
rollNW

unknown

May 17, 2024

GETTING STARTED

1	features	3
2	goals	5
3	quickstart - Open VS Code in your Browser	7
4	History	9
5	Moonshots	11
6	Credits	13
	Python Module Index	395
	Index	397

rollNW is an homage to Neverwinter Nights in C++ and Python.

See the [docs](#) and [tests](#) for more info, or open an IDE in browser in the quickstart section below.

This library is a work-in-progress. There will be serious refactoring and until there is a real release, it should be assumed the library is in flux.

FEATURES

- The beginnings of a novel [Rules System](#) designed for easily adding, overriding, expanding, or removing any rule and reasonable performance
 - A [combat engine](#) that's very nearing being able to simulate melee battles.
 - Objects (i.e. Creatures, Waypoints, etc) are implemented at a toolset level. Or in other words their features cover blueprints, area instances, with support for effects and item properties. They are still missing some new EE things. Player Characters are read only, for now.
 - A recursive decent [NWScript Parser](#)
 - Implementations of pretty much every [NWN File Format](#)
 - An binary and ASCII [Model Parser](#). See also the [mudl](#) model viewer side project.
 - A Resource Manager that can load all NWN containers (e.g. erf, key, nwsync) and also Zip files.
 - An implementation of NWN's [Localization System](#) focused on utf8 everywhere.
-

GOALS

- aims to implement an RPG engine inspired by NWN, excluding graphics and networking.
 - focuses on usage, instead of doing things the Aurora Engine Way.
 - follows [utf8 everywhere](#).
 - hews as close to [C++ Core Guidelines](#) as possible.
 - aims to be as easily bindable as possible to other languages. I.e. only library specific or STL types at API boundaries.
-

QUICKSTART - OPEN VS CODE IN YOUR BROWSER

[Github Codespaces](#) is available to those in the beta.

HISTORY

A lot of what's here was written in the 2011-2015 range as part of personal minimalist toolset, modernized and with new EE stuff added. In some sense, it's a work of historical fiction - it's what I'd have suggested at the start of NWN:EE: get the game and the community on the same set of libraries. Similarly to an older project that asked "[what if Bioware had stuck with Lua?](#)". The answer to that was pretty positive: a decade ahead, at least, of nwscript.

MOONSHOTS

You make ask yourself, why? But, to paraphrase Tennyson, ours isn't to question why, it's but to do and die and learn and maybe make neat things. In that spirit, here is a list of crazy projects that this library hopes to facilitate and that all fly in the face of "WHY?".

- A nwscript [Language Server](#)
 - A modern, cross-platform nwexplorer.
 - And, of course, the ever elusive open source NWN Toolset, with plugins, scripting, and a built-in console.
-

CREDITS

- [Bioware](#), [Beamdog](#) - The game itself
- [abseil](#) - Foundational
- [Catch2](#) - Testing
- [glm](#) - Mathematics
- [loguru](#), [fmt](#) - Logging
- [stbi_image](#), [NWNEexplorer](#), [SOIL2](#) - Image/Texture loading.
- [inih](#) - INI, SET parsing
- [nholmann_json](#) - JSON
- [toml++](#) - For settings.toml
- [libiconv](#), [boost::nowide](#) - i18n, string conversion
- [doxygen](#), [sphinx](#), [breathe](#) - documentation

6.1 building

rollnw uses cmake as its build system and more specifically [CMakePresets.json](#).

To build the library, all one needs to do is use the following cmake commands. This example also builds tests which are not enabled by default.

linux

macOS

windows

```
$ cd path/to/rollnw
$ cmake --preset linux -DROLLNW_BUILD_TESTS=ON
$ cmake --build --preset default
$ ctest --preset default
```

Note: The deployment target is currently set to 12.

```
$ cd path/to/rollnw
$ cmake --preset macos -DROLLNW_BUILD_TESTS=ON
$ cmake --build --preset default
$ ctest --preset default
```

The main windows builds are for Visual Studio 2022 (Community Edition), but mingw-64, later versions of Visual Studio will added.

For now it's probably easiest to open the x64 Visual Studio Developer Command Prompt. If you have ninja installed, it's highly recommended to use the windows-ninja configuration preset.

```
$ cd path/to/rollnw
$ cmake --preset windows -DROLLNW_BUILD_TESTS=ON
$ cmake --build --preset default
$ ctest --preset default
```

In order to run all of the tests, you can help the library locate Neverwinter Nights installation
paths by exporting the following ENV vars, if your install is in a non-standard location:

Linux / MacOS

Windows

```
$ export NWN_ROOT=path/to/game
$ export NWN_USER=path/to/nwn-user-dir
```

```
set NWN_ROOT=path\to\game
set NWN_USER=path\to\nwn-user-dir
```

6.2 using

While the library is far from done, basic usage would be as follows.

Python

C++

```
pip install rollnw
```

```
import rollnw

rollnw.kernel.start()
mod = rollnw.kernel.load_module("mymodule.mod")
for area in mod:
    # Do neat things
```

```
#include <nw/kernel/Kernel.hpp>
#include <nw/log.hpp>

int main(int argc, char* argv[])
{
    // Initialize logger
    nw::init_logger(argc, argv);
```

(continues on next page)

(continued from previous page)

```

    // Say this application is specific to 1.69.
    // This must be set before the initialize call below. The default is NWN:EE, so in
↳ that case,
    // ``set_version`` need not be called.. NOTE: THIS also controls which profile is
↳ loaded..
    nw::kernel::config().set_version(GameVersion::v1_69);

    // Sets config for the system, paths, version, etc.
    nw::kernel::config().initialize();

    // Initializes all systems
    nw::kernel::services().start();

    auto mod = nw::kernel::load_module("path/to/modules/your_module.mod");

    // Do neat stuff

    nw::kernel::unload_module();

    return 0;
}

```

6.3 differences

6.3.1 Changed

1. All resource names (i.e. resrefs, extensions) and resource paths are coerced to lower-case. On macOS, Windows, this generally makes no difference. On Linux, converting filenames, paths, etc, to lower-case has always been the best policy.

6.3.2 Unsupported

1. NWN(:EE or 2) configuration files for a couple reasons:
 - NWN:EE introduced a lot of needless complexity with `settings.tml` and it wasn't a particularly good choice to begin with.
 - If values are necessary they can be read first by some consumer of the library.
2. The concept of path aliases, i.e. "HAK:", "HD0:", etc.

6.4 formats

One thing that makes NWN(:EE) so great is that it's a local optima of power and simplicity. It's file formats are no different many of them - at the reader level - can be implemented as a thin wrapper over a handful of casts.

Where necessary the reading will be implemented separately from the writing and likewise from the 'rithmetic, unless it doesn't affect the usage or performance characteristics of one or the other. E.g. `tlk` can easily be made read/write/modifiable with the exact same performance characteristics, `Gff` cannot. It's better to separate them than convolute the implementations of all of them.

6.4.1 2da

Status: read/write

The 2da parser is one of the more optimized parts of the library. It can parse ~300MBps and all default 2das in under half of a second.

Example - Load a TwoDA:

Python

C++

```
#!/usr/bin/env python

from rollnw import TwoDA
import os

for f in os.listdir():
    if os.path.isfile(f) and os.path.splitext(f)[1].lower() == '.2da':
        tda = TwoDA(f)
        if not tda.valid():
            print(f"failed parsing: {f}")
            continue
        print(tda[0][0])
```

```
nw::TwoDA feat("feat.2da");
if(feat.is_valid()) {
    std::cout << fmt::format("feat.2da has {} rows", feat.rows()) << "\n";
    std::cout << *feat.get<std::string_view>(4, 0) << "\n";
    std::cout << *feat.get<int32_t>(0, "FEAT") << "\n";
}
```

6.4.2 gff

See [serialization docs](#)

6.4.3 images formats

Status:

- bmp: read/write
- dds (standard): read/write
- dds (bioware): read/write
- jpg: read/write
- gif: read/write
- plt: unsupported
- png: read/write
- tga: read/write

The library can do conversions between image formats and can do anything that stbi_image can, however, this has no goal of being any kind of useful conversion library.

bmp, gif, jpg, png, tga are supported thanks to [stbi_image](#). dds (standard & bioware) is supported thanks to [SOIL2](#).

Python

C++

```
from rollnw import Image
img = Image("my_texture.dds") # Can be Bioware DDS or standard
img.write_to("my_texture.png")
```

```
// TODO
```

6.4.4 ini

Status: read

Supported thanks to [inih](#)

Python

C++

```
from rollnw import Ini
ini = Ini("userpatch.ini")
if ini.get_str("Patch/PatchFile000"):
    # User has patch files defined
    pass
```

rollNW

```
// TODO
```

6.4.5 json

Status: read/write

Supported thanks to [nholmann_json](#)

6.4.6 mdl

See [model docs](#)

6.4.7 mtr

Status: unsupported

Python

C++

```
# TODO
```

```
// TODO
```

6.4.8 set

Status: read

Supported thanks to [inih](#)

Python

C++

```
# TODO
```

```
// TODO
```

6.4.9 ssf

Status: unsupported

Python

C++

```
# TODO
```

```
// TODO
```

6.4.10 tml

Status: read/write (c++), unsupported (python)

Supported thanks to `toml++`.

6.4.11 txi

Status: unsupported

Python

C++

```
# TODO
```

```
// TODO
```

6.5 i18n

The **i18n** module provides support for internationalization, conversions between default NWN encodings and UTF-8 (see below).

6.5.1 Philosophy

The module follows the principles of **UTF-8 everywhere**. Or in other words, ordinary C++ string types, `std::string`, `std::string_view`, etc. *must* be in UTF-8. The only exception are:

- wide character types (`std::wstring`, `u16string`, `u32string`, etc) which are never used.
- `std::filesystem::path` which is, per the standard, stored in native encoding. E.g., on Linux, UTF-8; on windows, UCS-2; etc. Some platform specific conversions to UTF-8 are therefore necessary.

There is *no* caching or fixed caching policies at this layer of the library.

6.5.2 Neverwinter Nights Languages and Encodings

- English (CP1252)
- French (CP1252)
- German (CP1252)
- Italian (CP1252)
- Spanish (CP1252)
- Polish (CP1250)
- Korean (CP949) - Unsupported by NWN:EE
- Chinese Traditional (CP936) - Unsupported by NWN:EE
- Chinese Simplified (CP950) - Unsupported by NWN:EE
- Japanese (CP932) - Unsupported by NWN:EE

6.5.3 kernel service

The *Strings* kernel service provides access to dialog/custom TLKs and localized strings. It also provides a mechanism for interning commonly used strings.

Example - Intern a String

```
auto str = nw::kernel::strings().intern("This is a Test");
if(str == "This is a Test") {
    // This will occur
}
```

6.6 kernel

The `kernel` module provides submodules for handling global resources and services. It's designed around some explicit goals:

- Every service should be easily overrideable to allow for [parallel implementation](#).
- Every service should be decoupled from the kernel itself.
- Any function or object that can modify global state must be contained in this module for easy search/grepability.

6.6.1 Services

Config

The `Config` service provides access to installation info.

6.7 model

As mentioned elsewhere, the goal of this library is not to render graphics, but maybe? Loading NWN models is for the purpose of conversion or in some other asset pipeline.

See the [mudl](#) model viewer side project for work on a NWN model viewer.

6.7.1 ASCII Models

Most default NWN models can be parsed without errors.

The parser can parse at about 100mb/s and can read pretty much [all ascii models](#) in ~20s on 2015 MacBook Pro.

6.7.2 Binary Models

The beginnings of binary model parsing is in the library. It's hard to tell what's right and what's wrong until there is more rendering experience.

6.7.3 Examples

Python

C++

```
#!/usr/bin/env python

from rollnw.model import Mdl
import os

mdl = Mdl.from_file("my_ascii_model.mdl")
if not mdl.valid():
    print(f"failed parsing: {f}")
print(mdl.supermodel_name)
```

```
// TODO
```

6.8 objects

rollNW is all about live objects and *not* serialized file formats.

6.8.1 definitions

ObjectID

Unlike NWN an ObjectID does not provide a one-to-one mapping to an object. Rather, it's an index into a structure containing objects.

ObjectHandle

An object handle maps to a specific object it consists of an ObjectID, the objects type, and an unsigned 16 bit integer indicating the object's version. To be valid, an object handle must match what is in the object array.

ObjectBase

The base class of all objects

6.8.2 kernel service

Any object that is loaded via the Objects service, belongs to the service and must be deleted through it.

Example - Loading and Deleting a Creature

Python

C++

```
import rollnw

rollnw.kernel.start()
obj = rollnw.kernel.objects().creature('nw_chicken.utc')
rollnw.kernel.objects().destroy(obj.handle())
# After this point accessing obj is undefined behavior and its handle if stored elsewhere
# will no longer be valid
```

```
auto obj = nw::kernel::objects().load<nw::Creature>(fs::path("a/path/to/nw_chicken.utc
↪"));
nw::kernel::objects().destroy(obj->handle());
// After this point accessing obj is undefined behavior and its handle if stored
↪elsewhere
// will no longer be valid
```

6.8.3 area

6.8.4 creature

Python

C++

```
from rollnw import Creature

# The file can also be rollnw JSON format, it doesn't matter.
cre = Creature.from_file("a/path/to/nw_chicken.utc")
if cre.scripts.on_attacked == "nw_c2_default5":
    cre.scripts.on_attacked = "nw_shakenbake"
```

```
// TODO
```

6.8.5 door

6.8.6 encounter

6.8.7 item

6.8.8 module

6.8.9 placeable

6.8.10 sound

6.8.11 store

6.8.12 trigger

6.8.13 waypoint

6.9 resources

6.9.1 kernel service

The resource services provides access the file system and resources stored in NWN container files. The main goals mostly satisfied: the ability to read all NWN(:EE) containers. The ability to add new container types is limited in utility due to [NWNX:EE](#)'s lack of a ResMan plugin, even so the ability to load files from a Zip file is included.

Example - Demanding a resource from resman

Python

C++

```
import rollnw
from rollnw.kernel import resman

rollnw.kernel.start()
assert resman().contains('nw_chicken.utc')
data = resman().demand('nw_chicken.utc')
data2 = resman().demand(rollnw.Resource('nw_chicken', rollnw.ResourceType.utc))
assert data == data2
```

```
nw::kernel::start();
// Assumes that NWN root directory was found.
if (nw::kernel::resman().contains({"nw_chicken"sv, nw::ResourceType::utc})) {
    auto utc = nw::kernel::resman().demand({"nw_chicken"sv, nw::ResourceType::utc});
    // Do something with this chicken.
}
```

6.9.2 containers

Directory

Status: Read, Write (file format dependant)

Erf

Status: Read

Example - Load an Erf and Print Contents

Python

C++

```
import rollnw

erf = rollnw.Erf("tests/test_data/user/hak/hak_with_description.hak")
print(erf.name(), erf.size())
for rd in erf.all():
    print(rd.name.filename(), rd.size)
```

```
#include <nw/resources/Erf.hpp>
// ...
Erf e("MyModule.mod");
if (e.valid()) {
    std::cout << fmt::format("{} has {} resources", e.name(), e.size()) << "\n";
    for (const auto& rd : e.all()) {
        std::cout << fmt::format("File: {}, Size: {}", rd.name.filename(), rd.size) << "\n";
    }
}
```

Key/Bif

Status: Read

NWSync

Status: Read

Example - Loading and Reading From NWSync Manifest

Python

C++

```
import rollnw

nws = rollnw.NWSync("path/to/nwsync")
if nws.is_loaded():
    # One of the curated modules
```

(continues on next page)

(continued from previous page)

```

manifest = nws.get('9a84e512dd3971eb215d6f9b0816a2e3ae2fee54')
if manifest:
    tga = manifest.demand('002metal.tga')
    # Do something with this image..

#include <nw/resources/NWSync.hpp>
#include <nw/kernel/Kernel.hpp>

auto path = "path/to/nwsync"
auto n = nw::NWSync(path);
if(!n.is_loaded()) {
    throw std::runtime_error("a fit");
}

auto manifests = n.manifests();
if (manifests.size() > 0) {
    auto manifest = n.get(manifests[0]);
    auto resource = manifest->all();
    if(resource.size() > 0) {
        // Extract the first resource found
        manifest->extract(std::regex(resource[0].name.filename()), "tmp/");
    }
}

```

Zip

Status: Read

6.10 rules

The Rules module presents some difficulties in the sense that if one was to sit down and design a system capable of expressing relatively arbitrary sets of rules and modifiers, it probably would not look much like NWN. Enhanced Edition's approach largely was to unhardcode *values*, but not systems¹.

rollNW has the elements of NWN's rule system builtin, which is itself an approximation of the Dungeons and Dragons 3rd Edition ruleset.

6.10.1 The Goals

- Rules must be overridable, expandable, removable either through configuration (2da) or at the very least programmatically. Nothing should be hardcoded.
- The rules system must be queryable. Example: Given one creature attacking one chair with one handaxe in one bar of Chicago, what are all the modifiers that affect this particular situation?
- Ideally, constants would be disassociated from 2da rows. Say a UUID <-> integer map, but that's both a configuration and serialization problem.

¹ There are some exceptions, parts of the custom spellcaster system.

6.10.2 Definitions

Profile

Profiles are a way of decoupling different rulesets from the rule system itself.

Type

A rule type is an attribute of the rule system, say a skill or an ability or a damage. The rule system defines the type and its invalid case, but leaves valid cases up to the rule profile. An example, armor class:

```
// Definition of an attribute in nw/rules/attributes.hpp
DECLARE_RULE_TYPE(ArmorClass)

// Somewhere else in a rule profile that uses the concept of armor class
constexpr nw::ArmorClass ac_dodge = nw::ArmorClass::make(0);
constexpr nw::ArmorClass ac_natural = nw::ArmorClass::make(1);
constexpr nw::ArmorClass ac_armor = nw::ArmorClass::make(2);
constexpr nw::ArmorClass ac_shield = nw::ArmorClass::make(3);
constexpr nw::ArmorClass ac_deflection = nw::ArmorClass::make(4);

// Then it's possible to refer to them as some opaque value for type safety:
auto res = get_armor_class(object, ac_shield);

// Or as their underlying value:
switch(*ac_type) {
case *ac_dodge: // ..
case *ac_natural: // ..
case *ac_armor: // ..
case *ac_shield: // ..
case *ac_deflection: // ..
}

// Or if it makes logical sense to think of a particular type as an index:
obj->ac_bonuses[ac_dodge.idx()]
```

Flag

`nw::RuleFlag` provides a mechanism for making flags out of rule types.

6.10.3 Modifiers

The foundation of the modifier system is just three types: `int32_t`, `float`, `strings`. It builds on the following abstractions to provide a dynamic, modifiable, queryable system. Modifiers are stored in a global table in `nw::kernel::Rules`. Note that Master Feat modifiers are special cased below.

The approach here is inspired by [Solstice](#) and Orth's NWNX:EE plugins [Race](#), [SkillRank](#), and [Feat](#).

Note that the examples below are designed for simplicity, not things that should necessarily be done.

Definitions

Modifier Type

A modifier type is a rule type that is used to determine how to process the outputs of a modifier.

Modifier Source

A modifier source indicates the attribute of an object that modifier is associated with.

Modifier Input

An input is an `int`, `float`, or a version of a `ModifierFunction`².

Modifier Output

In the basic cases, an output is the input passed directly without modification. When a function is the modifier input, it is called and its result is the output

The output is then passed to a callback provided to one of the `nw::kernel::resolve_modifier` function overloads.

The meaning of these outputs are determined by the modifier type. The number of output parameters is limited to one. They currently have to be integer, floating point types, or `nw::DamageRoll`.

In most cases using `nw::kernel::sum_modifier` or `nw::kernel::max_modifier` can avoid having to deal with passing callbacks.

Example - Adding a Modifier:

```
// This is just an example, see "profiles/nwn1/modifiers.[ch]pp for real implementations.
↳ of rules.
auto mod2 = nwn1::mod::hitpoints(
    20, // Modifier value, if the below requirement is met
    "dnd-3.0-epic-toughness-01",
    nw::ModifierSource::feat
    { nwn1::qual::feat(nwn1::feat_epic_toughness_1) },
);

// Add it to the global modifier table
nw::kernel::rules().modifier.add(mod2);
```

Example - Pale Master Armor Class Bonus:

```
auto mod = nw::load_module("test_data/user/modules/DockerDemo.mod");
auto ent = nw::objects().load<nw::Creature>(fs::path("some/palemaster.utc"));

int res = 0;
nw::resolve_modifier(ent, nwn1::mod_type_armor_class, nwn1::ac_natural,
    [&res](int value) { res += value; });
// res == 6

auto pm_ac_nerf = [](const nw::ObjectBase* obj) -> nw::ModifierResult {
    auto cre = obj->as_creature();
    if (!cre) { return 0; }
    auto pm_level = cre->levels.level_by_class(nwn1::class_type_pale_master);
    return ((pm_level / 4) + 1);
};
```

(continues on next page)

² One could imagine in a different context, say NWNX:EE, you could add a callback to `nwnx_dotnet/lua/etc` or a string for use with `ExecuteScriptChunk`.

(continued from previous page)

```
// Get rid of any requirement
nw::rules().modifiers.replace("dnd-3.0-palemaster-ac", nw::Requirement{});
// Set nerf
nw::rules().modifiers.replace("dnd-3.0-palemaster-ac", pm_ac_nerf);
res = 0;
REQUIRE(nw::resolve_modifier(ent, nwn1::mod_type_armor_class, nwn1::ac_natural,
    [&res](int value) { res += value; }));
// res == 3

res = 0;
nw::resolve_modifier(ent, nwn1::mod_type_armor_class, nwn1::ac_natural,
    [&res](int value) { res += value; });
// res == 0
```

6.10.4 Master Feats

Master feats and associated bonuses are set in the `nw::MasterFeatRegistry`. The master feat registry associates a particular rule element, say, a skill with a master feat and a feat corresponding to that skill.

Example - (Epic) Skill Focus: Discipline

```
auto& mfr = nw::kernel::rules().master_feats();
mfr->set_bonus(mfeat_skill_focus, 3);
mfr->set_bonus(mfeat_skill_focus_epic, 10);

mfr->add(skill_discipline, mfeat_skill_focus, feat_skill_focus_discipline);
mfr->add(skill_discipline, mfeat_skill_focus_epic, feat_epic_skill_focus_discipline)
```

Multiple feats are able to be associated with a rule element and masterfeat. Imagine in some universe, there is a class that has access to a generic Weapon Focus: Martial feat which provides Weapon Focus for all martial weapons.

Example - Multiple Associated Feats

```
auto& mfr = nw::kernel::rules().master_feats;
// Set up bonuses...
mfr->set_bonus(mfeat_weapon_focus, 1);
mfr->set_bonus(mfeat_weapon_focus_epic, 2);

// Register feats
mfr.add(baseitem_longsword, mfeat_weapon_focus, feat_weapon_focus_longsword);
mfr.add(baseitem_longsword, mfeat_weapon_focus, feat_weapon_focus_martial);
mfr.add(baseitem_longsword, mfeat_weapon_focus_epic, feat_epic_weapon_focus_longsword);
mfr.add(baseitem_longsword, mfeat_weapon_focus_epic, feat_epic_weapon_focus_martial);

// Process
auto callback = [](int value) { /* do something with value */ };
nw::kernel::resolve_master_feats<int>(cre, baseitem, callback,
    mfeat_weapon_focus, mfeat_weapon_focus_epic);

// Simple sums of master feat bonuses can be done as below.
```

(continues on next page)

(continued from previous page)

```

int value = nw::kernel::sum_master_feats<int>(cre, baseitem,
    mfeat_weapon_focus, mfeat_weapon_focus_epic);

// If you are only interested in resolving one master feat you can get that result
// directly:
int value2 = nw::kernel::resolve_master_feat<int>(cre, baseitem, mfeat_weapon_focus);

```

6.10.5 Requirements

Selector

A selector gets some piece of information from an entity.

Example:

```

auto s = nwn1::sel::ability(ability_strength);
// ...
auto str = nw::kernel::rules().select<int>(s, entity);
// ...

```

Qualifier

A qualifier is a selector with some constraints thereupon. In the example below any creature with an unmodified strength between [20, 40] inclusive would match.

```

auto q = nwn1::qual::ability(ability_strength, 20, 40);
// ...
if(nw::kernel::rules().match(q, creature)) {
    // ...
}

```

Requirement

A requirement is just a set of one or more Qualifiers.

Example:

Some thing a has requirement of level 4, wisdom between [12, 20], and a minimum appraise skill of 6.

```

auto req = nw::Requirement{{
    nwn1::qual::level(4),
    nwn1::qual::ability(ability_wisdom, 12, 20), // Min, Max
    nwn1::qual::skill(skill_appraise, 6),
}};
// ...
if(nw::kernel::rules().meets_requirement(req, creature)) {
    // ...
}

```

By default a requirement uses logical conjunction, to use disjunction pass `false` at construction.

```

auto req = nw::Requirement{{
    // Qualifiers ...
}, false};

```

6.11 script

The script module provides a lexer, recursive decent parser, and type-checker for NWScript.

Note: In the case of the [Python API](#), the interface to the AST is read only.

6.11.1 examples

Basic Loading

Python

C++

```
import rollnw
from rollnw.script import Nss, Context

# Start kernel, if you want to load game assets
rollnw.kernel.start()

# Create a context and to add include path, pass them into the Context constructor
ctx = Context(["includes/"])

# Load the script from a file
nss = Nss("path/to/myscript.nss", ctx)

# Parse
nss.parse()

# Preprocessing
nss.process_includes()

# Now all dependencies are available
deps = nss.dependencies()

# Ast resolution and type-checking
nss.resolve()

# Load a script from string
nss2 = Nss.from_string("void test_function(string s, int b);", ctx)

# To get any old script in the the context's resman use ``get``. Note this
# parses and resolves the script, nothing further processing is needed.
raise_dead = ctx.get("nw_s0_raisedead")
```

```
#include <nw/kernel/Kernel.hpp>
#include <nw/script/Nss.hpp>

// Start the kernel, if you want to load game assets
nw::kernel::config().initialize();
nw::kernel::services().start();
```

(continues on next page)

(continued from previous page)

```

auto ctx = std::make_unique<nw::script::Context>();
nw::script::Nss nss{nw::kernel::resman().demand({"nwscript"sv, nw::ResourceType::nss),
↳ ctx.get(), true};

// Parse
nss.parse();

// Preprocessing
nss.process_includes()
// Now all dependencies are available
auto deps = nss.dependencies()

// Ast resolution and type-checking
nss.resolve()

```

Iterating Top-Level Declarations

```

import rollnw
from rollnw.script import Nss, FunctionDecl, Context

# Start kernel, if you want to load game assets
rollnw.kernel.start()

# Create a context..
ctx = Context()

# The default command script is "nwscript"
nss = ctx.command_script()

# Iterate toplevel declarations and look for function declarations
# This is all functions WITHOUT bodies.
for decl in nss.ast():
    if isinstance(decl, FunctionDecl):
        # the identifier is token for now..
        print(f"function '{decl.identifier()}' has {len(decl)} parameter(s)")

# Or if you know what you're looking for.. the result is a rollnw.script.Symbol
int_to_string = nss.locate_export("IntToString", False)

```

6.11.2 performance

The parser currently parses at >100MBps on a 2015 MacBook Pro.

6.11.3 TODOs

- Decide how much to track NWN:EE NWScript changes, only raw strings isn't already done.
- Make the library more useful for NWScript successors (i.e Dragon Age or KoTOR)
- Whether to do optimizations or anything further than performance/usability improvements

6.11.4 credits

- [Crafting Interpreters](#)

6.12 serialization

6.12.1 Definitions

- **profile** - NWN has three different (de)serialization profiles:
 - **blueprint** - UTC, UTT, etc, etc. BIC is included here, though not a blueprint itself.
 - **instance** - Instances of blueprints stored in an area's GIT file.
 - **savegame** - All game and object state. This is outside of the scope of this library.. for now.
- **type** - C++ types corresponding to GFF serialization types.
 - `uint8_t` - Also convertible to `bool`
 - `int8_t`
 - `uint16_t`
 - `int16_t`
 - `uint32_t`
 - `int32_t`
 - `uint64_t`
 - `int64_t`
 - `float`
 - `double`
 - `std::string`
 - `Resref`
 - `LocString`
 - `ByteArray`
 - Scoped Enumerations are convertible when their underlying type matches the GFF type.

The library may support the lifting of numeric types, i.e. reading a `int16_t` into `int16_t` or `int32_t` or `int64_t`.

- **struct** is a collection of key-value pairs, where the key is a 16 character string and the value is one of the above types (almost).
- **list** is a list solely of structs, this follows the GFF pattern.
- **gffjson** refers to the nwn-lib/neverwinter.nim json format that mimics GFF. The extent to which this is supported by the library is an open issue.
- **json** refers specifically to rollnw json serialization. This very closely mimics the structure of a given object, such that if you load the JSON into another language, or a dynamic language that can construct arbitrary objects from JSON, the usage is identical or analogous to the C++ objects.

6.12.2 Examples

Example - How to build your own GFF

```
nw::GffBuilder gff{"GFF"};

// Add a field. Note that the type of the field is determined by the value
// passed.
gff.top.add_field("DATA", 9);

// Add a list. Note that in the GFF format lists contain only structs
auto& xs = gff.top.add_list("LIST");
// So when you push_back, you're creating a struct with a specific struct ID
auto& st = xs.push_back(0xBEEF);
// Now you can add fields to the struct
st.add_field("A", 1)
  .add_field("B", 12);

// Add a struct. It's pretty rare that a gff field is a struct but if necessary
// you can add a struct with its struct ID, then add fields like above.
gff.top.add_struct("STRUCT", 42)
  .add_field("A", 1)
  .add_field("B", 12);

gff.build(); // This must be called after all fields have been added.
gff.write_to("mygff.gff");
```

6.12.3 Sample rollnw JSON serialization format

```
{
  "$type": "UTC",
  "$version": 1,
  "appearance": {
    "body_parts": {
      "belt": 0,
      "bicep_left": 1,
      "bicep_right": 1,
      "foot_left": 1,
      "foot_right": 1,
```

(continues on next page)

(continued from previous page)

```

        "forearm_left": 1,
        "forearm_right": 1,
        "hand_left": 1,
        "hand_right": 1,
        "head": 119,
        "neck": 1,
        "pelvis": 1,
        "shin_left": 1,
        "shin_right": 1,
        "shoulder_left": 0,
        "shoulder_right": 0,
        "thigh_left": 1,
        "thigh_right": 1,
        "torso": 1
    },
    "hair": 167,
    "id": 6,
    "phenotype": 0,
    "portrait_id": 65,
    "skin": 3,
    "tail": 0,
    "tattoo1": 1,
    "tattoo2": 1,
    "wings": 0
},
"bodybag": 0,
"chunk_death": 0,
"combat_info": {
    "ac_natural": 0,
    "special_abilities": [
        {
            "flags": 1,
            "level": 15,
            "spell": 120
        }
    ]
},
"common": {
    "comment": "",
    "locals": {
        "DIPTYPE": {
            "integer": 3
        },
        "DeflectionAC": {
            "integer": 6
        },
        "DodgeAC": {
            "integer": 6
        },
        "OtherImmunes": {
            "integer": 1001945111
        }
    },

```

(continues on next page)

(continued from previous page)

```

    "Soak": {
      "string": "15+5"
    },
    "VFXDur1": {
      "integer": 11
    },
    "rlgs_ss_1": {
      "string": "lt_agent_1"
    }
  },
  "object_type": 5,
  "palette_id": 0,
  "resref": "pl_agent_001",
  "tag": "pl_agent_001"
},
"conversation": "",
"cr": 38.0,
"cr_adjust": -36,
"decay_time": 5000,
"deity": "",
"description": {
  "strings": [],
  "strref": 4294967295
},
"disarmable": 0,
"equipment": {
  "arms": "handwish",
  "chest": "dk_agent_thread2",
  "creature_left": "pl_slam_1d2"
},
"faction_id": 1,
"gender": 0,
"good_evil": 100,
"hp": 894,
"hp_current": 894,
"hp_max": 1014,
"immortal": 0,
"interruptable": 0,
"inventory": [],
"lawful_chaotic": 50,
"levels": [
  {
    "class": 4,
    "level": 10,
    "spellbook": {
      "known": [
        [],
        [],
        [],
        [],
        [],
        []
      ]
    }
  }
]

```

(continues on next page)

(continued from previous page)

```

        [],
        [],
        [],
        []
    ],
    "memorized": [
        [],
        [],
        [],
        [],
        [],
        [],
        [],
        [],
        [],
        [],
        []
    ]
}
},
{
    "class": 5,
    "level": 30,
    "spellbook": {
        "known": [
            [],
            [],
            [],
            [],
            [],
            [],
            [],
            [],
            [],
            [],
            []
        ],
        "memorized": [
            [],
            [],
            [],
            [],
            [],
            [],
            [],
            [],
            [],
            []
        ]
    }
}
],
"lootable": 0,
"name_first": {

```

(continues on next page)

(continued from previous page)

```

    "strings": [
      {
        "lang": 0,
        "string": "Agent"
      }
    ],
    "strref": 4294967295
  },
  "name_last": {
    "strings": [],
    "strref": 4294967295
  },
  "pc": 0,
  "perception_range": 11,
  "plot": false,
  "race": 6,
  "scripts": {
    "on_attacked": "mon_ai_5attacked",
    "on_blocked": "mon_ai_13blocked",
    "on_conversation": "mon_ai_4conv",
    "on_damaged": "mon_ai_6dmged",
    "on_death": "mon_ai_7death",
    "on_disturbed": "mon_ai_8disturb",
    "on_endround": "mon_ai_3ocre",
    "on_heartbeat": "mon_ai_1hb",
    "on_perceived": "mon_ai_2percep",
    "on_rested": "mon_ai_10rest",
    "on_spawn": "mon_ai_9spawn",
    "on_spell_cast_at": "mon_ai_11spcast",
    "on_user_defined": "mon_ai_12ud"
  },
  "soundset": 171,
  "starting_package": 4,
  "stats": {
    "abilities": [
      40,
      13,
      16,
      10,
      16,
      9
    ],
    "feats": [
      2,
      3,
      4,
      6,
      8,
      10,
      21,
      26,
      32,

```

(continues on next page)

(continued from previous page)

```

41,
45,
46,
49,
206,
207,
208,
209,
211,
212,
214,
215,
216,
258,
260,
289,
290,
291,
292,
297,
391,
392,
408,
755,
756,
757,
971,
1089
],
"save_bonus": {
    "fort": 9,
    "reflex": 15,
    "will": 13
},
"skills": [
    0,
    1,
    0,
    40,
    11,
    30,
    30,
    1,
    30,
    0,
    20,
    0,
    30,
    0,
    0,
    0,
    0,
    0
]

```

(continues on next page)

(continued from previous page)

```

        0,
        0,
        0,
        0,
        0,
        1,
        0,
        0,
        1,
        2,
        0
    ]
},
"subtrace": "",
"walkrate": 4
}

```

6.13 classes

6.13.1 nw::Ability

struct **Ability**

Public Functions

bool **operator==**(const *Ability* &rhs) const = default

Defaulted equality operator

auto **operator<=>**(const *Ability* &rhs) const = default

Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept

Returns rule type as value

inline constexpr size_t **idx**() const noexcept

Returns rule type as index

Public Static Functions

static inline constexpr *Ability* **make**(int32_t id)

Makes a rule type

static inline constexpr *Ability* **invalid**()

Returns an invalid rule type

6.13.2 nw::AbilityInfo

struct **AbilityInfo**

Public Functions

inline bool **valid**() const noexcept

Public Members

uint32_t **name** = 0xFFFFFFFF

InternedString **constant**

6.13.3 nw::Appearance

struct **Appearance**

Public Functions

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

int32_t **phenotype** = 0

uint32_t **tail** = 0

uint32_t **wings** = 0

uint16_t **id** = 0

uint16_t **portrait_id**

BodyParts **body_parts**

uint8_t **hair** = 0

uint8_t **skin** = 0

```
uint8_t tattoo1 = 0
```

```
uint8_t tattoo2 = 0
```

6.13.4 nw::Area

```
struct Area : public nw::ObjectBase
```

Public Functions

Area()

```
inline virtual Common *as_common() override
```

```
inline virtual const Common *as_common() const override
```

```
inline virtual Area *as_area() override
```

```
inline virtual const Area *as_area() const override
```

```
virtual bool instantiate() override
```

```
inline ObjectHandle handle() const noexcept
```

```
inline void set_handle(ObjectHandle handle)
```

```
const EffectArray &effects() const
```

```
EffectArray &effects()
```

```
inline virtual Versus versus_me() const
```

```
virtual InternedString tag() const
```

```
inline virtual Creature *as_creature()
```

```
inline virtual const Creature *as_creature() const
```

```
inline virtual Door *as_door()
```

```
inline virtual const Door *as_door() const
```

```
inline virtual Encounter *as_encounter()
```

```
inline virtual const Encounter *as_encounter() const
```

```
inline virtual Item *as_item()
```

```
inline virtual const Item *as_item() const
```

```
inline virtual Module *as_module()
```

```
inline virtual const Module *as_module() const
```

```
inline virtual Placeable *as_placeable()
```

```
inline virtual const Placeable *as_placeable() const
inline virtual Player *as_player()
inline virtual const Player *as_player() const
inline virtual Sound *as_sound()
inline virtual const Sound *as_sound() const
inline virtual Store *as_store()
inline virtual const Store *as_store() const
inline virtual Trigger *as_trigger()
inline virtual const Trigger *as_trigger() const
inline virtual Waypoint *as_waypoint()
inline virtual const Waypoint *as_waypoint() const
```

Public Members

Common **common**

AreaScripts **scripts**

AreaWeather **weather**

std::vector<*Creature**> **creatures**

std::vector<*Door**> **doors**

std::vector<*Encounter**> **encounters**

std::vector<*Item**> **items**

std::vector<*Placeable**> **placeables**

std::vector<*Sound**> **sounds**

std::vector<*Store**> **stores**

std::vector<*Trigger**> **triggers**

std::vector<*Waypoint**> **waypoints**

std::string **comments**

LocString **name**

Resref **tileset**

std::vector<*Tile*> **tiles**

int32_t **creator_id** = 0

AreaFlags **flags**

int32_t **height** = 0

int32_t **id** = 0

int32_t **listen_check_mod** = 0

int32_t **spot_check_mod** = 0

uint32_t **version** = 0

int32_t **width** = 0

uint16_t **loadscreen** = 0

uint8_t **no_rest** = 0

uint8_t **pvp** = 0

uint8_t **shadow_opacity** = 0

uint8_t **skybox** = 0

Public Static Functions

static bool **deserialize**(*Area* *obj, const nlohmann::json &caf)

Deserialize from JSON

Note: Note only supports does ‘caf’ style input/output, i.e. ARE + GIT + GIC.

```
static bool deserialize(Area *obj, const nlohmann::json &are, const nlohmann::json &git, const  
                        nlohmann::json &gic)
```

```
static void serialize(const Area *obj, nlohmann::json &archive)  
    Serialize to JSON.
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::area
```

```
static constexpr ResourceType::type restype = ResourceType::caf
```

6.13.5 nw::AreaScripts

```
struct AreaScripts
```

Public Functions

```
AreaScripts() = default
```

```
bool from_json(const nlohmann::json &archive)
```

```
nlohmann::json to_json() const
```

Public Members

```
Resref on_enter
```

```
Resref on_exit
```

```
Resref on_heartbeat
```

```
Resref on_user_defined
```


6.13.6 nw::AreaWeather

struct **AreaWeather**

Public Functions

AreaWeather() = default

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

int32_t **chance_lightning** = 0

int32_t **chance_rain** = 0

int32_t **chance_snow** = 0

uint32_t **color_moon_ambient** = 0

uint32_t **color_moon_diffuse** = 0

uint32_t **color_moon_fog** = 0

uint32_t **color_sun_ambient** = 0

uint32_t **color_sun_diffuse** = 0

uint32_t **color_sun_fog** = 0

float **fog_clip_distance** = 0.0f

int32_t **wind_power** = 0

uint8_t **day_night_cycle** = 0

uint8_t **is_night** = 0

uint8_t **lighting_scheme** = 0

uint8_t **fog_moon_amount** = 0

```
uint8_t moon_shadows = 0
```

```
uint8_t fog_sun_amount = 0
```

```
uint8_t sun_shadows = 0
```

6.13.7 nw::AttackData

struct **AttackData**

Structure for aggregating attack related data.

Public Types

```
using DamageArray = absl::InlinedVector<DamageResult, 8>
```

Public Functions

```
void add(nw::Damage type_, int amount, bool unblockable = false)
```

Adds damage to damage result.

```
DamageArray &damages()
```

Gets damage array.

```
const DamageArray &damages() const
```

Gets damage array.

Public Members

```
Creature *attacker = nullptr
```

```
ObjectBase *target = nullptr
```

```
Item *weapon = nullptr
```

```
AttackType type = AttackType::invalid()
```

```
AttackResult result = AttackResult::miss_by_roll
```

```
TargetState target_state = TargetState::none
```

```
bool target_is_creature = false
```

bool **is_ranged_attack** = false

bool **is_killing_blow** = false

Is the attack enough to kill target.

int **nth_attack** = 0

The nth attack in the 'round'.

int **attack_roll** = 0

int **attack_bonus** = 0

int **damage_total** = 0

int **armor_class** = 0

int **iteration_penalty** = 0

int **multiplier** = 0

int **threat_range** = 0

int **concealment** = 0

DamageResult **damage_base**

Base weapon damage.

absl::InlinedVector<nw::*Effect**, 8> **effects_to_apply**

Effects to apply to target.

absl::InlinedVector<nw::*EffectHandle*, 8> **effects_to_remove**

Effects to remove from target.

6.13.8 nw::BaseItem

struct **BaseItem**

Public Functions

bool **operator==**(const *BaseItem* &rhs) const = default
Defaulted equality operator

auto **operator<=>**(const *BaseItem* &rhs) const = default
Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept
Returns rule type as value

inline constexpr size_t **idx**() const noexcept
Returns rule type as index

Public Static Functions

static inline constexpr *BaseItem* **make**(int32_t id)
Makes a rule type

static inline constexpr *BaseItem* **invalid**()
Returns an invalid rule type

6.13.9 nw::BeamdogInstall

struct **BeamdogInstall**

Public Members

const char ***appid**

const char ***path**

6.13.10 nw::Bif

struct **Bif**

Bif is used only by *nw::Key*, it has no independant use.

Public Functions

Bif(*Key* *key, std::filesystem::path path)

Bif(const *Bif* &) = delete

Bif(*Bif* &&other) = default

Bif &**operator**=(const *Bif* &) = delete

Bif &operator=(*Bif* &&other) = default

ByteArray demand(size_t index) const

Friends

friend struct Key

6.13.11 nw::BodyParts

struct **BodyParts**

Public Members

uint8_t **belt** = 0

uint8_t **bicep_left** = 0

uint8_t **bicep_right** = 0

uint8_t **foot_left** = 0

uint8_t **foot_right** = 0

uint8_t **forearm_left** = 0

uint8_t **forearm_right** = 0

uint8_t **hand_left** = 0

uint8_t **hand_right** = 0

uint8_t **head** = 0

uint8_t **neck** = 0

uint8_t **pelvis** = 0

uint8_t **shin_left** = 0

uint8_t **shin_right** = 0

```
uint8_t shoulder_left = 0
```

```
uint8_t shoulder_right = 0
```

```
uint8_t thigh_left = 0
```

```
uint8_t thigh_right = 0
```

```
uint8_t torso = 0
```

6.13.12 nw::ByteArray

```
struct ByteArray
```

Public Types

```
using Base = std::vector<uint8_t>
```

```
using iterator = Base::iterator
```

```
using const_iterator = Base::const_iterator
```

```
using size_type = Base::size_type
```

Public Functions

```
ByteArray() = default
```

```
ByteArray(const uint8_t *buffer, size_t len)
```

```
ByteArray(ByteArray&&) = default
```

```
ByteArray(const ByteArray&) = default
```

```
ByteArray &operator=(ByteArray&&) = default
```

```
ByteArray &operator=(const ByteArray&) = default
```

```
inline bool operator==(const ByteArray &other) const
```

```
inline uint8_t &operator[](size_type pos)
```

```
inline const uint8_t &operator[](size_type pos) const
```

```
void append(const void *buffer, size_t len)
```

Appends bytes to the array.

```

inline void clear()
    Clears the data in the array.

inline uint8_t *data() noexcept
    Returns pointer to the underlying array.

inline const uint8_t *data() const noexcept
    Returns pointer to the underlying array.

inline void push_back(uint8_t byte)
    Appends one element to the array.

bool read_at(size_t offset, void *buffer, size_t size) const
    Reads size bytes at offset into an arbitrary buffer

inline void reserve(size_type count)
    Increases the capacity of the array by count elements.

inline void resize(size_type count)
    Resizes array to contain count elements. If greater, than current size, null padded.

inline size_type size() const noexcept
    Returns the number of bytes.

inline std::span<uint8_t> span()
    Construct std::span.

inline std::span<const uint8_t> span() const
    Construct std::span.

std::string_view string_view() const
    Constructs string view of the array.

bool write_to(const std::filesystem::path &path) const
    Write contents to file.

```

Public Static Functions

```

static ByteArray from_file(const std::filesystem::path &path)
    Load a file into memory.

```

6.13.13 nw::Class

```

struct Class

```

Public Functions

bool **operator==**(const *Class* &rhs) const = default
Defaulted equality operator

auto **operator<=>**(const *Class* &rhs) const = default
Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept
Returns rule type as value

inline constexpr size_t **idx**() const noexcept
Returns rule type as index

Public Static Functions

static inline constexpr *Class* **make**(int32_t id)
Makes a rule type

static inline constexpr *Class* **invalid**()
Returns an invalid rule type

6.13.14 nw::ClassArray

struct **ClassArray**
Class Singleton component.

Public Types

using **map_type** = absl::flat_hash_map<*IntermedString*, *Class*, InternedStringHash, InternedStringEq>

Public Functions

const *ClassInfo* ***get**(*Class* class_) const noexcept

bool **is_valid**(*Class* class_) const noexcept

Class **from_constant**(std::string_view constant) const

int **get_base_attack_bonus**(*Class* class_, size_t level) const
Gets class base attack from attack tables.

Saves **get_class_save_bonus**(*Class* class_, size_t level) const
Gets class save bonuses from save tables.

bool **get_is_class_skill**(*Class* class_, *Skill* skill) const
Determines if skill is a class skill.

int **get_natural_ac**(*Class* class_, size_t level) const
Gets class Natural AC gain.


```
const ClassRequirement *get_requirement(Class class_) const
    Gets class requirements.

int get_stat_gain(Class class_, Ability ability, size_t level) const
    Gets class ability gain.
```

Public Members

```
std::set<std::vector<int>> attack_tables
```

```
std::vector<int> stat_gain_tables
```

```
std::vector<ClassInfo> entries
```

```
map_type constant_to_index
```

6.13.15 nw::ClassEntry

```
struct ClassEntry
```

Public Members

```
Class id = nw::Class::invalid()
```

```
int16_t level = 0
```

```
SpellBook spells
```

6.13.16 nw::ClassInfo

```
struct ClassInfo
```

Public Functions

```
ClassInfo() = default
```

```
ClassInfo(const TwoDARowView &tda)
```

```
inline bool valid() const noexcept
```

Public Members

ClassRequirement **requirements**

uint32_t **name** = 0xFFFFFFFF

uint32_t **plural** = 0xFFFFFFFF

uint32_t **lower** = 0xFFFFFFFF

uint32_t **description** = 0xFFFFFFFF

Resource **icon**

int **hitdie** = 0

const std::vector<int> ***attack_bonus_table** = nullptr

Resource **feats_table**

Resource **saving_throw_table**

std::vector<*Saves*> **class_saves**

Resource **skill_table**

std::vector<int> **class_skills**

Resource **bonus_feats_table**

int **skill_point_base** = 0

Resource **spell_gain_table**

Resource **spell_known_table**

bool **player_class** = false

bool **spellcaster** = false

int **primary_ability**

```
uint32_t alignment_restriction = 0
```

```
uint32_t alignment_restriction_type = 0
```

```
bool invert_restriction = false
```

```
InternedString constant
```

```
Resource prereq_table
```

```
int max_level = 0
```

```
int xp_penalty = 0
```

```
int arcane_spellgain_mod = 0
```

```
int divine_spellgain_mod = 0
```

```
int epic_level_limit = -1
```

```
int package = 0
```

```
Resource stat_gain_table
```

```
std::vector<ClassStatGain> class_stat_gain
```

```
bool memorizes_spells = false
```

```
bool spellbook_restricted = false
```

```
bool pick_domains = false
```

```
bool pick_school = false
```

```
bool learn_scroll = false
```

```
bool arcane = false
```

```
bool arcane_spell_failure = false
```

```
nw::Ability caster_ability = nw::Ability::invalid()
```

```
std::string spell_table_column

float caster_level_multiplier = 1.0f

int level_min_caster = 0

int level_min_associate = 0

bool can_cast_spontaneously = false
```

6.13.17 nw::CombatInfo

struct **CombatInfo**

Public Functions

```
CombatInfo() = default
CombatInfo(CombatInfo&) = default
CombatInfo(CombatInfo&&) = default
CombatInfo &operator=(CombatInfo&) = delete
CombatInfo &operator=(CombatInfo&&) = default
bool from_json(const nlohmann::json &archive)
nlohmann::json to_json() const
```

Public Members

```
int ac_natural_bonus = 0

int attack_current = 0
    Current attack counter.
```

Note: Invariant: `attack_current <= attacks_onhand + attacks_offhand + attacks_extra`

```
int attacks_onhand = 0

int attacks_offhand = 0

int attacks_extra = 0
```

```

nw::ObjectBase *target = nullptr

float target_distance_sq = 0.0f
    Distance to target squared.

TargetState target_state = TargetState::none

int ac_armor_base = 0

int ac_shield_base = 0

CombatMode combat_mode = nw::CombatMode::invalid()

int32_t size_ab_modifier = 0

int32_t size_ac_modifier = 0

std::vector<SpecialAbility> special_abilities

```

6.13.18 nw::Common

struct **Common**

Public Functions

```

bool from_json(const nlohmann::json &archive, SerializationProfile profile, ObjectType object_type)
nlohmann::json to_json(SerializationProfile profile, ObjectType object_type) const
inline bool valid()

```

Public Members

```

uuids::uuid uuid

Resref resref

InternedString tag

LocString name

LocalData locals

```

Location **location**

std::string **comment**

uint8_t **palette_id** = std::numeric_limits<uint8_t>::max()

6.13.19 nw::CompressionHeader

struct **CompressionHeader**

Public Members

std::array<char, 4> **magic**

uint32_t **version**

uint32_t **algorithm**

uint32_t **uncompressed_size**

6.13.20 nw::ConfigOptions

struct **ConfigOptions**

Configuration options, maybe there will be an actual config file.. someday.

Public Members

bool **include_install** = true

Load Game install files.

bool **include_nwsync** = true

Load *NWSync* files.

bool **include_user** = true

Load User files, note: if false, value overrides **include_nwsync**

6.13.21 nw::Container

struct **Container**

Base class for all containers.

Subclassed by *nw::Directory*, *nw::Erf*, *nw::Key*, *nw::NWSyncManifest*, *nw::Zip*, *nw::kernel::Resources*

Public Functions

Container()

virtual **~Container()**

virtual std::vector<*ResourceDescriptor*> **all()** const = 0

Get all resources.

virtual bool **contains**(*Resource* res) const = 0

Get if container contains resource.

virtual ResourceData **demand**(*Resource* res) const = 0

Reads resource data, empty ResourceData if no match.

virtual int **extract_by_glob**(std::string_view glob, const std::filesystem::path &output) const

Extract elements from a container by glob pattern.

virtual int **extract**(const std::regex &pattern, const std::filesystem::path &output) const = 0

Extract elements from a container by regex.

virtual const std::string &**name**() const = 0

Equivalent to `basename` *path()*

virtual const std::string &**path**() const = 0

Path to container, for basic containers, should be canonical.

virtual size_t **size**() const = 0

Determines the size, if applicable, of the container.

virtual *ResourceDescriptor* **stat**(const *Resource* &res) const = 0

Get some general data about a resource.

virtual bool **valid**() const noexcept = 0

Return true if loaded, false if not.

virtual void **visit**(std::function<void(const *Resource*&)> callback) const noexcept = 0

Visits all resources in a container.

const std::filesystem::path &**working_directory**() const

Get container working directory.

6.13.22 nw::Creature

struct **Creature** : public nw::ObjectBase

Subclassed by *nw::Player*

Public Functions

Creature()

inline virtual *Common* ***as_common**() override

inline virtual const *Common* ***as_common**() const override

inline virtual *Creature* ***as_creature**() override

inline virtual const *Creature* ***as_creature**() const override

virtual bool **instantiate**() override

inline virtual *InternedString* **tag**() const override

virtual *Versus* **versus_me**() const override

inline ObjectHandle **handle**() const noexcept

inline void **set_handle**(ObjectHandle handle)

const *EffectArray* &**effects**() const

EffectArray &**effects**()

inline virtual *Area* ***as_area**()

inline virtual const *Area* ***as_area**() const

inline virtual *Door* ***as_door**()

inline virtual const *Door* ***as_door**() const

inline virtual *Encounter* ***as_encounter**()

inline virtual const *Encounter* ***as_encounter**() const

inline virtual *Item* ***as_item**()

inline virtual const *Item* ***as_item**() const

inline virtual *Module* ***as_module**()

inline virtual const *Module* ***as_module**() const

inline virtual *Placeable* ***as_placeable**()

inline virtual const *Placeable* ***as_placeable**() const

inline virtual *Player* ***as_player**()

inline virtual const *Player* ***as_player**() const


```

inline virtual Sound *as_sound()

inline virtual const Sound *as_sound() const

inline virtual Store *as_store()

inline virtual const Store *as_store() const

inline virtual Trigger *as_trigger()

inline virtual const Trigger *as_trigger() const

inline virtual Waypoint *as_waypoint()

inline virtual const Waypoint *as_waypoint() const

```

Public Members

Common **common**

Appearance **appearance**

CombatInfo **combat_info**

Equips **equipment**

Inventory **inventory**

LevelStats **levels**

LevelHistory **history**

CreatureScripts **scripts**

CreatureStats **stats**

Resref **conversation**

std::string **deity**

LocString **description**

LocString **name_first**

LocString **name_last**

```
std::string subrace

float cr = 0.0

int32_t cr_adjust = 0

uint32_t decay_time

Race race = Race::invalid()

int32_t walkrate = 0

uint16_t faction_id = 0

int16_t hp = 0

int16_t hp_current = 0

int16_t hp_max = 0

int16_t hp_temp = 0

uint16_t soundset

int32_t hasted = 0

int32_t size = 0

uint8_t bodybag = 0

uint8_t chunk_death = 0

uint8_t disarmable = 0

uint8_t gender = 0

uint8_t good_evil = 50

uint8_t interruptable = 0

uint8_t immortal = 0
```

```

uint8_t lawful_chaotic = 50

uint8_t lootable = 0

uint8_t pc = 0

uint8_t perception_range = 0

bool plot = false

uint8_t starting_package = 0

bool instantiated_ = false

```

Public Static Functions

```

static bool deserialize(Creature *obj, const nlohmann::json &archive, SerializationProfile profile)

static bool serialize(const Creature *obj, nlohmann::json &archive, SerializationProfile profile)

```

Public Static Attributes

```

static constexpr int json_archive_version = 1

static constexpr ObjectType object_type = ObjectType::creature

static constexpr ResourceType::type restype = ResourceType::utc

```

6.13.23 nw::CreatureScripts

```
struct CreatureScripts
```

Public Functions

```

CreatureScripts() = default

bool deserialize(const GffStruct &archive)

bool from_json(const nlohmann::json &archive)

bool serialize(GffBuilderStruct &archive) const

nlohmann::json to_json() const

```

Public Members

Resref **on_attacked**

Resref **on_blocked**

Resref **on_conversation**

Resref **on_damaged**

Resref **on_death**

Resref **on_disturbed**

Resref **on_endround**

Resref **on_heartbeat**

Resref **on_perceived**

Resref **on_rested**

Resref **on_spawn**

Resref **on_spell_cast_at**

Resref **on_user_defined**

6.13.24 nw::CreatureStats

struct **CreatureStats**

Public Functions

CreatureStats() = default

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

bool **add_feat**(*Feat* id)

Attempts to add a feat to a creature, returning true if successful.

```
const std::vector<Feat> &feats() const noexcept
    Gets the feat array.

int get_ability_score(Ability id) const
    Gets an ability score.

int get_skill_rank(Skill id) const
    Gets a skill rank.

bool has_feat(Feat id) const noexcept
    Determines if creature has a feat.

bool set_ability_score(Ability id, int value)
    Sets an ability score, returning true if successful.

bool set_skill_rank(Skill id, int value)
    Sets a skill rank, returning true if successful.
```

Public Members

Saves **save_bonus**

Friends

```
friend bool deserialize(CreatureStats &self, const GffStruct &archive)
friend bool serialize(const CreatureStats &self, GffBuilderStruct &archive)
```

6.13.25 nw::DamageResult

```
struct DamageResult
```

Public Members

```
nw::Damage type = nw::Damage::invalid()

int amount = 0

int unblocked = 0

int immunity = 0

int reduction = 0

int reduction_remaining = 0
```

```
int resist = 0
```

```
int resist_remaining = 0
```

6.13.26 nw::DamageRoll

```
struct DamageRoll
```

Public Members

```
Damage type = Damage::invalid()
```

```
DiceRoll roll
```

```
DamageCategory flags = DamageCategory::none
```

6.13.27 nw::Dialog

```
struct Dialog
```

Public Functions

```
Dialog()
```

```
explicit Dialog(const GffStruct archive)
```

```
explicit Dialog(const nlohmann::json &archive)
```

```
Dialog(const Dialog&) = delete
```

```
Dialog &operator=(const Dialog&) = delete
```

```
DialogPtr *add()
```

Adds empty *Dialog* Pointer and Node.

```
void add_node_internal(DialogNode *node, DialogNodeType type)
```

Adds a node to the internal node lists

Warning: This should be considered for internal use and not client code
--

```
DialogPtr *add_ptr(DialogPtr *ptr, bool is_link = false)
```

Adds *Dialog* Pointer, if *is_link* is false no new pointer or node is created. if *is_link* is true a new pointer will be created with the node copied from input pointer.

DialogPtr ***add_string**(std::string value, nw::LanguageID lang = nw::LanguageID::english, bool feminine = false)

Adds *Dialog* Pointer and Node with string value set.

DialogNode ***create_node**(*DialogNodeType* type)

Creates a new *Dialog* Node.

DialogPtr ***create_ptr**()

Creates a new *Dialog* Pointer.

void **delete_node**(*DialogNode* *node)

Deletes a dialog node

Warning: This should be considered for internal use and not client code

void **delete_ptr**(*DialogPtr* *ptr)

Deletes a dialog pointer

Warning: ptr should be removed from / not added to a dialog prior to deletion

size_t **node_index**(*DialogNode* *node, *DialogNodeType* type) const

Get Node index.

void **remove_node_internal**(*DialogNode* *node, *DialogNodeType* type)

Removes a node to the internal node lists

Warning: This should be considered for internal use and not client code

void **remove_ptr**(*DialogPtr* *ptr)

Removes *Dialog* Ptr from underlying node.

inline bool **valid**() const noexcept

Checks id dialog was successfully parsed.

Public Members

std::vector<*DialogNode**> **entries**

std::vector<*DialogNode**> **replies**

Resref **script_abort**

Resref **script_end**

std::vector<*DialogPtr**> **starts**

```
uint32_t delay_entry = 0
```

```
uint32_t delay_reply = 0
```

```
uint32_t word_count = 0
```

```
bool prevent_zoom = false
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ResourceType::type restype = ResourceType::dlg
```

6.13.28 nw::DialogNode

```
struct DialogNode
```

Public Functions

```
inline DialogNode()
```

```
DialogNode *copy() const
```

Copies a Node.

```
std::optional<std::string> get_action_param(const std::string &key)
```

Gets action parameter if it exists.

```
void remove_action_param(const std::string &key)
```

Removes action parameter by key.

```
void remove_action_param(size_t index)
```

Removes action parameter by index.

```
void set_action_param(const std::string &key, const std::string &value)
```

Sets action parameter, if key does not exist key and value are appended.

Public Members

```
Dialog *parent = nullptr
```

```
DialogNodeType type
```

```
std::string comment
```



```

std::string quest

std::string speaker

uint32_t quest_entry = std::numeric_limits<uint32_t>::max()

Resref script_action

Resref sound

LocString text

DialogAnimation animation = DialogAnimation::default_

bool animation_loop = false

uint32_t delay = std::numeric_limits<uint32_t>::max()

std::vector<DialogPtr*> pointers

std::vector<std::pair<std::string, std::string>> action_params

```

6.13.29 nw::DialogPtr

struct **DialogPtr**

Public Functions

DialogPtr ***add_ptr**(*DialogPtr* *ptr, bool is_link = false)

Adds *Dialog* Pointer, if *is_link* is false no new pointer or node is created. if *is_link* is true a new pointer will be created with the node copied from input pointer.

DialogPtr ***add_string**(std::string value, nw::LanguageID lang = nw::LanguageID::english, bool feminine = false)

Adds *Dialog* Pointer and Node with string value set.

DialogPtr ***add**()

Adds empty *Dialog* Pointer and Node.

DialogPtr ***copy**() const

Copies dialog pointer and all sub-nodes.

void **get_all_subnodes**(std::vector<*DialogNode**> &subnodes)

Gets all sub-nodes that are not links. When a pointer is removed from the dialog tree all of its sub-nodes must be removed from the main node list, unless they are links.

`std::optional<std::string> get_condition_param(const std::string &key)`
Gets a condition parameter if it exists.

`void remove_condition_param(const std::string &key)`
Removes condition parameter by key.

`void remove_condition_param(size_t index)`
Removes condition parameter by index.

`void remove_ptr(DialogPtr *ptr)`
Removes *Dialog* Ptr from underlying node.

`void set_condition_param(const std::string &key, const std::string &value)`
Sets condition parameter, if key does not exist key and value are appended.

Public Members

Dialog ***parent** = nullptr

DialogNodeType **type** = *DialogNodeType::entry*

uint32_t **index** = std::numeric_limits<uint32_t>::max()

DialogNode ***node** = nullptr

Resref **script_appears**

std::vector<std::pair<std::string, std::string>> **condition_params**

bool **is_start** = false

bool **is_link** = false

std::string **comment**

6.13.30 nw::DiceRoll

struct **DiceRoll**
A dice roll.

Public Functions

inline **operator bool**()

Public Members

int **dice** = 0

Number of dice to roll.

int **sides** = 0

Number of sides on the dice.

int **bonus** = 0

Additional bonus.

6.13.31 nw::Directory

struct **Directory** : public nw::Container

Public Functions

Directory() = default

explicit **Directory**(const std::filesystem::path &path)

virtual ~**Directory**() = default

virtual std::vector<ResourceDescriptor> **all**() const override

Get all resources.

virtual bool **contains**(Resource res) const override

Get if container contains resource.

virtual ResourceData **demand**(Resource res) const override

Reads resource data, empty ResourceData if no match.

virtual int **extract**(const std::regex &pattern, const std::filesystem::path &output) const override

Extract elements from a container by regex.

inline virtual const std::string &**name**() const override

Equivalent to basename *path()*

inline virtual const std::string &**path**() const override

Path to container, for basic containers, should be canonical.

virtual size_t **size**() const override

Determines the size, if applicable, of the container.

virtual ResourceDescriptor **stat**(const Resource &res) const override

Get some general data about a resource.

```
inline virtual bool valid() const noexcept override
    Return true if loaded, false if not.

virtual void visit(std::function<void(const Resource>> callback) const noexcept override
    Visits all resources in a container.

virtual int extract_by_glob(std::string_view glob, const std::filesystem::path &output) const
    Extract elements from a container by glob pattern.

const std::filesystem::path &working_directory() const
    Get container working directory.
```

6.13.32 nw::Disease

```
struct Disease
```

Public Functions

```
bool operator==(const Disease &rhs) const = default
    Defaulted equality operator

auto operator<=>(const Disease &rhs) const = default
    Defaulted spaceship operator

inline constexpr int32_t operator*() const noexcept
    Returns rule type as value

inline constexpr size_t idx() const noexcept
    Returns rule type as index
```

Public Static Functions

```
static inline constexpr Disease make(int32_t id)
    Makes a rule type

static inline constexpr Disease invalid()
    Returns an invalid rule type
```

6.13.33 nw::Door

```
struct Door : public nw::ObjectBase
```

Public Functions

Door()

```

inline virtual Common *as_common() override
inline virtual const Common *as_common() const override
inline virtual Door *as_door() override
inline virtual const Door *as_door() const override
inline virtual bool instantiate() override
inline virtual InternedString tag() const override
inline ObjectHandle handle() const noexcept
inline void set_handle(ObjectHandle handle)
const EffectArray &effects() const
EffectArray &effects()
inline virtual Versus versus_me() const
inline virtual Area *as_area()
inline virtual const Area *as_area() const
inline virtual Creature *as_creature()
inline virtual const Creature *as_creature() const
inline virtual Encounter *as_encounter()
inline virtual const Encounter *as_encounter() const
inline virtual Item *as_item()
inline virtual const Item *as_item() const
inline virtual Module *as_module()
inline virtual const Module *as_module() const
inline virtual Placeable *as_placeable()
inline virtual const Placeable *as_placeable() const
inline virtual Player *as_player()
inline virtual const Player *as_player() const
inline virtual Sound *as_sound()
inline virtual const Sound *as_sound() const
inline virtual Store *as_store()

```

```
inline virtual const Store *as_store() const
inline virtual Trigger *as_trigger()
inline virtual const Trigger *as_trigger() const
inline virtual Waypoint *as_waypoint()
inline virtual const Waypoint *as_waypoint() const
```

Public Members

Common **common**

DoorScripts **scripts**

Lock **lock**

Trap **trap**

Resref **conversation**

LocString **description**

std::string **linked_to**

Saves **saves**

uint32_t **appearance**

uint32_t **faction** = 0

uint32_t **generic_type** = 0

int16_t **hp** = 0

int16_t **hp_current** = 0

uint16_t **loadscreen** = 0

uint16_t **portrait_id**

DoorAnimationState **animation_state** = *DoorAnimationState::closed*

```
uint8_t hardness
```

```
bool interruptable = 0
```

```
uint8_t linked_to_flags = 0
```

```
bool plot = false
```

```
bool instantiated_ = true
```

Public Static Functions

```
static bool deserialize(Door *obj, const nlohmann::json &archive, SerializationProfile profile)
```

```
static bool serialize(const Door *obj, nlohmann::json &archive, SerializationProfile profile)
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::door
```

```
static constexpr ResourceType::type restype = ResourceType::utd
```

6.13.34 nw::DoorScripts

```
struct DoorScripts
```

Public Functions

```
bool from_json(const nlohmann::json &archive)
```

```
nlohmann::json to_json() const
```

Public Members

```
Resref on_click
```

```
Resref on_closed
```

```
Resref on_damaged
```

Resref **on_death**

Resref **on_disarm**

Resref **on_heartbeat**

Resref **on_lock**

Resref **on_melee_attacked**

Resref **on_open**

Resref **on_open_failure**

Resref **on_spell_cast_at**

Resref **on_trap_triggered**

Resref **on_unlock**

Resref **on_user_defined**

6.13.35 nw::Effect

struct **Effect**

Public Functions

Effect()

Effect(EffectType type_)

void **clear**()

Clears the effect such that it's as if default constructed.

float **get_float**(size_t index) const noexcept

Gets a floating point value.

int **get_int**(size_t index) const noexcept

Gets an integer point value.

std::string_view **get_string**(size_t index) const noexcept

Gets a string value.

EffectHandle **handle**() noexcept

Gets the effect's handle.

EffectID **id**() const noexcept
 Gets the effect's ID.

void **set_float**(size_t index, float value)
 Sets a floating point value.

void **set_id**(EffectID id)
 Sets effect's ID.

void **set_int**(size_t index, int value)
 Sets an integer point value.

void **set_string**(size_t index, std::string value)
 Sets a string value.

void **set_versus**(*Versus* vs)
 Sets the versus value.

const *Versus* &**versus**() const noexcept
 Gets the versus value.

Public Members

EffectType **type** = EffectType::invalid()

EffectCategory **category** = EffectCategory::magical

int **subtype** = -1

ObjectHandle **creator**

Spell **spell_id** = *Spell*::invalid()

float **duration** = 0.0f

uint32_t **expire_day** = 0

uint32_t **expire_time** = 0

6.13.36 nw::EffectArray

struct **EffectArray**

Public Types

using **storage** = std::vector<*EffectHandle*>

using **iterator** = *storage*::iterator

using **const_iterator** = *storage*::const_iterator

Public Functions

bool **add**(*Effect* *effect)

Adds an effect.

iterator **begin**()

const_iterator **begin**() const

iterator **end**()

const_iterator **end**() const

void **erase**(*iterator* first, *iterator* last)

Removes a range of effects.

bool **remove**(*Effect* *effect)

Removes an effect.

size_t **size**() const noexcept

Gets the number of applied effects.

6.13.37 nw::EffectHandle

struct **EffectHandle**

Public Functions

bool **operator==**(const *EffectHandle*&) const = default

auto **operator<=>**(const *EffectHandle*&) const = default

Public Members

EffectType **type** = EffectType::invalid()

int **subtype** = -1

ObjectHandle **creator**

```
Spell spell_id = Spell::invalid()
```

```
EffectCategory category = EffectCategory::magical
```

```
Effect *effect = nullptr
```

6.13.38 nw::Encounter

```
struct Encounter : public nw::ObjectBase
```

Public Functions

```
Encounter()
```

```
inline virtual Common *as_common() override
```

```
inline virtual const Common *as_common() const override
```

```
inline virtual Encounter *as_encounter() override
```

```
inline virtual const Encounter *as_encounter() const override
```

```
inline virtual bool instantiate() override
```

```
inline virtual InternedString tag() const override
```

```
inline ObjectHandle handle() const noexcept
```

```
inline void set_handle(ObjectHandle handle)
```

```
const EffectArray &effects() const
```

```
EffectArray &effects()
```

```
inline virtual Versus versus_me() const
```

```
inline virtual Area *as_area()
```

```
inline virtual const Area *as_area() const
```

```
inline virtual Creature *as_creature()
```

```
inline virtual const Creature *as_creature() const
```

```
inline virtual Door *as_door()
```

```
inline virtual const Door *as_door() const
```

```
inline virtual Item *as_item()
```

```
inline virtual const Item *as_item() const
```

```
inline virtual Module *as_module()
```

```
inline virtual const Module *as_module() const
inline virtual Placeable *as_placeable()
inline virtual const Placeable *as_placeable() const
inline virtual Player *as_player()
inline virtual const Player *as_player() const
inline virtual Sound *as_sound()
inline virtual const Sound *as_sound() const
inline virtual Store *as_store()
inline virtual const Store *as_store() const
inline virtual Trigger *as_trigger()
inline virtual const Trigger *as_trigger() const
inline virtual Waypoint *as_waypoint()
inline virtual const Waypoint *as_waypoint() const
```

Public Members

Common **common**

EncounterScripts **scripts**

std::vector<*SpawnCreature*> **creatures**

std::vector<glm::vec3> **geometry**

std::vector<*SpawnPoint*> **spawn_points**

int32_t **creatures_max** = -1

int32_t **creatures_recommended** = 0

int32_t **difficulty** = 0

int32_t **difficulty_index** = 0

uint32_t **faction** = 0

int32_t **reset_time** = 0

```
int32_t respawns = 0
```

```
int32_t spawn_option = 0
```

```
bool active = true
```

```
bool player_only = false
```

```
bool reset = true
```

```
bool instantiated_ = false
```

Public Static Functions

```
static bool deserialize(Encounter *obj, const nlohmann::json &archive, SerializationProfile profile)
```

```
static bool serialize(const Encounter *obj, nlohmann::json &archive, SerializationProfile profile)
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::encounter
```

```
static constexpr ResourceType::type restype = ResourceType::ute
```

6.13.39 nw::EncounterScripts

```
struct EncounterScripts
```

Public Functions

```
bool from_json(const nlohmann::json &archive)
```

```
nlohmann::json to_json() const
```

Public Members

Resref **on_entered**

Resref **on_exhausted**

Resref **on_exit**

Resref **on_heartbeat**

Resref **on_user_defined**

6.13.40 nw::Equips

struct **Equips**

Public Functions

Equips(*Creature* *owner)

Equips(const *Equips*&) = delete

Equips(*Equips*&&) = default

Equips &**operator**=(const *Equips*&) = delete

Equips &**operator**=(*Equips*&&) = default

~Equips() = default

bool **instantiate**()

bool **from_json**(const nlohmann::json &archive, *SerializationProfile* profile)

nlohmann::json **to_json**(*SerializationProfile* profile) const

Public Members

nw::*Creature* ***owner_** = nullptr

std::array<*EquipItem*, 18> **equips**

6.13.41 nw::Erf

struct **Erf** : public nw::Container

Public Functions

Erf() = default

explicit **Erf**(const std::filesystem::path &path)

Erf(const *Erf* &) = delete

Erf(*Erf* &&other) = default

virtual ~**Erf**() = default

bool **add**(Resource res, const ByteArray &bytes)

Adds resources from array of bytes.

bool **add**(const std::filesystem::path &path)

Adds resources from path.

size_t **erase**(const Resource &res)

Removes resource.

bool **merge**(const Container *container)

Merges the contents of another container.

bool **reload**()

Reloads *Erf*

Note: *Erf::working_directory()* will not change

bool **save**() const

Saves *Erf* to *Erf::path()*

Note: It's probably best to call *Erf::reload* after save.

bool **save_as**(const std::filesystem::path &path) const

Saves *Erf* to different path

Note: Current *Erf* unmodified, to load *Erf* at new path a new *Erf* must be constructed.

virtual std::vector<ResourceDescriptor> **all**() const override

Get all resources.

virtual bool **contains**(Resource res) const override

Get if container contains resource.

virtual ResourceData **demand**(Resource res) const override

Reads resource data, empty ResourceData if no match.

virtual int **extract**(const std::regex &pattern, const std::filesystem::path &output) const override

Extract elements from a container by regex.

inline virtual const std::string &**name**() const override

Equivalent to `basename` [*path\(\)*](#)

inline virtual const std::string &**path**() const override

Path to container, for basic containers, should be canonical.

virtual size_t **size**() const override

Determines the size, if applicable, of the container.

virtual [*ResourceDescriptor*](#) **stat**(const [*Resource*](#) &res) const override

Get some general data about a resource.

inline virtual bool **valid**() const noexcept override

Return true if loaded, false if not.

virtual void **visit**(std::function<void(const [*Resource*](#)&)> callback) const noexcept override

Visits all resources in a container.

[*Erf*](#) &**operator**=(const [*Erf*](#)&) = delete

[*Erf*](#) &**operator**=([*Erf*](#)&&) = default

virtual int **extract_by_glob**(std::string_view glob, const std::filesystem::path &output) const

Extract elements from a container by glob pattern.

const std::filesystem::path &**working_directory**() const

Get container working directory.

Public Members

[*ErfType*](#) **type** = [*ErfType*](#)::*erf*

[*Erf*](#) type.

[*ErfVersion*](#) **version** = [*ErfVersion*](#)::*v1_0*

Version.

[*LocString*](#) **description**

Description.

6.13.42 nw::Faction

struct **Faction**

Public Functions

```
explicit Faction(const Gff &archive)
explicit Faction(const nlohmann::json &archive)
GffBuilder serialize() const
nlohmann::json to_json() const
```

Public Members

```
std::vector<FactionInfo> factions
std::vector<Reputation> reputations
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
static constexpr ResourceType::type restype = ResourceType::fac
```

6.13.43 nw::FactionInfo

```
struct FactionInfo
```

Public Members

```
std::string name
uint32_t parent = std::numeric_limits<uint32_t>::max()
uint16_t global = 0
```

6.13.44 nw::Feat

```
struct Feat
```

Public Functions

bool **operator==**(const *Feat* &rhs) const = default

Defaulted equality operator

auto **operator<=>**(const *Feat* &rhs) const = default

Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept

Returns rule type as value

inline constexpr size_t **idx**() const noexcept

Returns rule type as index

Public Static Functions

static inline constexpr *Feat* **make**(int32_t id)

Makes a rule type

static inline constexpr *Feat* **invalid**()

Returns an invalid rule type

6.13.45 nw::FeatInfo

struct **FeatInfo**

Feat definition.

Public Functions

FeatInfo() = default

FeatInfo(const TwoDARowView &tda)

inline bool **valid**() const noexcept

Public Members

uint32_t **name** = 0xFFFFFFFF

uint32_t **description** = 0xFFFFFFFF

Resource **icon**

bool **all_can_use** = false

int **category** = -1

```
int max_cr = 0
```

```
int spell = -1
```

```
Feat successor = Feat::invalid()
```

```
float cr_value = 0.0f
```

```
int uses = 0
```

```
int master = 0
```

```
bool target_self = false
```

```
InternedString constant
```

```
int tools_categories = 0
```

```
bool hostile = false
```

```
bool epic = false
```

```
bool requires_action = false
```

```
Requirement requirements
```

6.13.46 nw::GameProfile

struct **GameProfile**

Abstract base class for game profiles.

Subclassed by *nwn1::Profile*

Public Functions

```
virtual ~GameProfile() = default
```

```
virtual bool load_rules() const = 0
```

Loads game specific rules.

```
virtual bool load_resources() = 0
```

6.13.47 nw::Gff

struct **Gff**

Public Functions

Gff() = default

explicit **Gff**(const std::filesystem::path &file, nw::LanguageID lang = nw::LanguageID::english)

explicit **Gff**(ResourceData data, nw::LanguageID lang = nw::LanguageID::english)

GffStruct **toplevel**() const

Get the toplevel struct.

inline std::string_view **type**() const

Get *Gff* type.

bool **valid**() const

Get if *Gff* file successfully parsed.

inline std::string_view **version**() const

Get the *Gff* Version.

Public Members

GffHeader ***head_** = nullptr

GffLabel ***labels_** = nullptr

GffStructEntry ***structs_** = nullptr

GffFieldEntry ***fields_** = nullptr

uint32_t ***field_indices_** = nullptr

uint32_t ***list_indices_** = nullptr

6.13.48 nw::GffBuilder

struct **GffBuilder**

Public Functions

explicit **GffBuilder**(std::string_view type, std::string_view version = "V3.2")

size_t **add_label**(std::string_view name)

void **build**()

ByteArray **to_byte_array**() const

bool **write_to**(const std::filesystem::path &path) const

Public Members

GffBuilderStruct **top**

GffHeader **header**

ByteArray **data**

std::vector<*GffLabel*> **labels**

std::vector<uint32_t> **field_indices**

std::vector<uint32_t> **list_indices**

std::vector<GffFieldEntry> **field_entries**

std::vector<GffStructEntry> **struct_entries**

6.13.49 nw::GffBuilderField

struct **GffBuilderField**

Public Functions

explicit **GffBuilderField**(*GffBuilder* *parent_)

Public Members

GffBuilder ***parent** = nullptr

SerializationType::type **type**

uint32_t **index** = 0

uint32_t **label_index** = 0

uint32_t **data_or_offset** = 0

std::variant<*GffBuilderStruct*, *GffBuilderList*> **structures**

6.13.50 nw::GffBuilderList

struct **GffBuilderList**

Public Functions

GffBuilderList() = default

explicit **GffBuilderList**(*GffBuilder* *parent_)

GffBuilderStruct &**push_back**(uint32_t id)

inline size_t **size**() const noexcept

Public Members

GffBuilder ***parent** = nullptr

std::vector<*GffBuilderStruct*> **structs**

6.13.51 nw::GffBuilderStruct

struct **GffBuilderStruct**

Public Functions

GffBuilderStruct() = default

explicit **GffBuilderStruct**(*GffBuilder* *parent_)

template<typename T>

GffBuilderStruct &**add_field**(std::string_view name, const T &value)

GffBuilderList &**add_list**(std::string_view name)

GffBuilderStruct &**add_struct**(std::string_view name, uint32_t id_)

Public Members

GffBuilder ***parent** = nullptr

uint32_t **index** = 0

uint32_t **id** = 0

std::vector<*GffBuilderField*> **field_entries**

6.13.52 nw::GffField

struct **GffField**

Public Functions

template<typename T>

std::optional<T> **get**() const

Get the field's value.

template<typename T>

bool **get_to**(T &value) const

Get the field's value.

std::string_view **name**() const

Get label.

size_t **size**() const

If field is a list, returns size of list, else 0.

SerializationType::type **type**() const

Get field type.

inline bool **valid**() const noexcept

Get if field is valid.

GffStruct **operator[]**(size_t index) const

If field is a list, return struct at index, else invalid struct.

6.13.53 nw::GffLabel

struct **GffLabel**

Public Types

using **Storage** = std::array<char, *max_size*>

using **value_type** = typename *Storage*::value_type

using **size_type** = typename *Storage*::size_type

Public Functions

GffLabel()

GffLabel(const *GffLabel*&) = default

GffLabel(*Storage* data) noexcept

GffLabel(const char *string) noexcept

GffLabel(std::string_view string) noexcept

GffLabel &**operator**=(const *GffLabel*&) = default

bool **empty**() const noexcept

Checks if the underlying array has no non-null characters.

size_type **length**() const noexcept

Returns the number of char elements in the array, excluding nulls.

std::string **string**() const

Creates std::string of underlying array.

std::string_view **view**() const noexcept

Creates std::string_view of underlying array without null padding.

Public Static Attributes

static constexpr size_t **max_size** = 16

6.13.54 nw::GffStruct

struct **GffStruct**

Public Functions

bool **has_field**(std::string_view label) const

Check if a struct has a field.

inline uint32_t **id**() const

Get struct id.

template<typename T>

std::optional<T> **get**(std::string_view label, bool warn_missing = true) const

Gets a value from a field in the struct.

template<typename T>

bool **get_to**(std::string_view label, T &out, bool warn_missing = true) const

Gets a value from a field in the struct.

inline size_t **size**() const

Number of fields in the struct.

inline bool **valid**() const

Check if *Gff* has been parsed without error.

GffField **operator**[](std::string_view label) const

Get field by label.

GffField **operator**[](size_t index) const

Get field by index.

6.13.55 nw::Image

struct **Image**

Image Resource.

Read/Write Support:

- jpg, png, dds, tga (thanks to stb_image and SOIL)
- Bioware dds (thanks to NWNExplorer)

Todo:

plt

Note: Even though this supports writing images, this is **catagorically** not a tool for converting/compressing textures.

Public Functions

explicit **Image**(const std::filesystem::path &filename)

explicit **Image**(ResourceData data)

Image(*Image* &&other)

Image(const *Image* &other) = delete

Image &operator=(*Image* &&other)

Image &operator=(const *Image* &other) = delete

~**Image**()

uint32_t **channels**() const noexcept

Get BBP.

uint8_t ***data**()

Get raw data.

uint32_t **height**() const noexcept

Get height.

bool **is_bio_dds**() const noexcept

Returns true if image was loaded from a bioware dds file.

bool **valid**() const

Determine if successfully loaded.

uint32_t **width**() const noexcept

Get width.

bool **write_to**(const std::filesystem::path &filename) const

Write *Image* to file.

6.13.56 nw::Ini

struct **Ini**

Ini file format parser.

Lookup is by “<section>/<key>”

Note: This is read only currently.

Public Functions

Ini () = default

explicit **Ini** (const std::filesystem::path &filename)

explicit **Ini** (*ByteArray* bytes)

template<typename T>
std::optional<T> **get**(std::string key) const
Gets a value.

Template Parameters

T – int32_t, float, or std::string

Parameters

key –

Returns

std::optional<T>

bool **get_to**(std::string key, std::string &out) const
Gets string value.

bool **get_to**(std::string key, int &out) const
Gets int value.

bool **get_to**(std::string key, float &out) const
Gets float value.

bool **valid**() const noexcept
Determines if *Ini* file was successfully parsed.

6.13.57 nw::InstallInfo

struct **InstallInfo**

Public Members

std::filesystem::path **install**

std::filesystem::path **user**

GameVersion **version** = *GameVersion::invalid*

6.13.58 nw::InternedString

struct **InternedString**

Public Functions

InternedString() = default

inline explicit **InternedString**(const std::string *str)

bool **operator==**(const *InternedString* &rhs) const noexcept = default

auto **operator<=>**(const *InternedString* &rhs) const noexcept = default

inline std::string_view **view**() const noexcept

inline **operator bool**() const noexcept

6.13.59 nw::Inventory

struct **Inventory**

Public Functions

Inventory() = default

inline explicit **Inventory**(ObjectBase *owner_)

Inventory(const *Inventory*&) = delete

Inventory(*Inventory*&&) = default

Inventory &**operator=**(const *Inventory*&) = delete

Inventory &**operator=**(*Inventory*&&) = default

~Inventory() = default

bool **instantiate**()

bool **from_json**(const nlhmann::json &archive, *SerializationProfile* profile)

nlhmann::json **to_json**(*SerializationProfile* profile) const

Public Members

ObjectBase ***owner**

std::vector<*InventoryItem*> **items**

6.13.60 nw::InventoryItem

struct **InventoryItem**

Public Members

bool **infinite** = false

uint16_t **pos_x**

uint16_t **pos_y**

std::variant<*Resref*, *Item**> **item**

6.13.61 nw::Item

struct **Item** : public nw::ObjectBase

Public Functions

Item()

inline virtual *Common* ***as_common**() override

inline virtual const *Common* ***as_common**() const override

inline virtual *Item* ***as_item**() override

inline virtual const *Item* ***as_item**() const override

virtual bool **instantiate**() override

inline virtual *InternedString* **tag**() const override

inline ObjectHandle **handle**() const noexcept

inline void **set_handle**(ObjectHandle handle)

const *EffectArray* &**effects**() const

EffectArray &effects()

inline virtual *Versus* **versus_me**() const

inline virtual *Area* ***as_area**()

inline virtual const *Area* ***as_area**() const

inline virtual *Creature* ***as_creature**()

inline virtual const *Creature* ***as_creature**() const

inline virtual *Door* ***as_door**()

inline virtual const *Door* ***as_door**() const

inline virtual *Encounter* ***as_encounter**()

inline virtual const *Encounter* ***as_encounter**() const

inline virtual *Module* ***as_module**()

inline virtual const *Module* ***as_module**() const

inline virtual *Placeable* ***as_placeable**()

inline virtual const *Placeable* ***as_placeable**() const

inline virtual *Player* ***as_player**()

inline virtual const *Player* ***as_player**() const

inline virtual *Sound* ***as_sound**()

inline virtual const *Sound* ***as_sound**() const

inline virtual *Store* ***as_store**()

inline virtual const *Store* ***as_store**() const

inline virtual *Trigger* ***as_trigger**()

inline virtual const *Trigger* ***as_trigger**() const

inline virtual *Waypoint* ***as_waypoint**()

inline virtual const *Waypoint* ***as_waypoint**() const

Public Members

Common **common**

Inventory **inventory**

LocString **description**

LocString **description_id**

std::vector<*ItemProperty*> **properties**

int **armor_id** = -1

uint32_t **cost** = 0

uint32_t **additional_cost** = 0

nw::*BaseItem* **baseitem**

uint16_t **stacksize** = 1

uint8_t **charges** = 0

bool **cursed** = false

bool **identified** = false

bool **plot** = false

bool **stolen** = false

ItemModelType **model_type** = *ItemModelType::simple*

std::array<uint8_t, 6> **model_colors**

std::array<uint8_t, 19> **model_parts**

bool **instantiated_** = false

Public Static Functions

static bool **deserialize**(*Item* *obj, const nlohmann::json &archive, *SerializationProfile* profile)

static bool **serialize**(const *Item* *obj, nlohmann::json &archive, *SerializationProfile* profile)

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::item
```

```
static constexpr ResourceType::type restype = ResourceType::uti
```

6.13.62 nw::ItemColors

```
struct ItemColors
```

Public Types

```
enum type
```

Values:

```
enumerator cloth1
```

```
enumerator cloth2
```

```
enumerator leather1
```

```
enumerator leather2
```

```
enumerator metal1
```

```
enumerator metal2
```

6.13.63 nw::ItemModelParts

```
struct ItemModelParts
```

Public Types

```
enum type
```

Values:

```
enumerator model1
```


enumerator **model2**

enumerator **model3**

enumerator **armor_belt**

enumerator **armor_lbicep**

enumerator **armor_lfarm**

enumerator **armor_lfoot**

enumerator **armor_lhand**

enumerator **armor_lshin**

enumerator **armor_lshoul**

enumerator **armor_lthigh**

enumerator **armor_neck**

enumerator **armor_pelvis**

enumerator **armor_rbicep**

enumerator **armor_rfarm**

enumerator **armor_rfoot**

enumerator **armor_rhand**

enumerator **armor_robe**

enumerator **armor_rshin**

enumerator **armor_rshoul**

enumerator **armor_rthigh**

enumerator **armor_torso**

6.13.64 nw::ItemProperty

struct **ItemProperty**

Public Members

uint16_t **type** = std::numeric_limits<uint16_t>::max()

uint16_t **subtype** = std::numeric_limits<uint16_t>::max()

uint8_t **cost_table** = std::numeric_limits<uint8_t>::max()

uint16_t **cost_value** = std::numeric_limits<uint16_t>::max()

uint8_t **param_table** = std::numeric_limits<uint8_t>::max()

uint8_t **param_value** = std::numeric_limits<uint8_t>::max()

6.13.65 nw::Journal

struct **Journal**

Public Functions

explicit **Journal**(const *GffStruct* gff)

Public Members

std::vector<*JournalCategory*> **categories**

Public Static Attributes

static constexpr int **json_archive_version** = 1

static constexpr *ResourceType::type* **restype** = *ResourceType::jrl*

6.13.66 nw::JournalCategory

struct **JournalCategory**

Public Members

std::string **comment**

std::vector<*JournalEntry*> **entries**

LocString **name**

std::string **tag**

uint32_t **priority**

uint32_t **xp**

uint16_t **picture**

6.13.67 nw::JournalEntry

struct **JournalEntry**

Public Members

LocString **text**

uint32_t **id**

uint16_t **end**

6.13.68 nw::Key

struct **Key** : public nw::*Container*

Public Functions

explicit **Key**(std::filesystem::path path)

Key(const *Key*&) = delete

Key(*Key*&&) = default

virtual ~**Key**() = default

inline bool **is_loaded**() const noexcept

Returns if *Key* file was successfully loaded.

virtual std::vector<*ResourceDescriptor*> **all**() const override

Get all resources.

virtual bool **contains**(*Resource* res) const override

Get if container contains resource.

virtual ResourceData **demand**(*Resource* res) const override

Reads resource data, empty ResourceData if no match.

virtual int **extract**(const std::regex &pattern, const std::filesystem::path &output) const override

Extract elements from a container by regex.

inline virtual const std::string &**name**() const override

Equivalent to `basename path()`

inline virtual const std::string &**path**() const override

Path to container, for basic containers, should be canonical.

virtual size_t **size**() const override

Determines the size, if applicable, of the container.

virtual *ResourceDescriptor* **stat**(const *Resource* &res) const override

Get some general data about a resource.

inline virtual bool **valid**() const noexcept override

Return true if loaded, false if not.

virtual void **visit**(std::function<void(const *Resource*&> callback) const noexcept override

Visits all resources in a container.

Key &**operator**=(const *Key*&) = delete

Key &**operator**=(*Key*&&) = default

virtual int **extract_by_glob**(std::string_view glob, const std::filesystem::path &output) const

Extract elements from a container by glob pattern.

const std::filesystem::path &**working_directory**() const

Get container working directory.

6.13.69 nw::Language

struct **Language**

Constants and related properties for supported languages.

Note: Might not be identical to what the game uses... yet. Short codes taken from https://en.wikipedia.org/wiki/List_of_ISO_639-1_codes. Encodings are probably right.

Public Static Functions

static std::string_view **encoding**(*LanguageID* lang)

Gets the encoding for a particular language.

static *LanguageID* **from_string**(std::string_view lang)

Converts string (short or long form) to ID.

static bool **has_feminine**(*LanguageID* lang)

Determines if language has feminine translations.

static std::pair<*LanguageID*, bool> **to_base_id**(uint32_t lang)

Convert runtime language identifier to base language and bool indicating masc/fem.

static uint32_t **to_runtime_id**(*LanguageID* lang, bool feminine = false)

Convert language ID to runtime identifier.

static std::string_view **to_string**(*LanguageID* lang, bool long_name = false)

Converts language to string form.

6.13.70 nw::Language::Properties

struct **Properties**

Public Members

LanguageID **id**

std::string_view **lang_short**

std::string_view **lang_long**

std::string_view **encoding**

bool **has_feminine**

6.13.71 nw::LevelHistory

struct **LevelHistory**

Encapsulates a players level up history.

Public Members

std::vector<LevelUp> **entries**

6.13.72 nw::LevelHistoryEntry

Warning: doxygenstruct: Cannot find class “nw::LevelHistoryEntry” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.73 nw::LevelStats

struct **LevelStats**

Public Functions

LevelStats() = default

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

int **level**() const noexcept

Determines total level.

int **level_by_class**(*Class* id) const noexcept

Determines level by class.

size_t **position**(*Class* id) const noexcept

Returns the position of the class, or npos.

Public Members

std::array<*ClassEntry*, *max_classes*> **entries**

Public Static Attributes

```
static constexpr size_t max_classes = 8
```

```
static constexpr size_t npos = std::numeric_limits<size_t>::max()
```

6.13.74 nw::LocString

```
struct LocString
```

Public Types

```
using LocStringPair = std::pair<uint32_t, std::string>
```

```
using Storage = std::vector<LocStringPair>
```

```
using size_type = Storage::size_type
```

```
using iterator = Storage::iterator
```

```
using const_iterator = Storage::const_iterator
```

Public Functions

```
explicit LocString(uint32_t strref = std::numeric_limits<uint32_t>::max())
```

```
LocString(const LocString&) = default
```

```
LocString(LocString&&) = default
```

```
bool add(LanguageID language, std::string_view str, bool feminine = false)  
    Add a localized string.
```

```
std::string get(LanguageID language, bool feminine = false) const  
    Gets a localized string.
```

```
bool contains(LanguageID language, bool feminine = false) const  
    Determines if a localized string is set.
```

```
void remove(LanguageID language, bool feminine = false)  
    Removes a localized string.
```

```
size_type size() const  
    Gets number of localized strings.
```

```
uint32_t strref() const  
    Gets string reference.
```

iterator **begin**()
Iterators.

iterator **end**()

const_iterator **begin**() const

const_iterator **end**() const

LocString &**operator**=(const *LocString*&) = default
Operators.

LocString &**operator**=(*LocString*&&) = default

bool **operator**==(const *LocString* &other) const

6.13.75 nw::LocalData

struct **LocalData**

Public Functions

LocalData() = default

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**(*SerializationProfile* profile) const

void **delete_float**(std::string_view var)

void **delete_int**(std::string_view var)

void **delete_object**(std::string_view var)

void **delete_string**(std::string_view var)

void **delete_location**(std::string_view var)

float **get_float**(std::string_view var) const

int32_t **get_int**(std::string_view var) const

ObjectID **get_object**(std::string_view var) const

std::string **get_string**(std::string_view var) const

Location **get_location**(std::string_view var) const

void **set_float**(std::string_view var, float value)

void **set_int**(std::string_view var, int32_t value)

void **set_object**(std::string_view var, *ObjectID* value)

void **set_string**(std::string_view var, std::string_view value)

void **set_location**(std::string_view var, *Location* value)

inline size_t **size**() const noexcept

Friends

friend bool **deserialize**(*LocalData* &self, const *GffStruct* &archive)

friend bool **serialize**(const *LocalData* &self, *GffBuilderStruct* &archive, *SerializationProfile* profile)

6.13.76 nw::LocalVar

struct **LocalVar**

Public Members

float **float_**

int32_t **integer**

ObjectID **object**

std::string **string**

Location **loc**

std::bitset<8> **flags**

6.13.77 nw::LocalVarType

struct **LocalVarType**

Public Static Attributes

static constexpr uint32_t **integer** = 1

static constexpr uint32_t **float_** = 2

static constexpr uint32_t **string** = 3

static constexpr uint32_t **object** = 4

static constexpr uint32_t **location** = 5

6.13.78 nw::Location

struct **Location**

Public Functions

Location()

inline **operator bool**()

bool operator==(const *Location*&) const = default

Public Members

ObjectID **area**

glm::vec3 **position**

glm::vec3 **orientation**

6.13.79 nw::Lock

struct **Lock**

Component for lockable objects.

Public Functions

Lock() = default

bool from_json(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

std::string **key_name**

bool key_required = false

bool lockable = false

bool locked = false

```
uint8_t lock_dc = 0
```

```
uint8_t unlock_dc = 0
```

```
bool remove_key = false
```

6.13.80 nw::MasterFeat

```
struct MasterFeat
```

Public Functions

```
bool operator==(const MasterFeat &rhs) const = default  
    Defaulted equality operator
```

```
auto operator<=>(const MasterFeat &rhs) const = default  
    Defaulted spaceship operator
```

```
inline constexpr int32_t operator*() const noexcept  
    Returns rule type as value
```

```
inline constexpr size_t idx() const noexcept  
    Returns rule type as index
```

Public Static Functions

```
static inline constexpr MasterFeat make(int32_t id)  
    Makes a rule type
```

```
static inline constexpr MasterFeat invalid()  
    Returns an invalid rule type
```

6.13.81 nw::MasterFeatRegistry

```
struct MasterFeatRegistry
```

Public Functions

```
template<typename T>  
void add(T type, MasterFeat mfeat, Feat feat)
```

```
void clear() noexcept
```

```
inline const std::vector<MasterFeatEntry> &entries() const noexcept
```

```
const ModifierVariant &get_bonus(MasterFeat mfeat) const
```

```
template<typename T>
```

```
void remove(T type, MasterFeat mfeat)

void set_bonus(MasterFeat mfeat, ModifierVariant bonus)
```

6.13.82 nw::Modifier

```
struct Modifier
```

Public Members

```
ModifierType type = ModifierType::invalid()

ModifierVariant input

InternedString tagged

ModifierSource source = ModifierSource::unknown

Requirement requirement = Requirement{ }

Versus versus = { }

int subtype = -1
```

6.13.83 nw::ModifierRegistry

```
struct ModifierRegistry
```

Public Types

```
using Storage = std::vector<Modifier>

using iterator = Storage::iterator

using const_iterator = Storage::const_iterator
```

Public Functions

void **add**(*Modifier* mod)

Adds a modifier to the system.

iterator **begin**()

const_iterator **begin**() const

const_iterator **cbegin**() const

void **clear**()

Clears all modifiers.

iterator **end**()

const_iterator **end**() const

const_iterator **cend**() const

int **remove**(std::string_view tag)

Removes modifiers by tag.

Parameters

tag – if string_view ends with '*' then matches any tag that starts with tag

Returns

int number of modifiers affected

int **replace**(std::string_view tag, *ModifierVariant* value)

Replace modifier value.

Parameters

- **tag** – if string_view ends with '*' then matches any tag that starts with tag
- **value** – new value

Returns

int number of modifiers affected

int **replace**(std::string_view tag, const *Requirement* &req)

Replace modifier requirement.

Parameters

- **tag** – if string_view ends with '*' then matches any tag that starts with tag
- **req** – new requirement

Returns

int number of modifiers affected

size_t **size**() const

Gets the number of modifiers.

6.13.84 nw::ModifierType

struct **ModifierType**

Public Functions

bool **operator==**(const *ModifierType* &rhs) const = default
Defaulted equality operator

auto **operator<=>**(const *ModifierType* &rhs) const = default
Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept
Returns rule type as value

inline constexpr size_t **idx**() const noexcept
Returns rule type as index

Public Static Functions

static inline constexpr *ModifierType* **make**(int32_t id)
Makes a rule type

static inline constexpr *ModifierType* **invalid**()
Returns an invalid rule type

6.13.85 nw::Module

struct **Module** : public nw::ObjectBase

Public Types

using **AreaVariant** = std::variant<std::vector<*Resref*>, std::vector<*Area**>>

Public Functions

inline virtual *Module* ***as_module**() override

inline virtual const *Module* ***as_module**() const override

virtual bool **instantiate**() override

size_t **area_count**() const noexcept

const *Area* ***get_area**(size_t index) const

inline ObjectHandle **handle**() const noexcept

```

inline void set_handle(ObjectHandle handle)

const EffectArray &effects() const

EffectArray &effects()

inline virtual Versus versus_me() const

virtual InternedString tag() const

inline virtual Area *as_area()

inline virtual const Area *as_area() const

inline virtual Common *as_common()

inline virtual const Common *as_common() const

inline virtual Creature *as_creature()

inline virtual const Creature *as_creature() const

inline virtual Door *as_door()

inline virtual const Door *as_door() const

inline virtual Encounter *as_encounter()

inline virtual const Encounter *as_encounter() const

inline virtual Item *as_item()

inline virtual const Item *as_item() const

inline virtual Placeable *as_placeable()

inline virtual const Placeable *as_placeable() const

inline virtual Player *as_player()

inline virtual const Player *as_player() const

inline virtual Sound *as_sound()

inline virtual const Sound *as_sound() const

inline virtual Store *as_store()

inline virtual const Store *as_store() const

inline virtual Trigger *as_trigger()

inline virtual const Trigger *as_trigger() const

inline virtual Waypoint *as_waypoint()

inline virtual const Waypoint *as_waypoint() const

```

Public Members

LocalData **locals**

ModuleScripts **scripts**

AreaVariant **areas**

LocString **description**

Resref **entry_area**

glm::vec3 **entry_orientation**

glm::vec3 **entry_position**

std::vector<std::string> **haks**

ByteArray **id**

std::string **min_game_version**

LocString **name**

Resref **start_movie**

std::string **tag**

std::string **tlk**

uuids::uuid **uuid**

int32_t **creator** = 0

uint32_t **start_year**

uint32_t **version** = 3

uint16_t **expansion_pack** = 0

uint8_t **dawn_hour** = 0


```
uint8_t dusk_hour = 0
```

```
bool is_save_game = false
```

```
uint8_t minutes_per_hour = 0
```

```
uint8_t start_day = 0
```

```
uint8_t start_hour = 0
```

```
uint8_t start_month = 0
```

```
uint8_t xpscale = 0
```

```
bool instantiated_ = false
```

Public Static Functions

```
static bool deserialize(Module *ent, const nlohmann::json &archive)
```

```
static bool serialize(const Module *ent, nlohmann::json &archive)
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::module
```

```
static constexpr ResourceType::type restype = ResourceType::ifo
```

6.13.86 nw::ModuleScripts

```
struct ModuleScripts
```

Public Functions

```
ModuleScripts() = default
```

```
bool from_json(const nlohmann::json &archive)
```

```
nlohmann::json to_json() const
```

Public Members

Resref on_client_enter

Resref on_client_leave

Resref on_cutsnabort

Resref on_heartbeat

Resref on_item_acquire

Resref on_item_activate

Resref on_item_unaquire

Resref on_load

Resref on_player_chat

Resref on_player_death

Resref on_player_dying

Resref on_player_equip

Resref on_player_level_up

Resref on_player_rest

Resref on_player_uneqiup

Resref on_spawnbtndn

Resref on_start

Resref on_user_defined

6.13.87 nw::NWSync

struct **NWSync**

Public Functions

NWSync()

explicit **NWSync**(const std::filesystem::path &path)

NWSync(const *NWSync*&) = delete

NWSync(*NWSync*&&) = default

~**NWSync**() = default

NWSyncManifest ***get**(std::string_view manifest)

Get a particular manifest as a container.

bool **is_loaded**() const noexcept

Get if *NWSync* was successfully loaded.

std::vector<std::string> **manifests**()

Get list of all manifests.

size_t **shard_count**() const noexcept

Get the number of shards.

inline sqlite3 ***meta**()

Get a pointer to the nwsyncmeta database.

inline std::vector<*sqlite3_ptr*> &**shards**()

List of all shards as active Sqlite3 connections.

NWSync &**operator**=(const *NWSync*&) = delete

NWSync &**operator**=(*NWSync*&&) = default

6.13.88 nw::NWSyncManifest

struct **NWSyncManifest** : public nw::Container

Abstracts over manifests, treating them as a *nw::Container*.

Public Functions

NWSyncManifest() = default

NWSyncManifest(std::string manifest, *NWSync* *parent)

virtual std::vector<*ResourceDescriptor*> **all**() const override

Get all resources.

virtual bool **contains**(*Resource* res) const override
Get if container contains resource.

virtual ResourceData **demand**(*Resource* res) const override
Reads resource data, empty ResourceData if no match.

virtual int **extract**(const std::regex &pattern, const std::filesystem::path &output) const override
Extract elements from a container by regex.

inline virtual const std::string &**name**() const override
Equivalent to `basename` *path()*

inline virtual const std::string &**path**() const override
Path to container, for basic containers, should be canonical.

inline virtual size_t **size**() const override
Determines the size, if applicable, of the container.

virtual *ResourceDescriptor* **stat**(const *Resource* &res) const override
Get some general data about a resource.

inline virtual bool **valid**() const noexcept override
Return true if loaded, false if not.

virtual void **visit**(std::function<void(const *Resource*&)> callback) const noexcept override
Visits all resources in a container.

virtual int **extract_by_glob**(std::string_view glob, const std::filesystem::path &output) const
Extract elements from a container by glob pattern.

const std::filesystem::path &**working_directory**() const
Get container working directory.

6.13.89 nw::Null

struct **Null**
Empty helper struct for *Variant*.

6.13.90 nw::Palette

struct **Palette**

Public Functions

explicit **Palette**(const *Gff* &gff)
~Palette() = default
inline uint8_t **max_id**() const noexcept
inline void **set_max_id**(uint8_t id) noexcept

```
inline bool valid() const noexcept
nllohmann::json to_json(nw::ResourceType::type restype) const
```

Public Members

PaletteTreeNode **root**

ResourceType::type **resource_type**

Resref **tileset**

bool **is_skeleton** = false

Public Static Attributes

static constexpr int **json_archive_version** = 1

6.13.91 nw::PaletteTreeNode

struct **PaletteTreeNode**

Public Functions

PaletteTreeNode() = default

Public Members

PaletteNodeType **type**

uint8_t **id** = std::numeric_limits<uint8_t>::max()

uint8_t **display** = 0

std::string **name**

uint32_t **strref** = std::numeric_limits<uint32_t>::max()

Resref **resref**

float **cr** = 0.0

std::string **faction**

std::vector<*PaletteTreeNode*> **children**

6.13.92 nw::Placeable

struct **Placeable** : public nw::ObjectBase

Public Functions

Placeable()

inline virtual *Common* ***as_common**() override

inline virtual const *Common* ***as_common**() const override

inline virtual *Placeable* ***as_placeable**() override

inline virtual const *Placeable* ***as_placeable**() const override

virtual bool **instantiate**() override

inline virtual *InternedString* **tag**() const override

inline ObjectHandle **handle**() const noexcept

inline void **set_handle**(ObjectHandle handle)

const *EffectArray* &**effects**() const

EffectArray &**effects**()

inline virtual *Versus* **versus_me**() const

inline virtual *Area* ***as_area**()

inline virtual const *Area* ***as_area**() const

inline virtual *Creature* ***as_creature**()

inline virtual const *Creature* ***as_creature**() const

inline virtual *Door* ***as_door**()

inline virtual const *Door* ***as_door**() const

inline virtual *Encounter* ***as_encounter**()

inline virtual const *Encounter* ***as_encounter**() const

inline virtual *Item* ***as_item**()

inline virtual const *Item* ***as_item**() const

inline virtual *Module* ***as_module**()

```

inline virtual const Module *as_module() const
inline virtual Player *as_player()
inline virtual const Player *as_player() const
inline virtual Sound *as_sound()
inline virtual const Sound *as_sound() const
inline virtual Store *as_store()
inline virtual const Store *as_store() const
inline virtual Trigger *as_trigger()
inline virtual const Trigger *as_trigger() const
inline virtual Waypoint *as_waypoint()
inline virtual const Waypoint *as_waypoint() const

```

Public Members

Common **common**

PlaceableScripts **scripts**

Inventory **inventory**

Lock **lock**

Trap **trap**

Resref **conversation**

LocString **description**

Saves **saves**

uint32_t **appearance**

uint32_t **faction** = 0

int16_t **hp** = 0

int16_t **hp_current** = 0

```
uint16_t portrait_id
```

```
PlaceableAnimationState animation_state
```

```
uint8_t bodybag = 0
```

```
uint8_t hardness
```

```
bool has_inventory = false
```

```
bool interruptable = 0
```

```
bool plot = 0
```

```
bool static_ = false
```

```
bool useable = false
```

```
bool instantiated_ = false
```

Public Static Functions

```
static bool deserialize(Placeable *obj, const nlohmann::json &archive, SerializationProfile profile)
```

```
static bool serialize(const Placeable *obj, nlohmann::json &archive, SerializationProfile profile)
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::placeable
```

```
static constexpr ResourceType::type restype = ResourceType::utp
```

6.13.93 nw::PlaceableScripts

```
struct PlaceableScripts
```


Public Functions

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

Resref **on_click**

Resref **on_closed**

Resref **on_damaged**

Resref **on_death**

Resref **on_disarm**

Resref **on_heartbeat**

Resref **on_inventory_disturbed**

Resref **on_lock**

Resref **on_melee_attacked**

Resref **on_open**

Resref **on_spell_cast_at**

Resref **on_trap_triggered**

Resref **on_unlock**

Resref **on_used**

Resref **on_user_defined**

6.13.94 nw::Player

struct **Player** : public nw::Creature

Public Functions

```
inline virtual Player *as_player() override
inline virtual const Player *as_player() const override
inline virtual InternedString tag() const override
inline virtual Common *as_common() override
inline virtual const Common *as_common() const override
inline virtual Creature *as_creature() override
inline virtual const Creature *as_creature() const override
virtual bool instantiate() override
virtual Versus versus_me() const override
inline ObjectHandle handle() const noexcept
inline void set_handle(ObjectHandle handle)
const EffectArray &effects() const
EffectArray &effects()
inline virtual Area *as_area()
inline virtual const Area *as_area() const
inline virtual Door *as_door()
inline virtual const Door *as_door() const
inline virtual Encounter *as_encounter()
inline virtual const Encounter *as_encounter() const
inline virtual Item *as_item()
inline virtual const Item *as_item() const
inline virtual Module *as_module()
inline virtual const Module *as_module() const
inline virtual Placeable *as_placeable()
inline virtual const Placeable *as_placeable() const
inline virtual Sound *as_sound()
```

```
inline virtual const Sound *as_sound() const
inline virtual Store *as_store()
inline virtual const Store *as_store() const
inline virtual Trigger *as_trigger()
inline virtual const Trigger *as_trigger() const
inline virtual Waypoint *as_waypoint()
inline virtual const Waypoint *as_waypoint() const
```

Public Members

Common **common**

Appearance **appearance**

CombatInfo **combat_info**

Equips **equipment**

Inventory **inventory**

LevelStats **levels**

LevelHistory **history**

CreatureScripts **scripts**

CreatureStats **stats**

Resref **conversation**

std::string **deity**

LocString **description**

LocString **name_first**

LocString **name_last**

std::string **subrace**

```
float cr = 0.0

int32_t cr_adjust = 0

uint32_t decay_time

Race race = Race::invalid()

int32_t walkrate = 0

uint16_t faction_id = 0

int16_t hp = 0

int16_t hp_current = 0

int16_t hp_max = 0

int16_t hp_temp = 0

uint16_t soundset

int32_t hasted = 0

int32_t size = 0

uint8_t bodybag = 0

uint8_t chunk_death = 0

uint8_t disarmable = 0

uint8_t gender = 0

uint8_t good_evil = 50

uint8_t interruptable = 0

uint8_t immortal = 0

uint8_t lawful_chaotic = 50
```

```
uint8_t lootable = 0
```

```
uint8_t pc = 0
```

```
uint8_t perception_range = 0
```

```
bool plot = false
```

```
uint8_t starting_package = 0
```

```
bool instantiated_ = false
```

Public Static Functions

```
static bool deserialize(Player *obj, const nlohmann::json &archive)
```

```
static bool deserialize(Creature *obj, const nlohmann::json &archive, SerializationProfile profile)
```

```
static bool serialize(const Creature *obj, nlohmann::json &archive, SerializationProfile profile)
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::player
```

```
static constexpr ResourceType::type restype = ResourceType::bic
```

6.13.95 nw::Plt

```
struct Plt
```

Implementation of Bioware's PLT file format.

Public Functions

```
Plt(std::filesystem::path file)
```

```
Plt(ResourceData data)
```

```
uint32_t height() const
```

Gets height.

```
const PltPixel *pixels() const
```

Gets pixel array.

bool **valid()** const
Determines if PLT was successfully parsed.

uint32_t **width()** const
Gets width.

6.13.96 nw::PltColors

struct **PltColors**
Plt Color Array

Note: This would be the colors that a player would select

Public Members

std::array<uint8_t, plt_layer_size> **data** = { }

6.13.97 nw::PltPixel

struct **PltPixel**
Plt Pixel.

Public Members

uint8_t **color**

PltLayer **layer**

6.13.98 nw::Qualifier

struct **Qualifier**

Public Members

Selector **selector**

absl::InlinedVector<*RuleValue*, 4> **params**

6.13.99 nw::Race

struct **Race**

Public Functions

bool **operator==**(const *Race* &rhs) const = default
Defaulted equality operator

auto **operator<=>**(const *Race* &rhs) const = default
Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept
Returns rule type as value

inline constexpr size_t **idx**() const noexcept
Returns rule type as index

Public Static Functions

static inline constexpr *Race* **make**(int32_t id)
Makes a rule type

static inline constexpr *Race* **invalid**()
Returns an invalid rule type

6.13.100 nw::RaceInfo

struct **RaceInfo**

Race definition.

Public Functions

RaceInfo() = default

RaceInfo(const TwoDARowView &tda)

inline bool **valid**() const noexcept

Public Members

uint32_t **name** = 0xFFFFFFFF

uint32_t **name_conversation** = 0xFFFFFFFF

uint32_t **name_conversation_lower** = 0xFFFFFFFF

```
uint32_t name_plural = 0xFFFFFFFF
```

```
uint32_t description = 0xFFFFFFFF
```

Resource **icon**

```
int appearance = 0
```

```
std::array<int, 6> ability_modifiers
```

```
int avored_class = 0
```

Resource **feats_table**

```
uint32_t biography = 0xFFFFFFFF
```

```
bool player_race = false
```

InternedString **constant**

```
int age = 1
```

```
int toolset_class = 0
```

```
float cr_modifier = 1.0f
```

```
int feats_extra_1st_level = 0
```

```
int skillpoints_extra_per_level = 0
```

```
int skillpoints_1st_level_multiplier = 0
```

```
int ability_point_buy_number = 0
```

```
int feats_normal_level = 0
```

```
int feats_normal_amount = 0
```

```
int skillpoints_ability = 0
```


6.13.101 nw::Reputation

struct **Reputation**

Public Members

uint32_t **faction_1**

uint32_t **faction_2**

uint32_t **reputation**

6.13.102 nw::Requirement

struct **Requirement**

Public Functions

explicit **Requirement**(bool conjunction_ = true)

explicit **Requirement**(std::initializer_list<*Qualifier*> quals, bool conjunction_ = true)

void **add**(*Qualifier* qualifier)

size_t **size**() const noexcept

Public Members

absl::InlinedVector<*Qualifier*, 8> **qualifiers**

bool **conjunction** = true

6.13.103 nw::Resource

struct **Resource**

A *nw::Resource* consists of a *nw::Resref* and a *nw::ResourceType*. Since NWN1/EE doesn't have any notion of hierarchical organization (paths, etc), it represents a fully-qualified resource identifier.

Public Functions

Resource() noexcept

Resource(const *Resref* &resref_, *ResourceType::type* type_) noexcept

Resource(std::string_view resref_, *ResourceType::type* type_) noexcept

Resource(const *Resource*&) = default

Resource(*Resource*&&) = default

std::string **filename**() const

Gets a Resrefs file name with extension.

bool **valid**() const noexcept

A resource is valid if resref is not empty and resref type is not invalid.

Resource &**operator**=(const *Resource*&) = default

Resource &**operator**=(*Resource*&&) = default

Public Members

Resref **resref**

ResourceType::type **type**

Public Static Functions

static *Resource* **from_filename**(std::string_view)

static *Resource* **from_path**(const std::filesystem::path &path)

6.13.104 nw::ResourceDescriptor

struct **ResourceDescriptor**

Public Functions

inline **operator** bool()

Public Members

Resource **name**

size_t **size** = 0

int64_t **mtime** = 0

const *Container* ***parent** = nullptr

6.13.105 nw::ResourceType

struct **ResourceType**

Resource type constants and helper functions.

Public Types

enum **type**

Enumeration of *Resource* types.

Values:

enumerator **invalid**

enumerator **container**

enumerator **gff_archive**

enumerator **movie**

enumerator **player**

enumerator **sound**

enumerator **texture**

enumerator **json**

enumerator **bmp**

enumerator **mve**

enumerator **tga**

enumerator **wav**

enumerator **plt**

enumerator **ini**

enumerator **bmu**

enumerator **mpg**

enumerator **txt**

enumerator **plh**

enumerator **tex**

enumerator **mdl**

enumerator **thg**

enumerator **fnt**

enumerator **lua**

enumerator **slt**

enumerator **nss**

enumerator **ncs**

enumerator **mod**

enumerator **are**

enumerator **set**

enumerator **ifo**

enumerator **bic**

enumerator **wok**

enumerator **twoda**

enumerator **tlk**

enumerator **txi**

enumerator **git**

enumerator **bti**

enumerator **uti**

enumerator **btc**

enumerator **utc**

enumerator **dlg**

enumerator **itp**

enumerator **btt**

enumerator **utt**

enumerator **dds**

enumerator **bts**

enumerator **uts**

enumerator **ltr**

enumerator **gff**

enumerator **fac**

enumerator **bte**

enumerator **ute**

enumerator **btd**

enumerator **utd**

enumerator **btp**

enumerator **utp**

enumerator **dft**

enumerator **gic**

enumerator **gui**

enumerator **css**

enumerator **ccs**

enumerator **btm**

enumerator **utm**

enumerator **dwk**

enumerator **pwk**

enumerator **btg**

enumerator **utg**

enumerator **jrl**

enumerator **sav**

enumerator **utw**

enumerator **fourpc**

enumerator **ssf**

enumerator **hak**

enumerator **nwm**

enumerator **bik**

enumerator **ndb**

enumerator **ptm**

enumerator **ptt**

enumerator **bak**

enumerator **dat**

enumerator **shd**

enumerator **xbc**

enumerator **wbm**

enumerator **mtr**

enumerator **ktx**

enumerator **ttf**

enumerator **sql**

enumerator **tml**

enumerator **sq3**

enumerator **lod**

enumerator **gif**

enumerator **png**

enumerator **jpg**

enumerator **caf**

enumerator **ids**

enumerator **erf**

enumerator **bif**

enumerator **key**

Public Static Functions

static inline *type* **from_extension**(std::string_view ext)

Converts extension to *ResourceType::type*.

static inline std::string **to_string**(*ResourceType::type* value)

Convert *ResourceType::type* to extension.

Note: The only compilers and standard libraries that are targeted have small string optimization, so there is no great overhead to just returning a `std::string`

Returns

extension or empty string on failure

static inline constexpr bool **check_category**(*ResourceType::type* category, *ResourceType::type* type)

6.13.106 nw::Resref

struct **Resref**

nw::Resref names a resource.

In NWN1/EE they are 16 character arrays, in NWN2 32 character arrays. These character arrays are case-insensitive.

Later evolutions of resrefs, in Dragon Age, were 32 utf16 character arrays; then ultimately seem to have been replaced by a combination of FNV hashes.

Currently only the NWN1/EE variety is supported.

Public Types

using **Storage** = std::array<char, *max_size*>

using **value_type** = typename *Storage*::value_type

using **size_type** = typename *Storage*::size_type

Public Functions

Resref()

Resref(const *Resref*&) = default

template<size_t **N**>

Resref(std::array<char, *N*> &string) noexcept

Resref(const char *string) noexcept

Resref(std::string_view string) noexcept

Resref &**operator**=(const *Resref*&) = default

const *Storage* &**data**() const noexcept

Get underlying storage.

bool **empty**() const noexcept

Checks if the underlying array has no non-null characters.

size_type **length**() const noexcept

Returns the number of char elements in the array, excluding nulls.

std::string **string**() const

Creates std::string of underlying array.

std::string_view **view**() const noexcept

Creates std::string_view of underlying array without null padding.

Public Static Attributes

static constexpr size_t **max_size** = 32

6.13.107 nw::RuleFlag

template<typename **T**, size_t **N** = 64>

struct **RuleFlag** : private std::bitset<64>

Public Types

using **Base** = std::bitset<*N*>

Public Functions

```
constexpr RuleFlag() = default  
  
inline constexpr RuleFlag(unsigned long long val) noexcept  
  
inline RuleFlag(T val) noexcept  
  
inline explicit RuleFlag(std::string_view str)  
  
inline bool operator[](T pos) const  
  
inline RuleFlag &flip(T pos)  
  
inline RuleFlag &reset(T pos)  
  
inline RuleFlag &set(T pos, bool value = true)  
  
inline bool test(T pos) const
```

6.13.108 nw::RuleTypeArray

```
template<typename RuleType, typename RuleTypeInfo>  
struct RuleTypeArray
```

Base template for rule type arrays.

Template Parameters

- **RuleType** –
- **RuleTypeInfo** –

Public Types

```
using map_type = absl::flat_hash_map<InternedString, RuleType, InternedStringHash, InternedStringEq>
```

Public Functions

```
inline const RuleTypeInfo *get(RuleType type) const noexcept  
  
inline bool is_valid(RuleType type) const noexcept  
  
inline RuleType from_constant(std::string_view constant) const
```

Public Members

`std::vector<RuleTypeInfo> entries`

map_type **constant_to_index**

6.13.109 nw::Save

struct **Save**

Public Functions

bool **operator==**(const *Save* &rhs) const = default

Defaulted equality operator

auto **operator<=>**(const *Save* &rhs) const = default

Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept

Returns rule type as value

inline constexpr size_t **idx**() const noexcept

Returns rule type as index

Public Members

int32_t **val** = -1

Public Static Functions

static inline constexpr *Save* **make**(int32_t id)

Makes a rule type

static inline constexpr *Save* **invalid**()

Returns an invalid rule type

6.13.110 nw::Saves

struct **Saves**

Public Members

`int16_t` **fort** = 0

`int16_t` **reflex** = 0

`int16_t` **will** = 0

6.13.111 nw::Selector

struct **Selector**

Public Members

SelectorType **type**

RuleValue **subtype** = { }

6.13.112 nw::SerializationType

struct **SerializationType**

Gff types, renamed for clarity.

Public Types

enum **type**

Values:

enumerator **invalid**

enumerator **uint8**

enumerator **int8**

enumerator **uint16**

enumerator **int16**

enumerator **uint32**

enumerator **int32**

enumerator **uint64**

enumerator **int64**

enumerator **float_**

enumerator **double_**

enumerator **string**

enumerator **resref**

enumerator **locstring**

enumerator **void_**

enumerator **struct_**

enumerator **list**

Public Static Functions

template<typename T>

static constexpr *SerializationType::type* **id**()

Convert type to *SerializationType*.

static constexpr std::string_view **to_string**(*SerializationType::type* type)

6.13.113 nw::Situation

struct **Situation**

Public Functions

bool **operator==**(const *Situation* &rhs) const = default

Defaulted equality operator

auto **operator<=>**(const *Situation* &rhs) const = default

Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept

Returns rule type as value

inline constexpr size_t **idx**() const noexcept
Returns rule type as index

Public Members

int32_t **val** = -1

Public Static Functions

static inline constexpr *Situation* **make**(int32_t id)
Makes a rule type
static inline constexpr *Situation* **invalid**()
Returns an invalid rule type

6.13.114 nw::Skill

struct **Skill**

Public Functions

bool **operator**==(const *Skill* &rhs) const = default
Defaulted equality operator
auto **operator**<=>(const *Skill* &rhs) const = default
Defaulted spaceship operator
inline constexpr int32_t **operator***() const noexcept
Returns rule type as value
inline constexpr size_t **idx**() const noexcept
Returns rule type as index

Public Static Functions

static inline constexpr *Skill* **make**(int32_t id)
Makes a rule type
static inline constexpr *Skill* **invalid**()
Returns an invalid rule type

6.13.115 nw::SkillInfo

struct **SkillInfo**

Skill definition.

Public Functions

SkillInfo() = default

SkillInfo(const TwoDARowView &tda)

inline bool **valid**() const noexcept

Public Members

uint32_t **name** = 0xFFFFFFFF

uint32_t **description** = 0xFFFFFFFF

Resource **icon**

bool **untrained** = false

Ability **ability** = { }

bool **armor_check_penalty** = false

bool **all_can_use** = false

InternedString **constant**

bool **hostile** = false

6.13.116 nw::Sound

struct **Sound** : public nw::ObjectBase

Public Functions

Sound()

```
inline virtual Common *as_common() override
inline virtual const Common *as_common() const override
inline virtual Sound *as_sound() override
inline virtual const Sound *as_sound() const override
inline virtual bool instantiate() override
inline virtual InternedString tag() const override
inline ObjectHandle handle() const noexcept
inline void set_handle(ObjectHandle handle)
const EffectArray &effects() const
EffectArray &effects()
inline virtual Versus versus_me() const
inline virtual Area *as_area()
inline virtual const Area *as_area() const
inline virtual Creature *as_creature()
inline virtual const Creature *as_creature() const
inline virtual Door *as_door()
inline virtual const Door *as_door() const
inline virtual Encounter *as_encounter()
inline virtual const Encounter *as_encounter() const
inline virtual Item *as_item()
inline virtual const Item *as_item() const
inline virtual Module *as_module()
inline virtual const Module *as_module() const
inline virtual Placeable *as_placeable()
inline virtual const Placeable *as_placeable() const
inline virtual Player *as_player()
inline virtual const Player *as_player() const
inline virtual Store *as_store()
```



```

inline virtual const Store *as_store() const
inline virtual Trigger *as_trigger()
inline virtual const Trigger *as_trigger() const
inline virtual Waypoint *as_waypoint()
inline virtual const Waypoint *as_waypoint() const

```

Public Members

Common **common**

std::vector<*Resref*> **sounds**

float **distance_min** = 0.0f

float **distance_max** = 0.0f

float **elevation** = 0.0f

uint32_t **generated_type** = 0

uint32_t **hours** = 0

uint32_t **interval** = 0

uint32_t **interval_variation** = 0

float **pitch_variation** = 0.0f

float **random_x** = 0.0f

float **random_y** = 0.0f

bool **active** = 0

bool **continuous** = 0

bool **looping** = 0

bool **positional** = 0

```
uint8_t priority = 0
```

```
bool random = 0
```

```
bool random_position = 0
```

```
uint8_t times = 3
```

```
uint8_t volume = 100
```

```
uint8_t volume_variation = 0
```

```
bool instantiated_ = false
```

Public Static Functions

```
static bool deserialize(Sound *obj, const nlohmann::json &archive, SerializationProfile profile)
```

```
static void serialize(const Sound *obj, nlohmann::json &archive, SerializationProfile profile)
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::sound
```

```
static constexpr ResourceType::type restype = ResourceType::uts
```

6.13.117 nw::SpawnCreature

```
struct SpawnCreature
```

Public Functions

```
bool from_json(const nlohmann::json &archive)
```

```
nlohmann::json to_json() const
```

Public Members

int32_t **appearance**

float **cr**

Resref **resref**

bool **single_spawn**

6.13.118 nw::SpawnPoint

struct **SpawnPoint**

Public Functions

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

float **orientation**

glm::vec3 **position**

6.13.119 nw::SpecialAbility

struct **SpecialAbility**

Public Members

uint16_t **spell**

uint8_t **level**

SpellFlags **flags** = *SpellFlags::none*

6.13.120 nw::Spell

struct **Spell**

Public Functions

bool **operator==**(const *Spell* &rhs) const = default
Defaulted equality operator

auto **operator<=>**(const *Spell* &rhs) const = default
Defaulted spaceship operator

inline constexpr int32_t **operator***() const noexcept
Returns rule type as value

inline constexpr size_t **idx**() const noexcept
Returns rule type as index

Public Static Functions

static inline constexpr *Spell* **make**(int32_t id)
Makes a rule type

static inline constexpr *Spell* **invalid**()
Returns an invalid rule type

6.13.121 nw::SpellBook

struct **SpellBook**

Public Functions

SpellBook()

bool **from_json**(const nlohmann::json &archive)
nlohmann::json **to_json**() const

bool **add_known_spell**(size_t level, *SpellEntry* entry)
Adds a known spell at level.

bool **add_memorized_spell**(size_t level, *SpellEntry* entry)
Adds a memorized spell at level.

size_t **get_known_spell_count**(size_t level) const
Gets the number of known at a given level.

size_t **get_memorized_spell_count**(size_t level) const
Gets the number of memorized at a given level.

SpellEntry **get_known_spell**(size_t level, size_t index) const

Gets a known spell entry.

SpellEntry **get_memorized_spell**(size_t level, size_t index) const

Gets a memorized spell entry.

void **remove_known_spell**(size_t level, *SpellEntry* entry)

Removes a known spell entry.

void **remove_memorized_spell**(size_t level, *SpellEntry* entry)

Removes a memorized spell entry.

Public Members

std::vector<std::vector<*SpellEntry*>> **known_**

std::vector<std::vector<*SpellEntry*>> **memorized_**

6.13.122 nw::SpellEntry

struct **SpellEntry**

Public Functions

bool **operator==**(const *SpellEntry*&) const = default

auto **operator<=>**(const *SpellEntry*&) const = default

Public Members

Spell **spell** = *Spell::invalid*()

SpellMetaMagic **meta** = *SpellMetaMagic::none*

SpellFlags **flags** = *SpellFlags::none*

6.13.123 nw::SpellInfo

struct **SpellInfo**

Public Functions

SpellInfo() = default

SpellInfo(const TwoDARowView &tda)

inline bool **valid**() const noexcept

Public Members

uint32_t **name** = 0xFFFFFFFF

Resource **icon**

nw::SpellSchool **school** = nw::SpellSchool::invalid()

SpellMetaMagic **metamagic** = *SpellMetaMagic::none*

int **innate_level** = 0

6.13.124 nw::Store

struct **Store** : public nw::ObjectBase

Public Functions

Store()

inline virtual *Common* ***as_common**() override

inline virtual const *Common* ***as_common**() const override

inline virtual *Store* ***as_store**() override

inline virtual const *Store* ***as_store**() const override

virtual bool **instantiate**() override

inline ObjectHandle **handle**() const noexcept

inline void **set_handle**(ObjectHandle handle)

const *EffectArray* &**effects**() const

EffectArray &**effects**()

inline virtual *Versus* **versus_me**() const

virtual *InternedString* **tag**() const

```

inline virtual Area *as_area()

inline virtual const Area *as_area() const

inline virtual Creature *as_creature()

inline virtual const Creature *as_creature() const

inline virtual Door *as_door()

inline virtual const Door *as_door() const

inline virtual Encounter *as_encounter()

inline virtual const Encounter *as_encounter() const

inline virtual Item *as_item()

inline virtual const Item *as_item() const

inline virtual Module *as_module()

inline virtual const Module *as_module() const

inline virtual Placeable *as_placeable()

inline virtual const Placeable *as_placeable() const

inline virtual Player *as_player()

inline virtual const Player *as_player() const

inline virtual Sound *as_sound()

inline virtual const Sound *as_sound() const

inline virtual Trigger *as_trigger()

inline virtual const Trigger *as_trigger() const

inline virtual Waypoint *as_waypoint()

inline virtual const Waypoint *as_waypoint() const

```

Public Members

Common **common**

StoreScripts **scripts**

StoreInventory **inventory**

int32_t **blackmarket_markdown** = 0

int32_t **identify_price** = 100

```
int32_t markdown = 0
```

```
int32_t markup = 0
```

```
int32_t max_price = -1
```

```
int32_t gold = -1
```

```
bool blackmarket
```

```
bool instantiated_ = false
```

Public Static Functions

```
static bool deserialize(Store *obj, const nlohmann::json &archive, SerializationProfile profile)
```

```
static bool serialize(const Store *obj, nlohmann::json &archive, SerializationProfile profile)
```

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::store
```

```
static constexpr ResourceType::type restype = ResourceType::utm
```

6.13.125 nw::StoreInventory

```
struct StoreInventory
```

Store Inventory component.

Public Functions

```
StoreInventory() = default
```

```
StoreInventory(ObjectBase *owner)
```

```
void set_owner(ObjectBase *owner)
```

Sets inventory owner.

Public Members

Inventory **armor**

Inventory **miscellaneous**

Inventory **potions**

Inventory **rings**

Inventory **weapons**

std::vector<int32_t> **will_not_buy**

std::vector<int32_t> **will_only_buy**

6.13.126 nw::StoreScripts

struct **StoreScripts**

Public Members

Resref **on_closed**

Resref **on_opened**

6.13.127 nw::Tile

struct **Tile**

Public Functions

Tile() = default

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

int32_t **id** = 0

int32_t **height** = 0

int32_t **orientation** = 0

uint8_t **animloop1** = 0

uint8_t **animloop2** = 0

uint8_t **animloop3** = 0

uint8_t **mainlight1** = 0

uint8_t **mainlight2** = 0

uint8_t **srcelight1** = 0

uint8_t **srcelight2** = 0

6.13.128 nw::Tlk

struct **Tlk**

Public Functions

explicit **Tlk**(*LanguageID* language = *LanguageID::english*)

explicit **Tlk**(std::filesystem::path filename)

Tlk(const *Tlk*&) = delete

Tlk(*Tlk*&&) = default

std::string **get**(uint32_t strref) const

Get a localized string.

LanguageID **language_id**() const noexcept

Get language ID.

bool **modified**() const noexcept

Is *Tlk* modified.

void **save**()

Write TLK to file.

void **save_as**(const std::filesystem::path &path)

Write TLK to file.

void **set**(uint32_t strref, std::string_view string)

Set a localized string.

size_t **size**() const noexcept

Get the number of tlk entries.

Note: This is equivalent to the highest string reference, not the number of actual strings

bool **valid**() const noexcept

Get if successfully parsed.

inline std::string **operator[]**(uint32_t strref) const

Get a localized string.

Tlk &**operator**=(const *Tlk*&) = delete

Tlk &**operator**=(*Tlk*&&) = default

Public Static Attributes

static constexpr uint32_t **custom_flag** = 0x01000000

6.13.129 nw::TlkElement

struct **TlkElement**

Public Functions

inline **TlkElement**()

Public Members

uint32_t **flags**

std::array<char, 16> **sound**

uint32_t **unused**[2]

uint32_t **offset**

uint32_t **size**

float **snd_duration**

6.13.130 nw::TlkFlags

struct **TlkFlags**

Tlk Flags.

Public Static Attributes

static constexpr uint32_t **empty** = 0x0

static constexpr uint32_t **text** = 0x1

static constexpr uint32_t **sound** = 0x2

static constexpr uint32_t **sound_length** = 0x4

6.13.131 nw::TlkHeader

struct **TlkHeader**

Public Members

std::array<char, 4> **type** = {'T', 'L', 'K', ' '}

std::array<char, 4> **version** = {'V', '3', '.', '0'}

uint32_t **language_id** = 0

uint32_t **str_count** = 0

uint32_t **str_offset** = 0

6.13.132 nw::Tokenizer

struct **Tokenizer**

Public Functions

Tokenizer()

Tokenizer(std::string_view buffer, std::string_view comment, bool skip_newline = true)

std::string_view **current**() const

bool **is_newline**(std::string_view tk) const

size_t **line**() const

std::string_view **next**()

void **put_back**(std::string_view token)

void **set_buffer**(std::string_view buffer)

6.13.133 nw::Trap

struct **Trap**

Public Functions

Trap() = default

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

bool **is_trapped** = false

uint8_t **type** = 0

bool **detectable** = false

uint8_t **detect_dc** = 0

bool **disarmable** = false

uint8_t **disarm_dc** = 0

bool **one_shot** = false

6.13.134 nw::Trigger

struct **Trigger** : public nw::ObjectBase

Public Functions

Trigger()

```
inline virtual Common *as_common() override
inline virtual const Common *as_common() const override
inline virtual Trigger *as_trigger() override
inline virtual const Trigger *as_trigger() const override
inline virtual bool instantiate() override
inline virtual InternedString tag() const override
virtual Versus versus_me() const override
inline ObjectHandle handle() const noexcept
inline void set_handle(ObjectHandle handle)
const EffectArray &effects() const
EffectArray &effects()
inline virtual Area *as_area()
inline virtual const Area *as_area() const
inline virtual Creature *as_creature()
inline virtual const Creature *as_creature() const
inline virtual Door *as_door()
inline virtual const Door *as_door() const
inline virtual Encounter *as_encounter()
inline virtual const Encounter *as_encounter() const
inline virtual Item *as_item()
inline virtual const Item *as_item() const
inline virtual Module *as_module()
inline virtual const Module *as_module() const
inline virtual Placeable *as_placeable()
inline virtual const Placeable *as_placeable() const
```

```

inline virtual Player *as_player()

inline virtual const Player *as_player() const

inline virtual Sound *as_sound()

inline virtual const Sound *as_sound() const

inline virtual Store *as_store()

inline virtual const Store *as_store() const

inline virtual Waypoint *as_waypoint()

inline virtual const Waypoint *as_waypoint() const

```

Public Members

Common **common**

Trap **trap**

TriggerScripts **scripts**

std::vector<glm::vec3> **geometry**

std::string **linked_to**

uint32_t **faction** = 0

float **highlight_height** = 0.0f

int32_t **type** = 0

uint16_t **loadscreen** = 0

uint16_t **portrait** = 0

uint8_t **cursor** = 0

uint8_t **linked_to_flags** = 0

bool **instantiated_** = false

Public Static Functions

static bool **deserialize**(*Trigger* *obj, const nlohmann::json &archive, *SerializationProfile* profile)

static bool **serialize**(const *Trigger* *obj, nlohmann::json &archive, *SerializationProfile* profile)

Public Static Attributes

static constexpr int **json_archive_version** = 1

static constexpr *ObjectType* **object_type** = *ObjectType::trigger*

static constexpr *ResourceType::type* **restype** = *ResourceType::utt*

6.13.135 nw::TriggerScripts

struct **TriggerScripts**

Public Functions

bool **from_json**(const nlohmann::json &archive)

nlohmann::json **to_json**() const

Public Members

Resref **on_click**

Resref **on_disarm**

Resref **on_enter**

Resref **on_exit**

Resref **on_heartbeat**

Resref **on_trap_triggered**

Resref **on_user_defined**

6.13.136 nw::TwoDA

struct **TwoDA**

Public Functions

TwoDA() = default

TwoDA(const *TwoDA*&) = delete

TwoDA(*TwoDA*&&) = default

TwoDA &**operator**=(const *TwoDA*&) = delete

TwoDA &**operator**=(*TwoDA*&&) = default

explicit **TwoDA**(const std::filesystem::path &filename)

Constructs *TwoDA* object from a file.

explicit **TwoDA**(ResourceData data)

Constructs *TwoDA* object from an array of bytes.

size_t **column_index**(std::string_view column) const

Finds the index of a column, or -1.

size_t **columns**() const noexcept

Get the number of columns.

template<typename T>

std::optional<T> **get**(size_t row, size_t col) const

Gets an element.

template<typename T>

std::optional<T> **get**(size_t row, std::string_view col) const

Gets an element.

template<typename T>

bool **get_to**(size_t row, size_t col, T &out) const

Gets an element.

template<typename T>

bool **get_to**(size_t row, std::string_view col, T &out) const

Gets an element.

void **pad**(size_t count)

Pads the 2da with count rows.

TwoDARowView **row**(size_t row) const noexcept

Gets entire row as.

size_t **rows**() const noexcept

Number of rows.

template<typename T>

void **set**(size_t row, size_t col, const *T* &value)

Sets an element.

template<typename **T**>

void **set**(size_t row, std::string_view col, const *T* &value)

Sets an element.

bool **is_valid**() const noexcept

Is the 2da parsed without error.

Public Static Attributes

static constexpr size_t **npos** = std::numeric_limits<size_t>::max()

6.13.137 nw::TwoDACache

Warning: doxygenstruct: Cannot find class “nw::TwoDACache” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.138 nw::Variant

template<typename ...**Ts**>

struct **Variant**

Wrapper around std::variant.

Public Functions

Variant() = default

Variant(const *Variant*&) = default

Variant(*Variant*&&) = default

Variant &**operator**=(const *Variant*&) = default

Variant &**operator**=(*Variant*&&) = default

template<typename **T**>

inline **Variant**(*T* value)

template<typename **T**>

inline bool **is**() const noexcept

Checks variant value is T

template<typename **T**>

inline *T* &**as**()

Gets variant value as T

template<typename **T**>

```
inline const T &as() const
```

Gets variant value as T

```
template<typename T>
```

```
inline std::optional<T> get() const
```

Checks variant value is `std::optional<T>`

Note: This does entail a copy

```
inline bool operator<(const Variant &rhs) const noexcept
```

```
inline bool operator==(const Variant &rhs) const noexcept
```

```
inline bool empty() const noexcept
```

6.13.139 nw::Versus

```
struct Versus
```

Public Functions

```
bool operator==(const Versus &rhs) const = default
```

```
auto operator<=>(const Versus &rhs) const = default
```

```
inline operator bool() const noexcept
```

```
inline bool match(const Versus &rhs) const noexcept
```

Public Members

```
Race race = Race::invalid()
```

```
AlignmentFlags align_flags = AlignmentFlags::none
```

```
bool trap = false
```

6.13.140 nw::Waypoint

```
struct Waypoint : public nw::ObjectBase
```

Public Functions

Waypoint()

```
inline virtual Common *as_common() override
inline virtual const Common *as_common() const override
inline virtual Waypoint *as_waypoint() override
inline virtual const Waypoint *as_waypoint() const override
inline virtual bool instantiate() override
inline virtual InternedString tag() const override
inline ObjectHandle handle() const noexcept
inline void set_handle(ObjectHandle handle)
const EffectArray &effects() const
EffectArray &effects()
inline virtual Versus versus_me() const
inline virtual Area *as_area()
inline virtual const Area *as_area() const
inline virtual Creature *as_creature()
inline virtual const Creature *as_creature() const
inline virtual Door *as_door()
inline virtual const Door *as_door() const
inline virtual Encounter *as_encounter()
inline virtual const Encounter *as_encounter() const
inline virtual Item *as_item()
inline virtual const Item *as_item() const
inline virtual Module *as_module()
inline virtual const Module *as_module() const
inline virtual Placeable *as_placeable()
inline virtual const Placeable *as_placeable() const
inline virtual Player *as_player()
inline virtual const Player *as_player() const
inline virtual Sound *as_sound()
```

```

inline virtual const Sound *as_sound() const
inline virtual Store *as_store()
inline virtual const Store *as_store() const
inline virtual Trigger *as_trigger()
inline virtual const Trigger *as_trigger() const

```

Public Members

Common **common**

LocString **description**

Description of waypoint.

std::string **linked_to**

Tag of entity waypoint is linked to.

LocString **map_note**

Map not for player minimap.

uint8_t **appearance**

Appearance.

bool **has_map_note** = false

If true waypoint has map note.

bool **map_note_enabled** = false

If true show map note.

bool **instantiated_** = false

Public Static Functions

static bool **deserialize**(*Waypoint* *obj, const nlohmann::json &archive, *SerializationProfile* profile)

Deserializes entity from JSON.

static void **serialize**(const *Waypoint* *obj, nlohmann::json &archive, *SerializationProfile* profile)

Deserializes entity to JSON.

Public Static Attributes

```
static constexpr int json_archive_version = 1
```

```
static constexpr ObjectType object_type = ObjectType::waypoint
```

```
static constexpr ResourceType::type restype = ResourceType::utw
```

6.13.141 nw::Zip

```
struct Zip : public nw::Container
```

Public Functions

```
Zip(const std::filesystem::path &path)
```

```
~Zip()
```

```
virtual std::vector<ResourceDescriptor> all() const override
```

Get all resources.

```
virtual bool contains(Resource res) const override
```

Get if container contains resource.

```
virtual ResourceData demand(Resource res) const override
```

Reads resource data, empty ResourceData if no match.

```
virtual int extract(const std::regex &pattern, const std::filesystem::path &output) const override
```

Extract elements from a container by regex.

```
inline virtual const std::string &name() const override
```

Equivalent to `basename` *path()*

```
inline virtual const std::string &path() const override
```

Path to container, for basic containers, should be canonical.

```
virtual size_t size() const override
```

Determines the size, if applicable, of the container.

```
virtual ResourceDescriptor stat(const Resource &res) const override
```

Get some general data about a resource.

```
inline virtual bool valid() const noexcept override
```

Return true if loaded, false if not.

```
virtual void visit(std::function<void(const Resource&>> callback) const noexcept override
```

Visits all resources in a container.

```
virtual int extract_by_glob(std::string_view glob, const std::filesystem::path &output) const
```

Extract elements from a container by glob pattern.

```
const std::filesystem::path &working_directory() const
```

Get container working directory.

6.13.142 nw::ZipElement

struct **ZipElement**

Public Members

Resource **resref**

size_t **size**

6.13.143 nw::ZlibHeader

struct **ZlibHeader**

Public Members

uint32_t **version**

6.13.144 nw::ZstdHeader

struct **ZstdHeader**

Public Members

uint32_t **version**

uint32_t **dictionary**

6.13.145 nw::kernel::Config

struct **Config**

Public Functions

explicit **Config**() = default

void **initialize**(*ConfigOptions* options = {})

Initializes configuration system.

const std::filesystem::path &**install_path**() const noexcept

Game installation path.

const *ConfigOptions* &**options**() const noexcept

Gets installation info.

void **set_paths**(const std::filesystem::path install, const std::filesystem::path user)

Sets game paths.

Note: If paths are unset, the kernel will attempt to find them.

void **set_version**(*GameVersion* version)

Sets game version.

const std::filesystem::path &**user_path**() const noexcept

Path to user directory.

GameVersion **version**() const noexcept

Gets games version.

6.13.146 nw::kernel::EffectSystem

struct **EffectSystem** : public nw::kernel::Service

Public Functions

virtual ~**EffectSystem**() = default

bool **add**(EffectType type, EffectFunc apply, EffectFunc remove)

Adds an effect type to the registry.

bool **add**(ItemPropertyType type, ItemPropFunc generator)

Adds an item property type to the registry.

bool **apply**(ObjectBase *obj, *Effect* *effect)

Applies an effect to an object.

virtual void **clear**() override

Clears effect registry and all effects.

Effect ***create**(EffectType type)

Creates an effect.

void **destroy**(*Effect* *effect)

Destroys an effect.


```

std::pair<int, int> effect_limits_ability() const noexcept
    Gets ability effect minimum and maximum.

std::pair<int, int> effect_limits_armor_class() const noexcept
    Gets armor class effect minimum and maximum.

std::pair<int, int> effect_limits_attack() const noexcept
    Gets attack effect minimum and maximum.

std::pair<int, int> effect_limits_skill() const noexcept
    Gets skill effect minimum and maximum.

Effect *generate(const ItemProperty &property, EquipIndex index, BaseItem baseitem) const
    Generates an effect from an item property.

virtual void initialize() override
    Initialize effect system.

const TwoDA *ip_cost_table(size_t table) const
    Gets an item property cost table.

const ItemPropertyDefinition *ip_definition(ItemPropertyType type) const
    Gets an item property definition.

const TwoDA *ip_param_table(size_t table) const
    Gets an item property param table.

bool remove(ObjectBase *obj, Effect *effect)
    Removes an effect to an object.

void set_effect_limits_ability(int min, int max) noexcept
    Sets ability effect minimum and maximum.

void set_effect_limits_armor_class(int min, int max) noexcept
    Sets armor class effect minimum and maximum.

void set_effect_limits_attack(int min, int max) noexcept
    Sets attack effect minimum and maximum.

void set_effect_limits_skill(int min, int max) noexcept
    Sets skill effect minimum and maximum.

EffectSystemStats stats() const noexcept
    Gets stats regarding the effect system.

```

6.13.147 nw::kernel::EventSystem

```

struct EventSystem : public nw::kernel::Service

```

Public Types

```
template<typename T>
using storage = std::priority_queue<T, std::vector<T>, std::greater<T>>>
```

Public Functions

```
void add(EventType type, ObjectBase *object, void *data = nullptr)
```

```
int process()
```

```
inline virtual void initialize()
```

Initializes a service.

```
inline virtual void clear()
```

Clears a service.

Public Members

```
storage<EventHandle> queue_
```

6.13.148 nw::kernel::ObjectSystem

```
struct ObjectSystem : public nw::kernel::Service
```

The object system creates, serializes, and deserializes entities.

Public Functions

```
ObjectSystem() = default
```

```
ObjectSystem(const ObjectSystem&) = delete
```

```
ObjectSystem(ObjectSystem&&) = default
```

```
ObjectSystem &operator=(ObjectSystem&) = delete
```

```
ObjectSystem &operator=(ObjectSystem&&) = default
```

```
inline virtual ~ObjectSystem()
```

```
virtual void clear() override
```

Destroys all objects.

```
inline virtual void initialize() override
```

Initializes a service.

```
void destroy(ObjectHandle obj)
```

Destroys a single object.

```
template<typename T>
```

T ***get**(ObjectHandle obj)

Gets an object.

ObjectBase ***get_object_base**(ObjectHandle obj) const

Gets an object.

ObjectBase ***get_by_tag**(std::string_view tag, int nth = 0) const

Gets object by tag.

ObjectBase ***alloc**(*ObjectType* object_type)

template<typename T>

T ***load**(const std::filesystem::path &archive, *SerializationProfile* profile = *SerializationProfile::blueprint*)

Loads an object from file system.

template<typename T>

T ***load**(std::string_view resref)

Loads an object from resource system.

template<typename T>

T ***load**(const *GffStruct* &archive)

Loads an object from gff instance.

template<typename T>

T ***load**(const nlohmann::json &archive)

Loads an object from json instance.

Player ***load_player**(std::string_view cdkey, std::string_view resref)

Loads an object from resource system.

template<typename T>

T ***make**()

Creates a new object.

Area ***make_area**(*Resref* area)

Creates an area object.

Module ***make_module**()

Creates a module object

Warning: : nw::kernel::resman().load_module(...) **must** be called before this.

bool **valid**(ObjectHandle obj) const

Determines if object handle is valid.

6.13.149 nw::kernel::Resources

struct **Resources** : public nw::Container, public nw::kernel::Service

Public Types

using **SearchVector** = std::vector<LocatorPayload>

Public Functions

Resources(const *Resources* *parent = nullptr)

virtual **~Resources**() = default

virtual void **initialize**() override
Initializes resources management system.

inline virtual void **clear**() override
Clears a service.

bool **add_base_container**(const std::filesystem::path &path, const std::string &name, *ResourceType::type* restype = *ResourceType::invalid*)
Add a base container

Note: This anything that is BELOW the module in priority

bool **add_custom_container**(*Container* *container, bool take_ownership = true, *ResourceType::type* restype = *ResourceType::invalid*)
Add already created container

Note: These containers are above all others in priority

bool **add_override_container**(const std::filesystem::path &path, const std::string &name, *ResourceType::type* restype = *ResourceType::invalid*)
Add already created container.
Add override container

Note: This anything that is ABOVE the module in priority

void **clear_containers**()
Clears any custom loaded containers.

bool **load_module**(std::filesystem::path path, std::string_view manifest = {})
Loads container resources for a module.

void **load_module_haks**(const std::vector<std::string> &haks)
Loads module haks.

void **unload_module**()
Unloads module.

ResourceData **demand_server_vault**(std::string_view cdkey, std::string_view resref)
Demands a player character file.

ResourceData **demand_any**(*Resref* resref, std::initializer_list<*ResourceType::type*> restypes) const
 Attempts to locate first matching resource type by container priority.

ResourceData **demand_in_order**(*Resref* resref, std::initializer_list<*ResourceType::type*> restypes) const
 Attempts to locate first matching resource by resource type priority.

void **load_palette_textures**()

Image ***palette_texture**(*PltLayer* layer)

inline virtual std::vector<*ResourceDescriptor*> **all**() const override
 Get all resources.

virtual bool **contains**(*Resource* res) const override
 Get if container contains resource.

virtual ResourceData **demand**(*Resource* res) const override
 Reads resource data, empty ResourceData if no match.

virtual int **extract**(const std::regex &pattern, const std::filesystem::path &output) const override
 Extract elements from a container by regex.

inline virtual const std::string &**name**() const override
 Equivalent to basename *path()*

inline virtual const std::string &**path**() const override
 Path to container, for basic containers, should be canonical.

virtual size_t **size**() const override
 Determines the size, if applicable, of the container.

virtual *ResourceDescriptor* **stat**(const *Resource* &res) const override
 Get some general data about a resource.

inline virtual bool **valid**() const noexcept override
 Return true if loaded, false if not.

virtual void **visit**(std::function<void(const *Resource*&)> callback) const noexcept override
 Visits all resources in a container.

virtual int **extract_by_glob**(std::string_view glob, const std::filesystem::path &output) const
 Extract elements from a container by glob pattern.

const std::filesystem::path &**working_directory**() const
 Get container working directory.

6.13.150 nw::kernel::Rules

struct **Rules** : public nw::kernel::Service

Public Types

using **qualifier_type** = std::function<bool(const *Qualifier*&, const ObjectBase*)>

using **selector_type** = std::function<*RuleValue*(const *Selector*&, const ObjectBase*)>

Public Functions

virtual **~Rules**()

virtual void **initialize**() override

Initializes rules system.

virtual void **clear**() override

Clears rules system of all rules and cached 2da files.

bool **match**(const *Qualifier* &qual, const ObjectBase *obj) const

Match.

bool **meets_requirement**(const *Requirement* &req, const ObjectBase *obj) const

Meets requirements.

RuleValue **select**(const *Selector*&, const ObjectBase*) const

Select.

void **set_qualifier**(*qualifier_type* match)

Set rules qualifier.

void **set_selector**(*selector_type* selector)

Set rules selector.

Public Members

BaseItemArray **baseitems**

ClassArray **classes**

FeatArray **feats**

RaceArray **races**

SpellArray **spells**

SpellSchoolArray **spellschools**

SkillArray **skills**

MasterFeatRegistry **master_feats**

ModifierRegistry **modifiers**

6.13.151 nw::kernel::ScriptSystem

Warning: doxygenstruct: Cannot find class “nw::kernel::ScriptSystem” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.152 nw::kernel::Service

struct **Service**

Subclassed by *nw::kernel::EffectSystem*, *nw::kernel::EventSystem*, *nw::kernel::ObjectSystem*, *nw::kernel::Resources*, *nw::kernel::Rules*, *nw::kernel::Strings*, *nw::kernel::TwoDACCACHE*

6.13.153 nw::kernel::Services

struct **Services**

Public Functions

Services()

void **start()**

Initializes kernel services.

void **shutdown()**

Shutsdown kernel services.

GameProfile ***profile()** const

Gets current game profile.

template<typename T>

T ***add()**

Adds a service.

template<typename T>

const *T* ***get()** const

Gets a service.

template<typename T>

T ***get_mut()**

Gets a service as non-const.

Public Members

std::unique_ptr<*Strings*> **strings**

std::unique_ptr<*Resources*> **resources**

std::unique_ptr<TwoDACache> **twoda_cache**

std::unique_ptr<*Rules*> **rules**

std::unique_ptr<*EffectSystem*> **effects**

std::unique_ptr<*ObjectSystem*> **objects**

std::unique_ptr<*EventSystem*> **events**

6.13.154 nw::kernel::Strings

struct **Strings** : public nw::kernel::Service

Public Functions

Strings() = default

virtual ~**Strings**() = default

virtual void **initialize**() override

Initializes strings system.

inline virtual void **clear**() override

Initializes strings system.

std::string **get**(const *LocString* &locstring, bool feminine = false) const

Gets string by *LocString*

Note: if *Tlk* strref, use that; if not look in localized strings

std::string **get**(uint32_t strref, bool feminine = false) const

Gets string by *Tlk* strref.

InternedString **get_interned**(std::string_view str) const

Gets interned string

Note: Return will not be valid if there is no interned string

InternedString **intern**(std::string_view str)

Interns a string

Note: Multiple calls to **intern** with the same string will and must return the same exact underlying string, such that equality can be determined by a comparison of pointers.

InternedString **intern**(uint32_t strref)

Interns a string by strref

Note: Multiple calls to **intern** with the same string will and must return the same exact underlying string, such that equality can be determined by a comparison of pointers.

void **load_custom_tlk**(const std::filesystem::path &path)

Loads a modules custom *Tlk* and feminine version if available.

void **load_dialog_tlk**(const std::filesystem::path &path)

Loads a dialog *Tlk* and feminine version if available.

LanguageID **global_language**() const noexcept

Gets the language ID that is considered ‘default’

Note: This determines the character encoding of strings as they are stored in game resources, TLK, GFF, etc. In EE the only encoding that isn’t CP1252 is Polish, so generally safe to not worry too much.

void **set_global_language**(*LanguageID* language) noexcept

Sets the language ID that is considered ‘default’.

void **unload_custom_tlk**()

Unloads a modules custom *Tlk* and feminine version if available.

6.13.155 nw::model::AABEntry

struct **AABEntry**

Public Members

glm::vec3 **bmin**

glm::vec3 **bmax**

int32_t **leaf_face**

uint32_t **plane**

6.13.156 nw::model::AABBNode

struct **AABBNode** : public nw::model::TrimeshNode

Public Functions

AABBNode(std::string name_)

void **add_controller_data**(std::string_view name_, uint32_t type_, std::vector<float> times_,
std::vector<float> data_, int rows_, int columns_ = 1)

Adds a controller to a model node.

ControllerValue **get_controller**(uint32_t type_, bool key = false) const

Gets a controller to a model node.

Public Members

std::vector<AABBEEntry> **entries**

glm::vec3 **ambient**

bool **beaming**

glm::vec3 **bmin**

glm::vec3 **bmax**

std::string **bitmap**

glm::vec3 **center**

glm::vec3 **diffuse**

std::string **materialname**

bool **render** = {true}

std::string **renderhint**

bool **rotatetexture** = {false}

bool **shadow** = {false}

```
float shininess

glm::vec3 specular

std::array<std::string, 3> textures

uint32_t tilefade = {0}

int transparencyhint = {0}

bool showdispl = {false}

uint32_t displtype = {1}

uint32_t lightmapped = {0}

std::vector<std::string> multimaterial

std::vector<glm::vec3> colors

std::vector<Vertex> vertices

std::vector<uint16_t> indices

std::string name

const uint32_t type

bool inheritcolor = false

Node *parent = nullptr

std::vector<Node*> children

std::vector<ControllerKey> controller_keys

std::vector<float> controller_data
```

6.13.157 nw::model::Animation

struct **Animation** : public nw::model::*Geometry*

Public Functions

Animation(std::string name_)

virtual ~**Animation**() = default

Node ***find**(const std::regex &re)

const *Node* ***find**(const std::regex &re) const

Public Members

float **length** = { 1.0f }

float **transition_time** = { 0.25f }

std::string **anim_root**

std::vector<*AnimationEvent*> **events**

std::string **name**

GeometryType **type**

std::vector<std::unique_ptr<*Node*>> **nodes**

6.13.158 nw::model::AnimationEvent

struct **AnimationEvent**

Public Members

float **time** = { 0.0f }

std::string **name**

6.13.159 nw::model::AnimeshNode

struct **AnimeshNode** : public nw::model::TrimeshNode

Public Functions

AnimeshNode(std::string name_)

void **add_controller_data**(std::string_view name_, uint32_t type_, std::vector<float> times_,
std::vector<float> data_, int rows_, int columns_ = 1)

Adds a controller to a model node.

ControllerValue **get_controller**(uint32_t type_, bool key = false) const

Gets a controller to a model node.

Public Members

std::vector<glm::vec3> **animtverts**

std::vector<glm::vec3> **animverts**

float **sampleperiod**

float **cliph** = {0.0f}

float **clipw** = {0.0f}

float **clipv** = {0.0f}

float **clipu** = {0.0f}

glm::vec3 **ambient**

bool **beaming**

glm::vec3 **bmin**

glm::vec3 **bmax**

std::string **bitmap**

glm::vec3 **center**

```
glm::vec3 diffuse

std::string materialname

bool render = {true}

std::string renderhint

bool rotatetexture = {false}

bool shadow = {false}

float shininess

glm::vec3 specular

std::array<std::string, 3> textures

uint32_t tilefade = {0}

int transparencyhint = {0}

bool showdispl = {false}

uint32_t displtype = {1}

uint32_t lightmapped = {0}

std::vector<std::string> multimaterial

std::vector<glm::vec3> colors

std::vector<Vertex> vertices

std::vector<uint16_t> indices

std::string name

const uint32_t type

bool inheritcolor = false
```

```

Node *parent = nullptr

std::vector<Node*> children

std::vector<ControllerKey> controller_keys

std::vector<float> controller_data

```

6.13.160 nw::model::CameraNode

```
struct CameraNode : public nw::model::Node
```

Public Functions

```

CameraNode(std::string name_)

void add_controller_data(std::string_view name_, uint32_t type_, std::vector<float> times_,
                        std::vector<float> data_, int rows_, int columns_ = 1)

    Adds a controller to a model node.

ControllerValue get_controller(uint32_t type_, bool key = false) const

    Gets a controller to a model node.

```

Public Members

```

std::string name

const uint32_t type

bool inheritcolor = false

Node *parent = nullptr

std::vector<Node*> children

std::vector<ControllerKey> controller_keys

std::vector<float> controller_data

```

6.13.161 nw::model::ControllerKey

struct **ControllerKey**

Public Functions

inline **ControllerKey**(*IntermedString* name_, uint32_t type_, int rows_, int key_offset_, int time_offset_, int data_offset_, int columns_, bool is_key_)

Public Members

IntermedString **name**

uint32_t **type**

int **rows** = {0}

int **key_offset** = {0}

int **time_offset** = {0}

int **data_offset** = {0}

int **columns** = {0}

bool **is_key** = {false}

6.13.162 nw::model::ControllerType

struct **ControllerType**

Public Static Functions

static std::pair<uint32_t, uint32_t> **lookup**(std::string_view cont)

Public Static Attributes

static constexpr uint32_t **Position** = 8

static constexpr uint32_t **Orientation** = 20

static constexpr uint32_t **Scale** = 36

static constexpr uint32_t **Wirecolor** = 20004

static constexpr uint32_t **Color** = 76

static constexpr uint32_t **Radius** = 88

static constexpr uint32_t **ShadowRadius** = 96

static constexpr uint32_t **VerticalDisplacement** = 100

static constexpr uint32_t **Multiplier** = 140

static constexpr uint32_t **AlphaEnd** = 80

static constexpr uint32_t **AlphaStart** = 84

static constexpr uint32_t **BirthRate** = 88

static constexpr uint32_t **Bounce_Co** = 92

static constexpr uint32_t **ColorEnd** = 96

static constexpr uint32_t **ColorStart** = 108

static constexpr uint32_t **CombineTime** = 120

static constexpr uint32_t **Drag** = 124

static constexpr uint32_t **FPS** = 128

static constexpr uint32_t **FrameEnd** = 132

static constexpr uint32_t **FrameStart** = 136

```
static constexpr uint32_t Grav = 140

static constexpr uint32_t LifeExp = 144

static constexpr uint32_t Mass = 148

static constexpr uint32_t P2P_Bezier2 = 152

static constexpr uint32_t P2P_Bezier3 = 156

static constexpr uint32_t ParticleRot = 160

static constexpr uint32_t RandVel = 164

static constexpr uint32_t SizeStart = 168

static constexpr uint32_t SizeEnd = 172

static constexpr uint32_t SizeStart_Y = 176

static constexpr uint32_t SizeEnd_Y = 180

static constexpr uint32_t Spread = 184

static constexpr uint32_t Threshold = 188

static constexpr uint32_t Velocity = 192

static constexpr uint32_t XSize = 196

static constexpr uint32_t YSize = 200

static constexpr uint32_t BlurLength = 204

static constexpr uint32_t LightningDelay = 208

static constexpr uint32_t LightningRadius = 212

static constexpr uint32_t LightningScale = 216

static constexpr uint32_t LightningSubDiv = 220
```

```

static constexpr uint32_t Detonate = 228

static constexpr uint32_t AlphaMid = 464

static constexpr uint32_t ColorMid = 468

static constexpr uint32_t PercentStart = 480

static constexpr uint32_t PercentMid = 481

static constexpr uint32_t PercentEnd = 482

static constexpr uint32_t SizeMid = 484

static constexpr uint32_t SizeMid_Y = 488

static constexpr uint32_t lock_axes = 500

static constexpr uint32_t spawn_type = 501

static constexpr uint32_t random = 502

static constexpr uint32_t inherit = 503

static constexpr uint32_t inherit_local = 503

static constexpr uint32_t SelfIllumColor = 100

static constexpr uint32_t Alpha = 128

static const std::unordered_map<std::string_view, std::pair<uint32_t, uint32_t>> map

```

6.13.163 nw::model::DanglymeshNode

```
struct DanglymeshNode : public nw::model::TrimeshNode
```

Public Functions

DanglymeshNode(std::string name_)

void **add_controller_data**(std::string_view name_, uint32_t type_, std::vector<float> times_,
std::vector<float> data_, int rows_, int columns_ = 1)

Adds a controller to a model node.

ControllerValue **get_controller**(uint32_t type_, bool key = false) const

Gets a controller to a model node.

Public Members

std::vector<float> **constraints**

float **displacement**

float **period**

float **tightness**

glm::vec3 **ambient**

bool **beaming**

glm::vec3 **bmin**

glm::vec3 **bmax**

std::string **bitmap**

glm::vec3 **center**

glm::vec3 **diffuse**

std::string **materialname**

bool **render** = {true}

std::string **renderhint**

bool **rotatetexture** = {false}

bool **shadow** = {false}

```
float shininess

glm::vec3 specular

std::array<std::string, 3> textures

uint32_t tilefade = {0}

int transparencyhint = {0}

bool showdispl = {false}

uint32_t displtype = {1}

uint32_t lightmapped = {0}

std::vector<std::string> multimaterial

std::vector<glm::vec3> colors

std::vector<Vertex> vertices

std::vector<uint16_t> indices

std::string name

const uint32_t type

bool inheritcolor = false

Node *parent = nullptr

std::vector<Node*> children

std::vector<ControllerKey> controller_keys

std::vector<float> controller_data
```

6.13.164 nw::model::DummyNode

```
struct DummyNode : public nw::model::Node
```

Public Functions

```
DummyNode(std::string name_)
```

```
void add_controller_data(std::string_view name_, uint32_t type_, std::vector<float> times_,  
                        std::vector<float> data_, int rows_, int columns_ = 1)
```

Adds a controller to a model node.

```
ControllerValue get_controller(uint32_t type_, bool key = false) const
```

Gets a controller to a model node.

Public Members

```
std::string name
```

```
const uint32_t type
```

```
bool inheritcolor = false
```

```
Node *parent = nullptr
```

```
std::vector<Node*> children
```

```
std::vector<ControllerKey> controller_keys
```

```
std::vector<float> controller_data
```

6.13.165 nw::model::EmitterFlag

```
struct EmitterFlag
```

Public Static Attributes

```
static constexpr uint32_t P2P = 0x0001
```

```
static constexpr uint32_t P2PSel = 0x0002
```

```
static constexpr uint32_t AffectedByWind = 0x0004
```

```

static constexpr uint32_t IsTinted = 0x0008

static constexpr uint32_t Bounce = 0x0010

static constexpr uint32_t Random = 0x0020

static constexpr uint32_t Inherit = 0x0040

static constexpr uint32_t InheritVel = 0x0080

static constexpr uint32_t InheritLocal = 0x0100

static constexpr uint32_t Splat = 0x0200

static constexpr uint32_t InheritPart = 0x0400

```

6.13.166 nw::model::EmitterNode

```
struct EmitterNode : public nw::model::Node
```

Public Functions

```
EmitterNode(std::string name_)
```

```
void add_controller_data(std::string_view name_, uint32_t type_, std::vector<float> times_,
                        std::vector<float> data_, int rows_, int columns_ = 1)
```

Adds a controller to a model node.

```
ControllerValue get_controller(uint32_t type_, bool key = false) const
```

Gets a controller to a model node.

Public Members

```
float blastlength = {0.0f}
```

```
float blastradius = {0.0f}
```

```
std::string blend
```

```
std::string chunkname
```

```
float deadspace = {0.0f}
```

```
uint32_t loop = {0}

std::string render

uint32_t renderorder = {0}

int32_t spawntype = {0}

std::string texture

uint32_t twosidedtex = {0}

std::string update

uint32_t xgrid = {0}

uint32_t ygrid = {0}

uint32_t flags = {0}

uint32_t render_sel = {0}

uint32_t blend_sel = {0}

uint32_t update_sel = {0}

uint32_t spawntype_sel = {0}

float opacity = {0.0f}

std::string p2p_type

uint32_t tilefade = {0}

std::string name

const uint32_t type

bool inheritcolor = false

Node *parent = nullptr
```


std::vector<*Node**> **children**

std::vector<*ControllerKey*> **controller_keys**

std::vector<float> **controller_data**

6.13.167 nw::model::Face

struct **Face**

Public Members

std::array<uint32_t, 3> **vert_idx**

int32_t **shader_group_idx**

std::array<uint32_t, 3> **tvert_idx**

uint32_t **material_idx**

6.13.168 nw::model::Geometry

struct **Geometry**

Subclassed by *nw::model::Animation*, *nw::model::Model*

Public Functions

Geometry(GeometryType type_ = GeometryType::geometry)

Geometry(*Geometry*&) = delete

virtual ~**Geometry**() = default

Geometry &**operator**=(*Geometry*&) = delete

Node ***find**(const std::regex &re)

const *Node* ***find**(const std::regex &re) const

Public Members

std::string **name**

GeometryType **type**

std::vector<std::unique_ptr<*Node*>> **nodes**

6.13.169 nw::model::GeometryFlag

Warning: doxygenstruct: Cannot find class “nw::model::GeometryFlag” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.170 nw::model::GeometryType

Warning: doxygenstruct: Cannot find class “nw::model::GeometryType” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.171 nw::model::LightNode

struct **LightNode** : public nw::model::Node

Public Functions

LightNode(std::string name_)

virtual ~**LightNode**() = default

void **add_controller_data**(std::string_view name_, uint32_t type_, std::vector<float> times_,
std::vector<float> data_, int rows_, int columns_ = 1)

Adds a controller to a model node.

ControllerValue **get_controller**(uint32_t type_, bool key = false) const

Gets a controller to a model node.

Public Members

int32_t **lensflares** = {0}

float **flareradius** = {0.0f}

float **multiplier** = {0.0f}

```
glm::vec3 color

std::vector<float> flaresizes

std::vector<float> flarepositions

std::vector<glm::vec3> flarecolorshifts

std::vector<std::string> textures

uint32_t lightpriority = {5}

int32_t ambientonly = {0}

bool dynamic = {true}

uint32_t affectdynamic = {1}

uint32_t shadow = {1}

uint32_t generateflare = {0}

uint32_t fadinglight = {1}

std::string name

const uint32_t type

bool inheritcolor = false

Node *parent = nullptr

std::vector<Node*> children

std::vector<ControllerKey> controller_keys

std::vector<float> controller_data
```

6.13.172 nw::model::Mdl

class **Mdl**

Implements Bioware MDL file format

Warning: This is still incomplete

Public Functions

Mdl(const std::filesystem::path &filename)

Mdl(ResourceData data)

std::unique_ptr<*Node*> **make_node**(uint32_t type, std::string_view name)

bool **valid**() const

Public Members

Model **model**

6.13.173 nw::model::TextParser

class **TextParser**

Public Functions

TextParser(std::string_view buffer, *Mdl* *mdl)

bool **parse**()

6.13.174 nw::model::Model

struct **Model** : public nw::model::*Geometry*

Public Functions

Model()

Model(*Model*&) = delete

virtual **~Model**() = default

Model &**operator**=(*Model*&) = delete

```

Animation *find_animation(std::string_view name)

const Animation *find_animation(std::string_view name) const

Node *find(const std::regex &re)

const Node *find(const std::regex &re) const

```

Public Members

```

ModelClass classification

bool ignorefog

std::vector<std::unique_ptr<Animation>> animations

std::unique_ptr<Mdl> supermodel

glm::vec3 bmin

glm::vec3 bmax

float radius

float animationscale

std::string supermodel_name

std::string file_dependency

std::string name

GeometryType type

std::vector<std::unique_ptr<Node>> nodes

```

6.13.175 nw::model::ModelClass

Warning: doxygenstruct: Cannot find class “nw::model::ModelClass” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.176 nw::model::Node

struct **Node**

Subclassed by *nw::model::CameraNode*, *nw::model::DummyNode*, *nw::model::EmitterNode*,
nw::model::LightNode, *nw::model::PatchNode*, *nw::model::ReferenceNode*, *nw::model::TrimeshNode*

Public Functions

Node(std::string name_, uint32_t type_)

virtual ~**Node**() = default

void **add_controller_data**(std::string_view name_, uint32_t type_, std::vector<float> times_,
std::vector<float> data_, int rows_, int columns_ = 1)

Adds a controller to a model node.

ControllerValue **get_controller**(uint32_t type_, bool key = false) const

Gets a controller to a model node.

Public Members

std::string **name**

const uint32_t **type**

bool **inheritcolor** = false

Node ***parent** = nullptr

std::vector<*Node**> **children**

std::vector<*ControllerKey*> **controller_keys**

std::vector<float> **controller_data**

6.13.177 nw::model::NodeFlags

struct **NodeFlags**

Public Static Attributes

```
static constexpr uint32_t header = 0x00000001
```

```
static constexpr uint32_t light = 0x00000002
```

```
static constexpr uint32_t emitter = 0x00000004
```

```
static constexpr uint32_t camera = 0x00000008
```

```
static constexpr uint32_t reference = 0x00000010
```

```
static constexpr uint32_t mesh = 0x00000020
```

```
static constexpr uint32_t skin = 0x00000040
```

```
static constexpr uint32_t anim = 0x00000080
```

```
static constexpr uint32_t dangly = 0x00000100
```

```
static constexpr uint32_t aabb = 0x00000200
```

```
static constexpr uint32_t patch = 0x00000400
```

6.13.178 nw::model::NodeType

```
struct NodeType
```

Public Static Functions

```
static inline uint32_t from_string(std::string_view str)
```

```
static inline constexpr std::string_view to_string(uint32_t value)
```

Public Static Attributes

```
static constexpr uint32_t camera = (NodeFlags::header | NodeFlags::camera)
```

```
static constexpr uint32_t dummy = NodeFlags::header
```

```
static constexpr uint32_t emitter = NodeFlags::header | NodeFlags::emitter
```

```
static constexpr uint32_t light = NodeFlags::header | NodeFlags::light

static constexpr uint32_t reference = NodeFlags::header | NodeFlags::reference

static constexpr uint32_t patch = NodeFlags::header | NodeFlags::patch

static constexpr uint32_t trimesh = NodeFlags::header | NodeFlags::mesh

static constexpr uint32_t danglymesh = trimesh | NodeFlags::dangly

static constexpr uint32_t skin = trimesh | NodeFlags::skin

static constexpr uint32_t animmesh = trimesh | NodeFlags::anim

static constexpr uint32_t aabb = trimesh | NodeFlags::aabb
```

6.13.179 nw::model::PatchNode

```
struct PatchNode : public nw::model::Node
```

Public Functions

```
PatchNode(std::string name_)
```

```
void add_controller_data(std::string_view name_, uint32_t type_, std::vector<float> times_,  
                        std::vector<float> data_, int rows_, int columns_ = 1)
```

Adds a controller to a model node.

```
ControllerValue get_controller(uint32_t type_, bool key = false) const
```

Gets a controller to a model node.

Public Members

```
std::string name
```

```
const uint32_t type
```

```
bool inheritcolor = false
```

```
Node *parent = nullptr
```

```
std::vector<Node*> children
```



```
std::vector<ControllerKey> controller_keys
```

```
std::vector<float> controller_data
```

6.13.180 nw::model::ReferenceNode

```
struct ReferenceNode : public nw::model::Node
```

Public Functions

```
ReferenceNode(std::string name_)
```

```
void add_controller_data(std::string_view name_, uint32_t type_, std::vector<float> times_,  
                        std::vector<float> data_, int rows_, int columns_ = 1)
```

Adds a controller to a model node.

```
ControllerValue get_controller(uint32_t type_, bool key = false) const
```

Gets a controller to a model node.

Public Members

```
std::string refmodel
```

```
bool reattachable
```

```
std::string name
```

```
const uint32_t type
```

```
bool inheritcolor = false
```

```
Node *parent = nullptr
```

```
std::vector<Node*> children
```

```
std::vector<ControllerKey> controller_keys
```

```
std::vector<float> controller_data
```

6.13.181 nw::model::SkinNode

struct **SkinNode** : public nw::model::TrimeshNode

Public Functions

SkinNode(std::string name_)

void **add_controller_data**(std::string_view name_, uint32_t type_, std::vector<float> times_,
std::vector<float> data_, int rows_, int columns_ = 1)

Adds a controller to a model node.

ControllerValue **get_controller**(uint32_t type_, bool key = false) const

Gets a controller to a model node.

Public Members

std::vector<SkinVertex> **vertices**

std::array<int16_t, 64> **bone_nodes**

glm::vec3 **ambient**

bool **beaming**

glm::vec3 **bmin**

glm::vec3 **bmax**

std::string **bitmap**

glm::vec3 **center**

glm::vec3 **diffuse**

std::string **materialname**

bool **render** = {true}

std::string **renderhint**

bool **rotatetexture** = {false}

```
bool shadow = {false}

float shininess

glm::vec3 specular

std::array<std::string, 3> textures

uint32_t tilefade = {0}

int transparencyhint = {0}

bool showdispl = {false}

uint32_t displtype = {1}

uint32_t lightmapped = {0}

std::vector<std::string> multimaterial

std::vector<glm::vec3> colors

std::vector<uint16_t> indices

std::string name

const uint32_t type

bool inheritcolor = false

Node *parent = nullptr

std::vector<Node*> children

std::vector<ControllerKey> controller_keys

std::vector<float> controller_data
```

6.13.182 nw::model::SkinWeight

Warning: doxygenstruct: Cannot find class “nw::model::SkinWeight” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.183 nw::model::TriangleMode

Warning: doxygenstruct: Cannot find class “nw::model::TriangleMode” in doxygen xml output for project “rollNW” from directory: build/xml/

6.13.184 nw::model::TrimeshNode

struct **TrimeshNode** : public nw::model::Node

Subclassed by *nw::model::AABBNode*, *nw::model::AnimeshNode*, *nw::model::DanglymeshNode*,
nw::model::SkinNode

Public Functions

TrimeshNode(std::string name_, uint32_t type_ = *NodeType::trimesh*)

virtual ~**TrimeshNode**() = default

void **add_controller_data**(std::string_view name_, uint32_t type_, std::vector<float> times_,
std::vector<float> data_, int rows_, int columns_ = 1)

Adds a controller to a model node.

ControllerValue **get_controller**(uint32_t type_, bool key = false) const

Gets a controller to a model node.

Public Members

glm::vec3 **ambient**

bool **beaming**

glm::vec3 **bmin**

glm::vec3 **bmax**

std::string **bitmap**

glm::vec3 **center**

```
glm::vec3 diffuse

std::string materialname

bool render = {true}

std::string renderhint

bool rotatetexture = {false}

bool shadow = {false}

float shininess

glm::vec3 specular

std::array<std::string, 3> textures

uint32_t tilefade = {0}

int transparencyhint = {0}

bool showdispl = {false}

uint32_t displtype = {1}

uint32_t lightmapped = {0}

std::vector<std::string> multimaterial

std::vector<glm::vec3> colors

std::vector<Vertex> vertices

std::vector<uint16_t> indices

std::string name

const uint32_t type

bool inheritcolor = false
```

Node *parent = nullptr

std::vector<*Node**> children

std::vector<*ControllerKey*> controller_keys

std::vector<float> controller_data

6.13.185 nw::script::AssignExpression

struct **AssignExpression** : public nw::script::Expression

Public Functions

inline **AssignExpression**(*Expression* *lhs_, *NssToken* token, *Expression* *rhs_)

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression *lhs = nullptr

NssToken op

Expression *rhs = nullptr

size_t type_id_ = invalid_type_id

bool is_const_ = false

immer::map<std::string, Export> env_

SourceRange range_

6.13.186 nw::script::Ast

struct **Ast**

Public Functions

Ast() = default

Ast(const *Ast*&) = delete

Ast(*Ast*&&) = default

Ast &**operator**=(const *Ast*&) = delete

Ast &**operator**=(*Ast*&&) = default

template<typename **T**, typename ...**Args**>
inline *T* ***create_node**(*Args*&&... args)

inline void **accept**(*BaseVisitor* *visitor)

std::string_view **find_comment**(size_t line) const noexcept

Finds first comment that the source range of which ends on line or line - 1.

Public Members

std::vector<*Statement**> **decls**

std::vector<*Include*> **includes**

std::unordered_map<std::string, std::string> **defines**

std::vector<*Comment*> **comments**

std::vector<size_t> **line_map**

std::vector<std::unique_ptr<*AstNode*>> **nodes_**

6.13.187 nw::script::AstLocator

struct **AstLocator** : public nw::script::*BaseVisitor*

Public Functions

```
inline AstLocator(Nss *parent, std::string symbol, size_t line, size_t character)

inline Symbol locate_in_dependencies(const std::string &needle, bool is_type = false)

inline virtual void visit(Ast *script)

inline virtual void visit(FunctionDecl *decl)

inline virtual void visit(FunctionDefinition *decl)

inline virtual void visit(StructDecl *decl)

inline virtual void visit(VarDecl *decl)

inline virtual void visit(AssignExpression *expr)

inline virtual void visit(BinaryExpression *expr)

inline virtual void visit(CallExpression *expr)

inline virtual void visit(ComparisonExpression *expr)

inline virtual void visit(ConditionalExpression *expr)

inline virtual void visit(DotExpression *expr)

inline virtual void visit(EmptyExpression *expr)

inline virtual void visit(GroupingExpression *expr)

inline virtual void visit(LiteralExpression *expr)

inline virtual void visit(LiteralVectorExpression *expr)

inline virtual void visit(LogicalExpression *expr)

inline virtual void visit(PostfixExpression *expr)

inline virtual void visit(UnaryExpression *expr)

inline virtual void visit(VariableExpression *expr)

inline virtual void visit(BlockStatement *stmt)

inline virtual void visit(DeclList *stmt)

inline virtual void visit(DoStatement *stmt)

inline virtual void visit(EmptyStatement *stmt)

inline virtual void visit(ExprStatement *stmt)

inline virtual void visit(IfStatement *stmt)

inline virtual void visit(ForStatement *stmt)

inline virtual void visit(JumpStatement *stmt)
```



```

inline virtual void visit(LabelStatement *stmt)
inline virtual void visit(SwitchStatement *stmt)
inline virtual void visit(WhileStatement *stmt)

```

Public Members

```

const Nss *parent_ = nullptr

std::string symbol_

SourcePosition pos_

bool in_func_decl_ = false

bool in_struct_decl_ = false

bool found_ = false

Symbol result_

const Declaration *last_seen_decl = nullptr

const DotExpression *dot = nullptr

const CallExpression *call = nullptr

size_t active_param = 0

```

6.13.188 nw::script::AstNode

struct **AstNode**

Subclassed by *nw::script::Expression*, *nw::script::Statement*

Public Functions

```

virtual ~AstNode() = default

virtual void accept(BaseVisitor *visitor) = 0

```

```
virtual void complete(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const
```

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

```
size_t type_id_ = invalid_type_id
```

```
bool is_const_ = false
```

```
immer::map<std::string, Export> env_
```

```
SourceRange range_
```

6.13.189 nw::script::AstPrinter

```
struct AstPrinter : public nw::script::BaseVisitor
```

Public Functions

```
~AstPrinter() = default
```

```
inline virtual void visit(Ast *script) override
```

```
inline virtual void visit(FunctionDecl *decl) override
```

```
inline virtual void visit(FunctionDefinition *decl) override
```

```
inline virtual void visit(StructDecl *decl) override
```

```
inline virtual void visit(VarDecl *decl) override
```

```
inline virtual void visit(AssignExpression *expr) override
```

```
inline virtual void visit(BinaryExpression *expr) override
```

```
inline virtual void visit(CallExpression *expr) override
```

```
inline virtual void visit(ComparisonExpression *expr) override
```

```
inline virtual void visit(ConditionalExpression *expr) override
```

```
inline virtual void visit(DotExpression *expr) override
```

```
inline virtual void visit(EmptyExpression *expr) override
```

```
inline virtual void visit(GroupingExpression *expr) override
```

```

inline virtual void visit(LiteralExpression *expr) override
inline virtual void visit(LiteralVectorExpression *expr) override
inline virtual void visit(LogicalExpression *expr) override
inline virtual void visit(PostfixExpression *expr) override
inline virtual void visit(UnaryExpression *expr) override
inline virtual void visit(VariableExpression *expr) override
inline virtual void visit(BlockStatement *stmt) override
inline virtual void visit(DeclList *stmt) override
inline virtual void visit(DoStatement *stmt) override
inline virtual void visit(EmptyStatement*) override
inline virtual void visit(ExprStatement *stmt) override
inline virtual void visit(IfStatement *stmt) override
inline virtual void visit(ForStatement *stmt) override
inline virtual void visit(JumpStatement *stmt) override
inline virtual void visit(LabelStatement *stmt) override
inline virtual void visit(SwitchStatement *stmt) override
inline virtual void visit(WhileStatement *stmt) override

```

Public Members

```
std::stringstream ss
```

```
int depth = 0
```

6.13.190 nw::script::AstResolver

```
struct AstResolver : public nw::script::BaseVisitor
```

Public Types

```
using ScopeMap = std::unordered_map<std::string, ScopeDecl>
```

```
using ScopeStack = std::vector<ScopeMap>
```

```
using EnvStack = std::vector<immer::map<std::string, Export>>
```

Public Functions

```
inline AstResolver(Nss *parent, Context *ctx, bool command_script = false)

virtual ~AstResolver() = default

inline void begin_scope(bool global = false)

inline void declare(NssToken token, Declaration *decl, bool is_type = false)

inline void define(NssToken token, bool is_type = false)

inline void end_scope(bool global = false)

inline immer::map<std::string, Export> symbol_table() const

inline const Declaration *resolve(std::string_view token, SourceRange range, bool is_type)

inline virtual void visit(Ast *script) override

inline void match_function_decls(const FunctionDecl *decl, const FunctionDecl *def)

inline bool all_control_flow_paths_return(const AstNode *node)

inline virtual void visit(FunctionDecl *decl) override

inline virtual void visit(FunctionDefinition *decl) override

inline virtual void visit(StructDecl *decl) override

inline virtual void visit(VarDecl *decl) override

inline virtual void visit(AssignExpression *expr) override

inline virtual void visit(BinaryExpression *expr) override

inline virtual void visit(CallExpression *expr) override

inline virtual void visit(ComparisonExpression *expr) override

inline virtual void visit(ConditionalExpression *expr) override

inline virtual void visit(DotExpression *expr) override

inline virtual void visit(EmptyExpression *expr) override

inline virtual void visit(GroupingExpression *expr) override

inline virtual void visit(LiteralExpression *expr) override

inline virtual void visit(LiteralVectorExpression *expr) override

inline virtual void visit(LogicalExpression *expr) override

inline virtual void visit(PostfixExpression *expr) override

inline virtual void visit(UnaryExpression *expr) override

inline virtual void visit(VariableExpression *expr) override
```

```

inline virtual void visit(BlockStatement *stmt) override
inline virtual void visit(DeclList *stmt) override
inline virtual void visit(DoStatement *stmt) override
inline virtual void visit(EmptyStatement *stmt) override
inline virtual void visit(ExprStatement *stmt) override
inline virtual void visit(IfStatement *stmt) override
inline virtual void visit(ForStatement *stmt) override
inline virtual void visit(JumpStatement *stmt) override
inline virtual void visit(LabelStatement *stmt) override
inline virtual void visit(SwitchStatement *stmt) override
inline virtual void visit(WhileStatement *stmt) override

```

Public Members

```
Nss *parent_ = nullptr
```

```
Context *ctx_ = nullptr
```

```
ScopeStack scope_stack_
```

```
EnvStack env_stack_
```

```
int loop_stack_ = 0
```

```
int switch_stack_ = 0
```

```
FunctionDefinition *func_def_stack_ = nullptr
```

```
bool is_command_script_ = false
```

6.13.191 nw::script::BaseVisitor

```
struct BaseVisitor
```

```

    Subclassed by nw::script::AstConstEvaluator, nw::script::AstHint, nw::script::AstLocator,
    nw::script::AstPrinter, nw::script::AstResolver

```

Public Functions

```
virtual ~BaseVisitor() = default
virtual void visit(Ast *script) = 0
virtual void visit(FunctionDecl *decl) = 0
virtual void visit(FunctionDefinition *decl) = 0
virtual void visit(StructDecl *decl) = 0
virtual void visit(VarDecl *decl) = 0
virtual void visit(AssignExpression *expr) = 0
virtual void visit(BinaryExpression *expr) = 0
virtual void visit(CallExpression *expr) = 0
virtual void visit(ComparisonExpression *expr) = 0
virtual void visit(ConditionalExpression *expr) = 0
virtual void visit(DotExpression *expr) = 0
virtual void visit(EmptyExpression *expr) = 0
virtual void visit(GroupingExpression *expr) = 0
virtual void visit(LiteralExpression *expr) = 0
virtual void visit(LiteralVectorExpression *expr) = 0
virtual void visit(LogicalExpression *expr) = 0
virtual void visit(PostfixExpression *expr) = 0
virtual void visit(UnaryExpression *expr) = 0
virtual void visit(VariableExpression *expr) = 0
virtual void visit(BlockStatement *stmt) = 0
virtual void visit(DeclList *stmt) = 0
virtual void visit(DoStatement *stmt) = 0
virtual void visit(EmptyStatement *stmt) = 0
virtual void visit(ExprStatement *stmt) = 0
virtual void visit(IfStatement *stmt) = 0
virtual void visit(ForStatement *stmt) = 0
virtual void visit(JumpStatement *stmt) = 0
virtual void visit(LabelStatement *stmt) = 0
virtual void visit(SwitchStatement *stmt) = 0
virtual void visit(WhileStatement *stmt) = 0
```

6.13.192 nw::script::BinaryExpression

struct **BinaryExpression** : public nw::script::Expression

Public Functions

inline **BinaryExpression**(Expression *lhs_, NssToken token, Expression *rhs_)

virtual void **accept**(BaseVisitor *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***lhs** = nullptr

NssToken **op**

Expression ***rhs** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.193 nw::script::BlockStatement

struct **BlockStatement** : public nw::script::Statement

Public Functions

BlockStatement() = default

BlockStatement(*BlockStatement*&) = delete

BlockStatement &**operator**=(const *BlockStatement*&) = delete

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

std::vector<*Statement**> **nodes**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.194 nw::script::CallExpression

struct **CallExpression** : public nw::script::*Expression*

Public Functions

inline explicit **CallExpression**(*Expression* *expr_)

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***expr** = nullptr

std::vector<*Expression**> **args**

SourceRange **arg_range**

std::vector<*SourceRange*> **comma_ranges**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.195 nw::script::Comment

struct **Comment**

Abstracts a comment.

Public Functions

inline void **append**(std::string_view comment, *SourceLocation* range)

Public Members

SourceLocation **range_**

std::string **comment_**

6.13.196 nw::script::ConditionalExpression

struct **ConditionalExpression** : public nw::script::*Expression*

Public Functions

inline **ConditionalExpression**(*Expression* *expr_, *Expression* *true_branch_, *Expression* *false_branch_)

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***test** = nullptr

Expression ***true_branch** = nullptr

Expression ***false_branch** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.197 nw::script::Context

struct **Context**

Public Functions

Context(std::vector<std::string> include_paths = { }, std::string command_script = "nwscript")

virtual ~**Context**() = default

void **add_include_path**(const std::filesystem::path &path)

Adds include path to internal resman.

Nss ***get**(*Resref* resref, bool command_script = false)

Gets a script from internal resman.

inline const *Nss* ***command_script**() const noexcept

Gets command script.

```

virtual void register_default_types()
virtual void register_engine_types()
size_t type_id(std::string_view type_name, bool define = false)
size_t type_id(Type type_name, bool define = false)
std::string_view type_name(size_t type_id)
virtual size_t type_check_binary_op(NssToken op, size_t lhs, size_t rhs)
virtual bool is_type_convertible(size_t lhs, size_t rhs)
virtual void lexical_diagnostic(Nss *script, std::string_view msg, bool is_warning, SourceRange range)
virtual void parse_diagnostic(Nss *script, std::string_view msg, bool is_warning, SourceRange range)
virtual void semantic_diagnostic(Nss *script, std::string_view msg, bool is_warning, SourceRange range)

```

Public Members

```

std::vector<std::string> include_paths_

absl::flat_hash_map<Resource, std::unique_ptr<Nss>> dependencies_

std::vector<IncludeStackEntry> include_stack_

std::vector<IncludeStackEntry> preprocessed_

kernel::Resources resman_

std::string command_script_name_

Nss *command_script_ = nullptr

absl::flat_hash_map<std::string, size_t> type_map_

std::vector<std::string> type_array_

std::vector<StructDecl*> struct_stack_

```

6.13.198 nw::script::Declaration

struct **Declaration** : public nw::script::Statement

Subclassed by nw::script::DeclList, nw::script::FunctionDecl, nw::script::FunctionDefinition, nw::script::StructDecl, nw::script::VarDecl

Public Functions

virtual std::string **identifier**() const = 0

virtual *SourceRange* **range**() const noexcept

virtual *SourceRange* **selection_range**() const noexcept

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Type **type**

SourceRange **range_selection_**

std::string_view **view**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.199 nw::script::Diagnostic

struct **Diagnostic**

Public Members

DiagnosticType **type**

DiagnosticSeverity **severity**

std::string **script**

std::string **message**

SourceRange **location**

6.13.200 nw::script::DoStatement

struct **DoStatement** : public nw::script::Statement

Public Functions

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Statement ***block** = nullptr

Expression ***expr** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.201 nw::script::DotExpression

struct **DotExpression** : public nw::script::Expression

Public Functions

inline **DotExpression**(Expression *lhs_, NssToken token, Expression *rhs_)

virtual void **accept**(BaseVisitor *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***lhs** = nullptr

NssToken **dot**

Expression ***rhs** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.202 nw::script::ExprStatement

struct **ExprStatement** : public nw::script::Statement

Public Functions

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***expr** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.203 nw::script::Expression

struct **Expression** : public nw::script::AstNode

Subclassed by *nw::script::AssignExpression*, *nw::script::BinaryExpression*, *nw::script::CallExpression*,
nw::script::ComparisonExpression, *nw::script::ConditionalExpression*, *nw::script::DotExpression*,
nw::script::EmptyExpression, *nw::script::GroupingExpression*, *nw::script::LiteralExpression*,
nw::script::LiteralVectorExpression, *nw::script::LogicalExpression*, *nw::script::PostfixExpression*,
nw::script::UnaryExpression, *nw::script::VariableExpression*

Public Functions

virtual ~**Expression**() = default

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.204 nw::script::ForStatement

struct **ForStatement** : public nw::script::Statement

Public Functions

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

AstNode ***init** = nullptr

Expression ***check** = nullptr

Expression ***inc** = nullptr

Statement ***block** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.205 nw::script::FunctionDecl

struct **FunctionDecl** : public nw::script::Declaration

Public Functions

FunctionDecl() = default

FunctionDecl(*FunctionDecl*&) = delete

FunctionDecl &**operator**=(const *FunctionDecl*&) = delete

inline virtual std::string **identifier**() const override

virtual *SourceRange* **range**() const noexcept

virtual *SourceRange* **selection_range**() const noexcept

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

NssToken **identifier_**

std::vector<*VarDecl**> **params**

Type **type**

SourceRange **range_selection_**

std::string_view **view**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.206 nw::script::FunctionDefinition

struct **FunctionDefinition** : public nw::script::*Declaration*

Public Functions

inline virtual std::string **identifier**() const override

virtual *SourceRange* **range**() const noexcept

virtual *SourceRange* **selection_range**() const noexcept

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

FunctionDecl ***decl_inline** = nullptr

BlockStatement ***block** = nullptr

const *FunctionDecl* ***decl_external** = nullptr

Type **type**

SourceRange **range_selection_**

std::string_view **view**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.207 nw::script::GroupingExpression

struct **GroupingExpression** : public nw::script::Expression

Public Functions

inline explicit **GroupingExpression**(Expression *expr_)

virtual void **accept**(BaseVisitor *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const

Find completions for this Ast Node

Note: This function does not traverse dependencies

Public Members

Expression ***expr** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.208 nw::script::IfStatement

struct **IfStatement** : public nw::script::Statement

Public Functions

virtual void **accept**(BaseVisitor *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const

Find completions for this Ast Node

Note: This function does not traverse dependencies

Public Members

Expression ***expr** = nullptr

Statement ***if_branch** = nullptr

Statement ***else_branch** = nullptr

size_t **type_id** = invalid_type_id

bool **is_const** = false

immer::map<std::string, Export> **env**_

SourceRange **range**_

6.13.209 nw::script::Include

struct **Include**

Abstracts an script include.

Public Members

std::string **resref**

Resref of included script.

SourceRange **location**

Source location in script.

Nss ***script** = nullptr

Loaded script.

int **used** = 0

Number of times include is used in script file.

6.13.210 nw::script::InlayHint

struct **InlayHint**

Public Members

std::string **message**

SourcePosition **position**

6.13.211 nw::script::JumpStatement

struct **JumpStatement** : public nw::script::Statement

Public Functions

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

NssToken **op**

Expression ***expr** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.212 nw::script::LabelStatement

struct **LabelStatement** : public nw::script::Statement

Public Functions

virtual void **accept**(BaseVisitor *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const

Find completions for this Ast Node

Note: This function does not traverse dependencies

Public Members

NssToken type

Expression *expr = nullptr

size_t type_id_ = invalid_type_id

bool is_const_ = false

immer::map<std::string, Export> env_

SourceRange range_

6.13.213 nw::script::LiteralExpression

struct **LiteralExpression** : public nw::script::Expression

Public Functions

inline explicit **LiteralExpression**(NssToken token)

virtual void **accept**(BaseVisitor *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const

Find completions for this Ast Node

Note: This function does not traverse dependencies

Public Members

NssToken **literal**

Variant<int32_t, float, std::string, *Location*, *ObjectID*> **data**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.214 nw::script::LiteralVectorExpression

struct **LiteralVectorExpression** : public nw::script::Expression

Public Functions

inline explicit **LiteralVectorExpression**(*NssToken* x_, *NssToken* y_, *NssToken* z_)

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

NssToken **x**

NssToken **y**

NssToken **z**

glm::vec3 **data**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.215 nw::script::LogicalExpression

struct **LogicalExpression** : public nw::script::Expression

Public Functions

inline **LogicalExpression**(Expression *lhs_, NssToken token, Expression *rhs_)

virtual void **accept**(BaseVisitor *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***lhs** = nullptr

NssToken **op**

Expression ***rhs** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.216 nw::script::Nss

struct **Nss**

Public Functions

explicit **Nss**(const std::filesystem::path &filename, *Context* *ctx, bool command_script = false)

explicit **Nss**(std::string_view script, *Context* *ctx, bool command_script = false)

explicit **Nss**(ResourceData data, *Context* *ctx, bool command_script = false)

void **add_diagnostic**(*Diagnostic* diagnostic)

Add diagnostic to script.

Ast &**ast**()

Gets parsed AST.

const *Ast* &**ast**() const

Gets parsed ast.

void **complete**(const std::string &needle, CompletionContext &out, bool no_filter = false) const

Generates a list of potential completions (excluding dependencies)

void **complete_at**(const std::string &needle, size_t line, size_t character, CompletionContext &out, bool no_filter = false)

Get all completions (including dependencies)

void **complete_dot**(const std::string &needle, size_t line, size_t character, std::vector<*Symbol*> &out, bool no_filter = false)

Get all completions (including dependencies)

Context ***ctx**() const

Script context.

Symbol **declaration_to_symbol**(const *Declaration* *decl) const

Converts declaration to symbol

Note: *Declaration* must be in script

std::vector<std::string> **dependencies**() const

Returns all transitive dependencies in ‘preprocessed’ order, i.e. *dependencies*()*[n]* was include before *dependencies*()*[n+1]*

const std::vector<*Diagnostic*> &**diagnostics**() const noexcept

Gets script diagnostics.

inline size_t **errors**() const noexcept

Returns how many errors were found during parsing.

inline immer::map<std::string, Export> **exports**() const noexcept

Table of symbols exported from script.

inline size_t **export_count**() const noexcept
Count of symbols exported from script.

inline void **increment_errors**() noexcept
Increments error count.

inline void **increment_warnings**() noexcept
Increments warning count.

std::vector<*InlayHint*> **inlay_hints**(*SourceRange* range)

inline bool **is_command_script**() const noexcept
Is script a command script.

Symbol **locate_export**(const std::string &symbol, bool is_type, bool search_dependencies = false) const
Locate export, i.e. a top level symbols.

Symbol **locate_symbol**(const std::string &symbol, size_t line, size_t character)
Locate symbol in source file.

std::string_view **name**() const noexcept
Script name.

void **parse**()
Parses script file.

void **process_includes**(*Nss* *parent = nullptr)
Process includes recursively.

void **resolve**()
Resolves and type checks the *Ast*.

void **set_name**(const std::string &new_name)
Sets a scripts name.

SignatureHelp **signature_help**(size_t line, size_t character)

std::string_view **text**() const noexcept
Gets text of script.

std::string_view **view_from_range**(*SourceRange* range) const noexcept
Gets a view of source file in specified range.

inline size_t **warnings**() const noexcept
Returns how many warnings were found during parsing.

6.13.217 nw::script::NssLexer

struct **NssLexer**

Public Functions

explicit **NssLexer**(std::string_view buffer, *Context* *ctx, *Nss* *parent = nullptr)

NssToken **next**()

const *NssToken* &**current**() const

const char ***data**() const

Public Members

std::vector<size_t> **line_map**

6.13.218 nw::script::NssParser

struct **NssParser**

Public Functions

explicit **NssParser**(std::string_view view, *Context* *ctx, *Nss* *parent = nullptr)

NssToken **advance**()

Advances the token stream.

bool **check**(std::initializer_list<*NssTokenType*> types) const

Checks if next token matches a particular type.

Note: Does not advance the token stream

Parameters

types – An initializer list of token types

Returns

True if there is a match

bool **check_is_type**() const

Checks if next token matches a particular type.

Note: Does not advance the token stream

Returns

True if there is a match

NssToken **consume**(*NssTokenType* type, std::string_view error)

Consumes a token.

Parameters

- **type** – *Type* of token to consume
- **error** – Error message if token type is not matched

Returns

Matched token

void **diagnostic**(std::string_view msg, *NssToken* token, bool is_warning = false)

Report diagnostic

Parameters

msg – Message to report

bool **is_end**() const

Checks if at end of token stream.

bool **match**(std::initializer_list<*NssTokenType*> types)

Checks if next token matches a particular type.

Note: Advances the token stream

Parameters

types – An initializer list of token types

Returns

True if there is a match

void **lex**()

Lexes the file.

NssToken **lookahead**(size_t index) const

Looks ahead in the token stream

Parameters

index – Index to look ahead to, from current token

NssToken **peek**() const

Next token in the token stream.

NssToken **previous**()

Previous token in the token stream.

void **synchronize**(bool allow_rbrace = false)

Advances token stream after an error.

Expression ***parse_expr**()

Expression ***parse_expr_assign**()

Expression ***parse_expr_conditional**()

Expression ***parse_expr_or**()

Expression ***parse_expr_and()**
Expression ***parse_expr_bitwise()**
Expression ***parse_expr_equality()**
Expression ***parse_expr_relational()**
Expression ***parse_expr_shift()**
Expression ***parse_expr_additive()**
Expression ***parse_expr_multiplicative()**
Expression ***parse_expr_unary()**
Expression ***parse_expr_postfix()**
Expression ***parse_expr_primary()**
Expression ***parse_expr_group()**
Statement ***parse_stmt()**
BlockStatement ***parse_stmt_block()**
DoStatement ***parse_stmt_do()**
ExprStatement ***parse_stmt_expr()**
IfStatement ***parse_stmt_if()**
ForStatement ***parse_stmt_for()**
LabelStatement ***parse_stmt_label()**
JumpStatement ***parse_stmt_jump()**
SwitchStatement ***parse_stmt_switch()**
WhileStatement ***parse_stmt_while()**
Type **parse_type()**
Statement ***parse_decl()**
StructDecl ***parse_decl_struct()**
Declaration ***parse_decl_function_def()**
FunctionDecl ***parse_decl_function()**
VarDecl ***parse_decl_param()**
Ast **parse_program()**
Parses script.

Public Members

Context ***ctx_** = nullptr

Nss ***parent_** = nullptr

std::string_view **view_**

Ast **ast_**

std::vector<*NssToken*> **tokens**

size_t **current_** = 0

6.13.219 nw::script::NssToken

struct **NssToken**

Public Functions

NssToken() = default

inline **NssToken**(*NssTokenType* type_, std::string_view id_)

inline **NssToken**(*NssTokenType* type_, std::string_view id_, *SourcePosition* start, *SourcePosition* end)

Public Members

NssTokenType **type** = *NssTokenType::INVALID*

SourceLocation **loc**

6.13.220 nw::script::PostfixExpression

struct **PostfixExpression** : public nw::script::Expression

Public Functions

inline **PostfixExpression**(*Expression* *lhs_, *NssToken* token)

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression *lhs = nullptr

NssToken op

size_t type_id_ = invalid_type_id

bool is_const_ = false

immer::map<std::string, Export> env_

SourceRange range_

6.13.221 nw::script::SourceLocation

struct **SourceLocation**

Public Functions

inline size_t **length**() const noexcept

Gets the length of source code covered.

inline std::string_view **view**() const noexcept

Gets a view of the source code covered.

Public Members

const char ***start** = nullptr

Pointer to start of source code.

const char ***end** = nullptr

Pointer to end of source code.

SourceRange **range**

Source range.

6.13.222 nw::script::SourcePosition

struct **SourcePosition**

Position in source code.

Public Functions

bool **operator**==(const *SourcePosition* &rhs) const = default

auto **operator**<=>(const *SourcePosition* &rhs) const = default

Public Members

size_t **line** = 0

Starting line.

size_t **column** = 0

Starting column.

6.13.223 nw::script::SourceRange

struct **SourceRange**

Range of source code.

Public Members

SourcePosition **start**

Start of range.

SourcePosition **end**

End of Range.

6.13.224 nw::script::Statement

struct **Statement** : public nw::script::AstNode

Subclassed by *nw::script::BlockStatement*, *nw::script::Declaration*, *nw::script::DoStatement*,
nw::script::EmptyStatement, *nw::script::ExprStatement*, *nw::script::ForStatement*, *nw::script::IfStatement*,
nw::script::JumpStatement, *nw::script::LabelStatement*, *nw::script::SwitchStatement*,
nw::script::WhileStatement

Public Functions

virtual ~**Statement**() = default

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.225 nw::script::StructDecl

struct **StructDecl** : public nw::script::Declaration

Public Functions

inline virtual std::string **identifier**() const override

const *VarDecl* ***locate_member_decl**(std::string_view name) const

virtual *SourceRange* **range**() const noexcept

virtual *SourceRange* **selection_range**() const noexcept

virtual void **accept**(*BaseVisitor* *visitor) = 0

```
virtual void complete(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const
```

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

std::vector<*Declaration**> **decls**

Type **type**

SourceRange **range_selection_**

std::string_view **view**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.226 nw::script::SwitchStatement

```
struct SwitchStatement : public nw::script::Statement
```

Public Functions

```
virtual void accept(BaseVisitor *visitor) = 0
```

```
virtual void complete(const std::string &needle, std::vector<const Declaration*> &out, bool no_filter = false) const
```

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***target**

Statement ***block** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.227 nw::script::Symbol

struct **Symbol**

Info regarding a particular symbol somewhere in a source file.

Public Members

AstNode ***node** = nullptr

AstNode if symbol is used in a variable expression.

const *Declaration* ***decl** = nullptr

Original declaration.

std::string **comment**

Comment on original declaration, in case of functions decl is preferred over definition.

std::string **type**

Type of the symbol.

SymbolKind **kind**

The kind of symbol.

const *Nss* ***provider** = nullptr

What script this symbol is from, i.e. “nwscript”.

std::string_view **view**

View of declaration.

6.13.228 nw::script::Type

struct **Type**

Contains type tokens.

Public Functions

inline *SourcePosition* **range_start**() const noexcept

Public Members

NssToken **type_qualifier**

const

NssToken **type_specifier**

int, float, string, etc

NssToken **struct_id**

6.13.229 nw::script::UnaryExpression

struct **UnaryExpression** : public nw::script::Expression

Public Functions

inline **UnaryExpression**(*NssToken* token, *Expression* *rhs_)

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

NssToken **op**

Expression ***rhs** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.230 nw::script::VarDecl

struct **VarDecl** : public nw::script::Declaration

Public Functions

inline virtual std::string **identifier**() const override

virtual *SourceRange* **range**() const noexcept

virtual *SourceRange* **selection_range**() const noexcept

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

NssToken **identifier_**

Expression ***init** = nullptr

Type **type**

SourceRange **range_selection_**

std::string_view **view**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.231 nw::script::VariableExpression

struct **VariableExpression** : public nw::script::Expression

Public Functions

inline explicit **VariableExpression**(*NssToken* token)

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

NssToken **var**

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.232 nw::script::WhileStatement

struct **WhileStatement** : public nw::script::Statement

Public Functions

virtual void **accept**(*BaseVisitor* *visitor) = 0

virtual void **complete**(const std::string &needle, std::vector<const *Declaration**> &out, bool no_filter = false) const

Find completions for this *Ast* Node

Note: This function does not traverse dependencies

Public Members

Expression ***check** = nullptr

Statement ***block** = nullptr

size_t **type_id_** = invalid_type_id

bool **is_const_** = false

immer::map<std::string, Export> **env_**

SourceRange **range_**

6.13.233 nwn1::Profile

struct **Profile** : public nw::*GameProfile*
NWN1 Game *Profile*.

Public Functions

virtual ~**Profile**() = default

virtual bool **load_rules**() const override
Loads rules.

- Load Selector and Matcher
- Load Components
- Load 2DAs
- Load Constants
- Post Process 2DAs

virtual bool **load_resources**() override
Loads containers into resman.

6.14 defines

6.14.1 DEFINE_ENUM_FLAGS

DEFINE_ENUM_FLAGS(T)

Defines bitwise functions for an enum type.

6.14.2 ROLLNW_STRINGIFY

ROLLNW_STRINGIFY(a)

6.14.3 ROLLNW_UNUSED

ROLLNW_UNUSED(thing)

Silences unused variable warnings.

6.14.4 SCOPE_EXIT

SCOPE_EXIT(f)

Creates scope exit.

6.15 enums

6.15.1 nw::AlignmentAxis

enum class nw::AlignmentAxis

Values:

enumerator **neither**

enumerator **law_chaos**

enumerator **good_evil**

enumerator **both**

6.15.2 nw::AlignmentFlags

enum class nw::AlignmentFlags

Values:

enumerator **none**

enumerator **neutral**

enumerator **lawful**

enumerator **chaotic**

enumerator **good**

enumerator **evil**

6.15.3 nw::AlignmentType

enum class nw::AlignmentType

Values:

enumerator **all**

enumerator **neutral**

enumerator **lawful**

enumerator **chaotic**

enumerator **good**

enumerator **evil**

6.15.4 nw::AreaFlags

enum class nw::AreaFlags : uint32_t

Values:

enumerator **none**

Unspecified.

enumerator **interior**

Exterior if unset.

enumerator **underground**

Above ground if unset.

enumerator **natural**

Urban if unset.

6.15.5 nw::AttackResult

enum class nw::AttackResult

Values:

enumerator **hit_by_auto_success**

enumerator **hit_by_critical**

enumerator **hit_by_roll**

enumerator **miss_by_auto_fail**

enumerator **miss_by_concealment**

enumerator **miss_by_miss_chance**

enumerator **miss_by_roll**

6.15.6 nw::DialogNodeType

enum class nw::DialogNodeType

Values:

enumerator **entry**

enumerator **reply**

6.15.7 nw::DoorAnimationState

enum class nw::DoorAnimationState : uint8_t

Values:

enumerator **closed**

enumerator **opened1**

enumerator **opened2**

6.15.8 nw::EquipIndex

enum class nw::EquipIndex : uint32_t

Values:

enumerator **head**

enumerator **chest**

enumerator **boots**

enumerator **arms**

enumerator **righthand**

enumerator **lefthand**

enumerator **cloak**

enumerator **leftring**

enumerator **rightring**

enumerator **neck**

enumerator **belt**

enumerator **arrows**

enumerator **bullets**

enumerator **bolts**

enumerator **creature_left**

enumerator **creature_right**

enumerator **creature_bite**

enumerator **creature_skin**

enumerator **invalid**

6.15.9 nw::EquipSlot

enum class nw::EquipSlot

Values:

enumerator **head**

enumerator **chest**

enumerator **boots**

enumerator **arms**

enumerator **righthand**

enumerator **lefthand**

enumerator **cloak**

enumerator **leftring**

enumerator **rightring**

enumerator **neck**

enumerator **belt**

enumerator **arrows**

enumerator **bullets**

enumerator **bolts**

enumerator **creature_left**

enumerator **creature_right**

enumerator **creature_bite**

enumerator **creature_skin**

6.15.10 nw::ErfType

enum class nw::ErfType

Values:

enumerator **erf**

enumerator **hak**

enumerator **mod**

enumerator **sav**

6.15.11 nw::ErfVersion

enum class nw::ErfVersion

Values:

enumerator **v1_0**

enumerator **v1_1**

6.15.12 nw::GameVersion

enum class nw::GameVersion

Values:

enumerator invalid

enumerator v1_69

enumerator vEE

enumerator nwn2

6.15.13 nw::ItemModelType

enum class nw::ItemModelType : uint8_t

Values:

enumerator simple

enumerator layered

enumerator composite

enumerator armor

6.15.14 nw::LanguageID

enum class nw::LanguageID : uint32_t

Language IDs.

Values:

enumerator invalid

enumerator english

enumerator french

enumerator german

enumerator italian

enumerator **spanish**

enumerator **polish**

enumerator **korean**

Unsupported in EE?

enumerator **chinese_traditional**

Unsupported in EE?

enumerator **chinese_simplified**

Unsupported in EE?

enumerator **japanese**

Unsupported in EE?

6.15.15 nw::ObjectID

enum class nw::ObjectID : uint32_t

Opaque type.. for now.

Values:

6.15.16 nw::ObjectType

enum class nw::ObjectType : uint16_t

Object types.

Values:

enumerator **invalid**

enumerator **gui**

enumerator **tile**

enumerator **module**

enumerator **area**

enumerator **creature**

enumerator **item**

enumerator **trigger**

enumerator **projectile**

enumerator **placeable**

enumerator **door**

enumerator **areaofeffect**

enumerator **waypoint**

enumerator **encounter**

enumerator **store**

enumerator **portal**

enumerator **sound**

enumerator **player**

6.15.17 nw::PaletteNodeType

enum class nw::PaletteNodeType

Values:

enumerator **branch**

enumerator **category**

enumerator **blueprint**

6.15.18 nw::PlaceableAnimationState

enum class nw::PlaceableAnimationState : uint8_t

Values:

enumerator **none**

enumerator **open**

enumerator **closed**

enumerator **destroyed**

enumerator **activated**

enumerator **deactivated**

6.15.19 nw::PltLayer

enum nw::PltLayer

Plt formats respective layers.

Values:

enumerator **plt_layer_skin**

enumerator **plt_layer_hair**

enumerator **plt_layer_metal1**

enumerator **plt_layer_metal2**

enumerator **plt_layer_cloth1**

enumerator **plt_layer_cloth2**

enumerator **plt_layer_leather1**

enumerator **plt_layer_leather2**

enumerator **plt_layer_tattoo1**

enumerator **plt_layer_tattoo2**

enumerator **plt_layer_size**

6.15.20 nw::SelectorType

enum class nw::SelectorType : uint32_t

Selector types.

Values:

enumerator **ability**

Subtype: ability_* constant.

enumerator **ac**

Subtype: ac_* constant.

enumerator **alignment**

Subtype: AlignmentAxis.

enumerator **arcane_level**

Subtype: none.

enumerator **bab**

Subtype: none.

enumerator **caster_level**

Subtype:

enumerator **class_level**

Subtype: class_* constant.

enumerator **feat**

Subtype: feat_* constant.

enumerator **hitpoints_max**

Subtype: none.

enumerator **level**

Subtype: none.

enumerator **local_var_int**

Subtype: local var name, eg. "X1_AllowArcher".

enumerator **local_var_str**

Subtype: local var name, eg. "some_var".

enumerator **race**

Subtype: none.

enumerator **skill**

Subtype: skill_* constant.

enumerator **spell_level**

Subtype:

6.15.21 nw::SerializationProfile

enum class nw::**SerializationProfile**

Game serialization profiles.

Values:

enumerator **any**

enumerator **blueprint**

enumerator **instance**

enumerator **savegame**

6.15.22 nw::SpellFlags

enum class nw::**SpellFlags** : uint8_t

Values:

enumerator **none**

enumerator **readied**

enumerator **spontaneous**

enumerator **unlimited**

6.15.23 nw::SpellMetaMagic

enum class nw::**SpellMetaMagic** : uint8_t

Values:

enumerator **none**

enumerator **empower**

enumerator **extend**

enumerator **maximize**

enumerator **quicken**

enumerator **silent**

enumerator **still**

6.15.24 nw::TargetState

enum class **nw::TargetState**

Values:

enumerator **none**

enumerator **blind**

enumerator **attacker_invis**

enumerator **unseen**

enumerator **moving**

enumerator **prone**

enumerator **stunned**

enumerator **flanked**

enumerator **flatfooted**

enumerator **asleep**

enumerator **attacker_unseen**

enumerator **invis**

6.15.25 nw::script::DiagnosticLevel

Warning: doxygenenum: Cannot find enum “nw::script::DiagnosticLevel” in doxygen xml output for project “rollNW” from directory: build/xml/

6.15.26 nw::script::DiagnosticType

enum class nw::script::DiagnosticType

Values:

enumerator **lexical**

enumerator **parse**

enumerator **semantic**

6.15.27 nw::script::NssTokenType

enum class nw::script::NssTokenType

Values:

enumerator **INVALID**

enumerator **END**

enumerator **IDENTIFIER**

enumerator **COMMENT**

enumerator **LPAREN**

enumerator **RPAREN**

enumerator **LBRACE**

enumerator **RBRACE**

enumerator **LBRACKET**

enumerator **RBRACKET**

enumerator **COMMA**

enumerator **COLON**

enumerator **QUESTION**

enumerator **SEMICOLON**

enumerator **POUND**

enumerator **DOT**

enumerator **AND**

enumerator **ANDAND**

enumerator **ANDEQ**

enumerator **DIV**

enumerator **DIVEQ**

enumerator **EQ**

enumerator **EQEQ**

enumerator **GT**

enumerator **GTEQ**

enumerator **LT**

enumerator **LTEQ**

enumerator **MINUS**

enumerator **MINUSEQ**

enumerator **MINUSMINUS**

enumerator **MOD**

enumerator **MODEQ**

enumerator **TIMES**

enumerator **TIMESEQ**

enumerator **NOT**

enumerator **NOTEQ**

enumerator **OR**

enumerator **OREQ**

enumerator **OROR**

enumerator **PLUS**

enumerator **PLUSEQ**

enumerator **PLUSPLUS**

enumerator **SL**

enumerator **SLEQ**

enumerator **SR**

enumerator **SREQ**

enumerator **TILDE**

enumerator **USR**

enumerator **USREQ**

enumerator **XOR**

enumerator **XOREQ**

enumerator **FLOAT_CONST**

enumerator **INTEGER_CONST**

enumerator **OBJECT_INVALID_CONST**

enumerator **OBJECT_SELF_CONST**

enumerator **STRING_CONST**

enumerator **STRING_RAW_CONST**

enumerator **LOCATION_INVALID**

enumerator **JSON_CONST**

enumerator **ACTION**

enumerator **BREAK**

enumerator **CASE**

enumerator **CASSOWARY**

enumerator **CONST_**

enumerator **CONTINUE**

enumerator **DEFAULT**

enumerator **DO**

enumerator **EFFECT**

enumerator **ELSE**

enumerator **EVENT**

enumerator **FLOAT**

enumerator **FOR**

enumerator **IF**

enumerator **INT**

enumerator **ITEMPROPERTY**

enumerator **JSON**

enumerator **LOCATION**

enumerator **OBJECT**

enumerator **RETURN**

enumerator **STRING**

enumerator **STRUCT**

enumerator **SQLQUERY**

enumerator **SWITCH**

enumerator **TALENT**

enumerator **VECTOR**

enumerator **VOID_**

enumerator **WHILE**

6.15.28 **nw::script::SymbolKind**

enum class **nw::script::SymbolKind**

Values:

enumerator **variable**

enumerator **function**

enumerator **type**

enumerator **param**

enumerator **field**

6.16 functions

6.16.1 nw::alignment_axis_from_flags

AlignmentAxis nw::alignment_axis_from_flags(*AlignmentFlags* flags)

Gets alignment axis from alignment flags.

6.16.2 nw::always_false

template<typename T>

constexpr bool nw::always_false()

Always returns false for use with static_assert

Template Parameters

T – type is disregarded

6.16.3 nw::count_feats_in_range

int nw::count_feats_in_range(const nw::Creature *obj, nw::Feat start, nw::Feat end)

Counts the number of known feats in the range [start, end].

6.16.4 nw::create_unique_tmp_path

fs::path nw::create_unique_tmp_path()

Creates randomly named folder in tmp. Analguous to POSIX mkdtemp.

6.16.5 nw::decode_plt_color

std::array<uint8_t, 4> nw::decode_plt_color(const *Plt* &plt, const *PltColors* &colors, uint32_t x, uint32_t y)

Decodes PLT and user selected colors to RGBA.

6.16.6 nw::decompress

ByteArray nw::decompress(std::span<const uint8_t> span, const char *magic)

Decompress a NWN:EE compressed buffer.

Note: Doesn't support Zstd dictionaries, but the game doesn't either.. yet. Supporting that will likely lead to API change.

Parameters

- **span** – Compressed data
- **magic** – Magic 4 byte sequence, i.e. “NSYC”

Returns

ByteArray Uncompressed data, empty on error.

6.16.7 nw::documents_path

`fs::path nw::documents_path()`

Gets user's documents path.

6.16.8 nw::equip_index_to_string

`constexpr std::string_view nw::equip_index_to_string(EquipIndex idx)`

6.16.9 nw::equip_slot_to_index

`constexpr EquipIndex nw::equip_slot_to_index(EquipSlot slot)`

6.16.10 nw::expand_path

`std::filesystem::path nw::expand_path(const std::filesystem::path &path)`

Expands path with ~ and environment variables.

6.16.11 nw::find_first_effect_of

`template<typename It>`

`It nw::find_first_effect_of(It begin, It end, nw::EffectType type, int subtype = -1)`

Finds first effect of a given type.

Template Parameters

It – A forward iterator

Parameters

- **begin** – Beginning of an range of effects
- **end** – Beginning of an range of effects
- **type** – An `effect_type_*` constant
- **subtype** – An effect subtype

Returns

It iterator to the first effect, or `end`

6.16.12 nw::from_base64

`ByteArray nw::from_base64(const std::string &string)`

Converts base64 string to an array of bytes.

6.16.13 nw::from_json

void nw::from_json(const nlohmann::json &json, *ByteArray* &ba)

Warning: doxygenfunction: Unable to resolve function “from_json” with arguments (const nlohmann::json&, Dialog&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile,
↳ObjectType object_type)
- void from_json(const nlohmann::json &j, Ability &type)
- void from_json(const nlohmann::json &j, ArmorClass &type)
- void from_json(const nlohmann::json &j, AttackType &type)
- void from_json(const nlohmann::json &j, BaseItem &type)
- void from_json(const nlohmann::json &j, Class &type)
- void from_json(const nlohmann::json &j, CombatMode &type)
- void from_json(const nlohmann::json &j, Damage &type)
- void from_json(const nlohmann::json &j, DamageModType &type)
- void from_json(const nlohmann::json &j, Disease &type)
- void from_json(const nlohmann::json &j, EffectType &type)
- void from_json(const nlohmann::json &j, Feat &type)
- void from_json(const nlohmann::json &j, ItemPropertyType &type)
- void from_json(const nlohmann::json &j, LocString &loc)
- void from_json(const nlohmann::json &j, MasterFeat &type)
- void from_json(const nlohmann::json &j, MissChanceType &type)
- void from_json(const nlohmann::json &j, ModifierType &type)
- void from_json(const nlohmann::json &j, ObjectID &id)
- void from_json(const nlohmann::json &j, ObjectType &type)
- void from_json(const nlohmann::json &j, Poison &type)
- void from_json(const nlohmann::json &j, Race &type)
- void from_json(const nlohmann::json &j, Resource &r)
- void from_json(const nlohmann::json &j, Resref &r)
- void from_json(const nlohmann::json &j, Save &type)
```

```

- void from_json(const nlohmann::json &j, SaveVersus &type)
- void from_json(const nlohmann::json &j, Situation &type)
- void from_json(const nlohmann::json &j, Skill &type)
- void from_json(const nlohmann::json &j, SpecialAttack &type)
- void from_json(const nlohmann::json &j, Spell &type)
- void from_json(const nlohmann::json &j, SpellEntry &spell)
- void from_json(const nlohmann::json &j, SpellSchool &type)
- void from_json(const nlohmann::json &j, ByteArray &ba)
- void from_json(const nlohmann::json &j, LevelUp &entry)
- void from_json(const nlohmann::json &j, Location &loc)
- void from_json(const nlohmann::json &j, Saves &saves)

```

Warning: doxygenfunction: Unable to resolve function “from_json” with arguments (const nlohmann::json&, DialogNode&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```

- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile,
↳ObjectType object_type)
- void from_json(const nlohmann::json &j, Ability &type)
- void from_json(const nlohmann::json &j, ArmorClass &type)
- void from_json(const nlohmann::json &j, AttackType &type)
- void from_json(const nlohmann::json &j, BaseItem &type)
- void from_json(const nlohmann::json &j, Class &type)
- void from_json(const nlohmann::json &j, CombatMode &type)
- void from_json(const nlohmann::json &j, Damage &type)
- void from_json(const nlohmann::json &j, DamageModType &type)
- void from_json(const nlohmann::json &j, Disease &type)
- void from_json(const nlohmann::json &j, EffectType &type)
- void from_json(const nlohmann::json &j, Feat &type)
- void from_json(const nlohmann::json &j, ItemPropertyType &type)
- void from_json(const nlohmann::json &j, LocString &loc)

```

```

- void from_json(const nlohmann::json &j, MasterFeat &type)
- void from_json(const nlohmann::json &j, MissChanceType &type)
- void from_json(const nlohmann::json &j, ModifierType &type)
- void from_json(const nlohmann::json &j, ObjectID &id)
- void from_json(const nlohmann::json &j, ObjectType &type)
- void from_json(const nlohmann::json &j, Poison &type)
- void from_json(const nlohmann::json &j, Race &type)
- void from_json(const nlohmann::json &j, Resource &r)
- void from_json(const nlohmann::json &j, Resref &r)
- void from_json(const nlohmann::json &j, Save &type)
- void from_json(const nlohmann::json &j, SaveVersus &type)
- void from_json(const nlohmann::json &j, Situation &type)
- void from_json(const nlohmann::json &j, Skill &type)
- void from_json(const nlohmann::json &j, SpecialAttack &type)
- void from_json(const nlohmann::json &j, Spell &type)
- void from_json(const nlohmann::json &j, SpellEntry &spell)
- void from_json(const nlohmann::json &j, SpellSchool &type)
- void from_json(const nlohmann::json &j, ByteArray &ba)
- void from_json(const nlohmann::json &j, LevelUp &entry)
- void from_json(const nlohmann::json &j, Location &loc)
- void from_json(const nlohmann::json &j, Saves &saves)

```

Warning: doxygenfunction: Unable to resolve function “from_json” with arguments (const nlohmann::json&, DialogPtr&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```

- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile)
- bool from_json(const nlohmann::json &archive, SerializationProfile profile,
->ObjectType object_type)
- void from_json(const nlohmann::json &j, Ability &type)
- void from_json(const nlohmann::json &j, ArmorClass &type)
- void from_json(const nlohmann::json &j, AttackType &type)

```

```

- void from_json(const nlohmann::json &j, BaseItem &type)
- void from_json(const nlohmann::json &j, Class &type)
- void from_json(const nlohmann::json &j, CombatMode &type)
- void from_json(const nlohmann::json &j, Damage &type)
- void from_json(const nlohmann::json &j, DamageModType &type)
- void from_json(const nlohmann::json &j, Disease &type)
- void from_json(const nlohmann::json &j, EffectType &type)
- void from_json(const nlohmann::json &j, Feat &type)
- void from_json(const nlohmann::json &j, ItemPropertyType &type)
- void from_json(const nlohmann::json &j, LocString &loc)
- void from_json(const nlohmann::json &j, MasterFeat &type)
- void from_json(const nlohmann::json &j, MissChanceType &type)
- void from_json(const nlohmann::json &j, ModifierType &type)
- void from_json(const nlohmann::json &j, ObjectID &id)
- void from_json(const nlohmann::json &j, ObjectType &type)
- void from_json(const nlohmann::json &j, Poison &type)
- void from_json(const nlohmann::json &j, Race &type)
- void from_json(const nlohmann::json &j, Resource &r)
- void from_json(const nlohmann::json &j, Resref &r)
- void from_json(const nlohmann::json &j, Save &type)
- void from_json(const nlohmann::json &j, SaveVersus &type)
- void from_json(const nlohmann::json &j, Situation &type)
- void from_json(const nlohmann::json &j, Skill &type)
- void from_json(const nlohmann::json &j, SpecialAttack &type)
- void from_json(const nlohmann::json &j, Spell &type)
- void from_json(const nlohmann::json &j, SpellEntry &spell)
- void from_json(const nlohmann::json &j, SpellSchool &type)
- void from_json(const nlohmann::json &j, ByteArray &ba)
- void from_json(const nlohmann::json &j, LevelUp &entry)
- void from_json(const nlohmann::json &j, Location &loc)
- void from_json(const nlohmann::json &j, Saves &saves)

```

```
void nw::from_json(const nlohmann::json &j, Location &loc)
```

```
void nw::from_json(const nlohmann::json &j, LocString &loc)
```

```
void nw::from_json(const nlohmann::json &j, ObjectID &id)
```

```
    nlohmann::json specialization
```

```
void nw::from_json(const nlohmann::json &j, ObjectType &type)
```

```
    nlohmann::json specialization
```

```
void nw::from_json(const nlohmann::json &j, Resource &r)
```

```
    nlohmann::json specialization
```

```
void nw::from_json(const nlohmann::json &j, Resref &r)
```

```
    nlohmann::json specialization
```

```
void nw::from_json(const nlohmann::json &j, Saves &saves)
```

```
void nw::from_json(const nlohmann::json &j, SpellEntry &spell)
```

6.16.14 nw::from_utf8

std::string nw::from_utf8(std::string_view str, std::string_view encoding, bool ignore_errors = false)
Convert from utf8.

6.16.15 nw::from_utf8_by_global_lang

std::string nw::from_utf8_by_global_lang(std::string_view str, bool ignore_errors)

6.16.16 nw::from_utf8_by_langid

std::string nw::from_utf8_by_langid(std::string_view str, *LanguageID* id, bool ignore_errors)

6.16.17 nw::get_all_available_feats

std::vector<nw::Feat> nw::get_all_available_feats(const nw::Creature *obj)
Gets all feats for which requirements are met

Note: This is not yet very useful until a level up parameter is added.

6.16.18 nw::gff_to_gffjson

nlohmann::json nw::gff_to_gffjson(const *Gff* &gff)
Convert a *Gff* to JSON (nwn-lib/neverwinter.nim format, I think.)

6.16.19 nw::has_effect_applied

bool nw::has_effect_applied(nw::ObjectBase *obj, nw::EffectType type, int subtype = -1)
Determines if an effect type is applied to an object.

6.16.20 nw::has_feat_successor

std::pair<nw::Feat, int> nw::has_feat_successor(const nw::Creature *obj, nw::Feat feat)
Gets the highest known successor feat.

6.16.21 nw::highest_feat_in_range

`nw::Feat nw::highest_feat_in_range(const nw::Creature *obj, nw::Feat start, nw::Feat end)`

Gets the highest known feat in range [start, end].

6.16.22 nw::home_path

`fs::path nw::home_path()`

Gets user's home path.

6.16.23 nw::init_logger

`void nw::init_logger(int argc, char *argv[])`

Initialize logger.

6.16.24 nw::is_attack_type_hit

`constexpr bool nw::is_attack_type_hit(AttackResult value)`

6.16.25 nw::is_attack_type_miss

`constexpr bool nw::is_attack_type_miss(AttackResult value)`

6.16.26 nw::istream_read

`template<typename T, typename U>`

`std::istream &nw::istream_read(std::istream &stream, T *data, U size)`

Reads from a stream into an arbitrary pointer of type T

6.16.27 nw::itemprop_to_string

`std::string nw::itemprop_to_string(const nw::ItemProperty &ip)`

Converts item property to in-game style string.

6.16.28 nw::kernel::config

`Config &nw::kernel::config()`

Gets configuration options.

6.16.29 nw::kernel::load_module

Module *nw::kernel::load_module(const std::filesystem::path &path, std::string_view manifest = {})

Loads a module.

6.16.30 nw::kernel::max_modifier

template<typename T>

T nw::kernel::max_modifier(const ObjectBase *obj, const *ModifierType* type)

Maxes all modifiers of type

Template Parameters

T –

template<typename T>

T nw::kernel::max_modifier(const ObjectBase *obj, const *ModifierType* type, const ObjectBase *versus)

Maxes all modifiers of type versus an object.

Template Parameters

T –

template<typename T, typename SubType>

T nw::kernel::max_modifier(const ObjectBase *obj, const *ModifierType* type, *SubType* subtype)

Maxes all modifiers of a type and subtype

Template Parameters

- T –
 - U – is some rule subtype
-

template<typename T, typename SubType>

T nw::kernel::max_modifier(const ObjectBase *obj, const *ModifierType* type, *SubType* subtype, const ObjectBase *versus)

Maxes all modifiers of a type and subtype versus another object.

Template Parameters

- T –
- U – is some rule subtype

6.16.31 nw::kernel::objects

inline *ObjectSystem* &nw::kernel::objects()

6.16.32 nw::kernel::resman

inline *Resources* &nw::kernel::resman()

6.16.33 nw::kernel::resolve_master_feat

template<typename T, typename U>

T nw::kernel::resolve_master_feat(const *Creature* *obj, U type, *MasterFeat* mfeat)

Resolves a master feat bonus.

Template Parameters

- **T** – Return type
- **U** – Rule type

Parameters

- **obj** – *Creature* object
- **type** – Rule value
- **mfeat** – Master feat

6.16.34 nw::kernel::resolve_master_feats

template<typename T, typename U, typename **Callback**, typename ...**Args**>

void nw::kernel::resolve_master_feats(const *Creature* *obj, U type, *Callback* cb, *Args*... mfeats)

Resolves an arbitrary number of master feats.

Template Parameters

- **T** – Return type
- **U** – Rule type
- **Callback** – Callback type should be void(T)
- **Args** – *MasterFeat*...

Parameters

- **obj** – *Creature* object
- **type** – Rule value
- **cb** – This parameter will be called with any valid master feat bonus as a parameter.
- **mfeats** – As many master feats as needed

6.16.35 nw::kernel::resolve_modifier

```
template<typename Callback>
bool nw::kernel::resolve_modifier(const ObjectBase *obj, const Modifier &mod, Callback cb, const
                                ObjectBase *versus = nullptr, int32_t subtype = -1)
```

Calculates a modifier.

Template Parameters

Callback – *Modifier* callback function

```
template<typename Callback>
bool nw::kernel::resolve_modifier(const ObjectBase *obj, const ModifierType type, Callback cb)
```

Calculates all modifiers of type

Template Parameters

Callback – *Modifier* callback function

```
template<typename Callback>
bool nw::kernel::resolve_modifier(const ObjectBase *obj, const ModifierType type, const ObjectBase
                                *versus, Callback cb)
```

Calculates all modifiers of type versus an object.

Template Parameters

Callback – *Modifier* callback function

```
template<typename SubType, typename Callback>
bool nw::kernel::resolve_modifier(const ObjectBase *obj, const ModifierType type, SubType subtype,
                                Callback cb)
```

Calculates all modifiers of a type and subtype

Template Parameters

- **U** – is some rule subtype
 - **Callback** – *Modifier* callback function
-

```
template<typename SubType, typename Callback>
bool nw::kernel::resolve_modifier(const ObjectBase *obj, const ModifierType type, SubType subtype, const
                                ObjectBase *versus, Callback cb)
```

Calculates all modifiers of a type and subtype versus another object.

Template Parameters

- **U** – is some rule subtype
- **Callback** – *Modifier* callback function

6.16.36 nw::kernel::rules

inline *Rules* &nw::kernel::rules()

6.16.37 nw::kernel::serial_id_to_obj_type

inline *ObjectType* nw::kernel::serial_id_to_obj_type(std::string_view id)

6.16.38 nw::kernel::services

Services &nw::kernel::services()

Gets services.

6.16.39 nw::kernel::strings

inline *Strings* &nw::kernel::strings()

6.16.40 nw::kernel::sum_master_feats

template<typename T, typename U, typename ...**MasterFeats**>

T nw::kernel::sum_master_feats(const *Creature* *obj, *U* type, *MasterFeats*... mfeats)

Sum master feat bonus.

Template Parameters

- **T** – Return type
- **U** – Rule type
- **Args** – *MasterFeat*...

Parameters

- **obj** – *Creature* object
- **type** – Rule value
- **mfeats** – *MasterFeats*

6.16.41 nw::kernel::sum_modifier

template<typename T>

T nw::kernel::sum_modifier(const ObjectBase *obj, const *ModifierType* type)

Sums all modifiers of type

Template Parameters

T –

Warning: doxygenfunction: Unable to resolve function “sum_modifier” with arguments (const ObjectBase*, const ModifierType, const ObjectBase*) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```
- template<typename T, typename SubType> T sum_modifier(const ObjectBase *obj, const ↵
↵ ModifierType type, SubType subtype)
- template<typename T, typename SubType> T sum_modifier(const ObjectBase *obj, const ↵
↵ ObjectBase *versus, const ModifierType type, SubType subtype)
- template<typename T> T sum_modifier(const ObjectBase *obj, const ModifierType type)
- template<typename T> T sum_modifier(const ObjectBase *obj, const ObjectBase *versus,
↵ const ModifierType type)
```

template<typename T, typename **SubType**>

T nw::kernel::sum_modifier(const ObjectBase *obj, const *ModifierType* type, *SubType* subtype)

Sums all modifiers of a type and subtype

Template Parameters

- **T** –
- **U** – is some rule subtype

Warning: doxygenfunction: Unable to resolve function “sum_modifier” with arguments (const ObjectBase*, const ModifierType, SubType, const ObjectBase*) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```
- template<typename T, typename SubType> T sum_modifier(const ObjectBase *obj, const ↵
↵ ModifierType type, SubType subtype)
- template<typename T, typename SubType> T sum_modifier(const ObjectBase *obj, const ↵
↵ ObjectBase *versus, const ModifierType type, SubType subtype)
- template<typename T> T sum_modifier(const ObjectBase *obj, const ModifierType type)
- template<typename T> T sum_modifier(const ObjectBase *obj, const ObjectBase *versus,
↵ const ModifierType type)
```

6.16.42 nw::kernel::unload_module

void nw::kernel::unload_module()

Unloads currently active module.

6.16.43 nw::knows_feat

bool nw::knows_feat(const nw::Creature *obj, nw::Feat feat)

Checks if an entity knows a given feat.

6.16.44 nw::max_effects_of

```
template<typename T, typename It, typename Extractor = decltype(&effect_extract_int0)>
std::pair<T, It> nw::max_effects_of(It begin, It end, nw::EffectType type, int subtype, Versus vs = {}, Extractor
                                   extractor = &effect_extract_int0) noexcept
```

Finds all applicable effects of a given type / subtype.

Applicable effects are passed to a user supplied callback.

Template Parameters

- **T** – An arbitrary type that can be held in an effect, e.g. a simple integer, a damage roll, etc.
- **It** – An iterator type
- **Extractor** – A function that extracts a value of type T from an *EffectHandle*

Parameters

- **begin** – Start of a range of effect handles of a type/subtype
- **end** – End range of effect handles
- **type** – An effect_type_* constant
- **subtype** – A effect subtype, if no subtype -1 should be passed
- **vs** – *Versus* struct
- **extractor** – A function that extracts the value from a particular effect.

Returns

(result, iterator)

6.16.45 nw::move_file_safely

```
bool nw::move_file_safely(const std::filesystem::path &from, const std::filesystem::path &to)
```

Copies and deletes a file to a new location, overwrites existing.

6.16.46 nw::needs_quote

```
inline bool nw::needs_quote(std::string_view str)
```

6.16.47 nw::operator==

```
bool nw::operator==(const DiceRoll &lhs, const DiceRoll &rhs)
```

```
inline bool nw::operator==(const Null&, const Null&)
```

```
inline bool nw::operator==(const Resource &lhs, const Resource &rhs)
```

```
inline bool nw::operator==(const Resref &lhs, const Resref &rhs)
```

Warning: doxygenfunction: Unable to resolve function “operator==” with arguments (const Selector&, const Selector&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```
- bool operator==(const Ability &rhs) const = default
- bool operator==(const ArmorClass &rhs) const = default
- bool operator==(const AttackType &rhs) const = default
- bool operator==(const BaseItem &rhs) const = default
- bool operator==(const ByteArray &other) const
- bool operator==(const Class &rhs) const = default
- bool operator==(const CombatMode &rhs) const = default
- bool operator==(const Damage &rhs) const = default
- bool operator==(const DamageModType &rhs) const = default
- bool operator==(const DiceRoll &lhs, const DiceRoll &rhs)
- bool operator==(const Disease &rhs) const = default
- bool operator==(const EffectHandle&) const = default
- bool operator==(const EffectType &rhs) const = default
- bool operator==(const EventHandle &rhs) const
- bool operator==(const Feat &rhs) const = default
- bool operator==(const InternedString &rhs) const noexcept = default
- bool operator==(const ItemPropertyType &rhs) const = default
- bool operator==(const LocString &other) const
- bool operator==(const Location&) const = default
- bool operator==(const MasterFeat &rhs) const = default
- bool operator==(const MasterFeatEntry &lhs, const MasterFeatEntry &rhs)
- bool operator==(const MissChanceType &rhs) const = default
- bool operator==(const ModifierType &rhs) const = default
- bool operator==(const Null&, const Null&)
- bool operator==(const Poison &rhs) const = default
- bool operator==(const Race &rhs) const = default
- bool operator==(const Resource &lhs, const Resource &rhs)
- bool operator==(const ResourceData &other) const = default
- bool operator==(const Resref &lhs, const Resref &rhs)
- bool operator==(const Save &rhs) const = default
- bool operator==(const SaveVersus &rhs) const = default
- bool operator==(const Situation &rhs) const = default
- bool operator==(const Skill &rhs) const = default
- bool operator==(const SourcePosition &rhs) const = default
- bool operator==(const SpecialAttack &rhs) const = default
- bool operator==(const Spell &rhs) const = default
- bool operator==(const SpellEntry&) const = default
- bool operator==(const SpellSchool &rhs) const = default
- bool operator==(const Variant &rhs) const noexcept
- bool operator==(const Versus &rhs) const = default
- bool operator==(const WeaponModifier &lhs, const WeaponModifier &rhs)
```


6.16.48 nw::operator<<

std::ostream &nw::operator<<(std::ostream &out, const *Resource* &res)

std::ostream &nw::operator<<(std::ostream &out, const *Resref* &resref)

Warning: doxygenfunction: Unable to resolve function “operator<<” with arguments (std::ostream&, const TwoDA&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

- std::ostream &operator<<(std::ostream &out, const Resource &res)
- std::ostream &operator<<(std::ostream &out, const Resref &resref)
- std::ostream &operator<<(std::ostream &out, const TwoDA &tda)
- std::ostream &operator<<(std::ostream &out, const TwoDA &tda)
- std::ostream &operator<<(std::ostream &out, const nw::script::NssToken &token)

inline std::ostream &operator<<(std::ostream &out, const nw::script::NssToken &token)

6.16.49 nw::operator<

bool nw::operator<(const *DiceRoll* &lhs, const *DiceRoll* &rhs)

inline bool nw::operator<(const *Null*&, const *Null*&)

inline bool nw::operator<(const *Resource* &lhs, const *Resource* &rhs)

inline bool nw::operator<(const *Resref* &lhs, const *Resref* &rhs)

Warning: doxygenfunction: Unable to resolve function “operator<” with arguments (const Selector&, const Selector&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

- bool operator<(const DiceRoll &lhs, const DiceRoll &rhs)
- bool operator<(const EventHandle &rhs) const
- bool operator<(const MasterFeatEntry &lhs, const MasterFeatEntry &rhs)
- bool operator<(const Modifier &lhs, const Modifier &rhs)
- bool operator<(const Null&, const Null&)
- bool operator<(const Resource &lhs, const Resource &rhs)
- bool operator<(const Resref &lhs, const Resref &rhs)
- bool operator<(const Variant &rhs) const noexcept
- bool operator<(const WeaponModifier &lhs, const WeaponModifier &rhs)

6.16.50 nw::ostream_write

template<typename T, typename U>

std::ostream &nw::ostream_write(std::ostream &stream, const T *data, U size)

Writes to a stream from nto an arbitrary pointer of type T

6.16.51 nw::probe_nwn_install

InstallInfo nw::probe_nwn_install(*GameVersion* version)

Probes for an NWN install

Parameters

only – probe for specific version

6.16.52 nw::resolve_effects_of

```
template<typename T, typename It, typename Callback, typename Extractor, typename Comp = std::greater<T>>
It nw::resolve_effects_of(It begin, It end, nw::EffectType type, int subtype, Versus vs, Callback cb, Extractor
                        extractor, Comp comparator = std::greater<T>{ }) noexcept
```

Finds all applicable effects of a given type / subtype.

Applicable effects are passed to a user supplied callback.

Template Parameters

- **T** – An arbitrary type that can be held in an effect, e.g. a simple integer, a damage roll, etc.
- **It** – An iterator type
- **Callback** – A function with the signature void(T) supplied by the user
- **Extractor** – A function that extracts a value of type T from an *EffectHandle*
- **Comp** – A comparator taking two T values and returns **true** if the first is greater (Default std::greater<T>)

Parameters

- **begin** – Start of a range of effect handles of a type/subtype
- **end** – End range of effect handles
- **type** – An effect_type_* constant
- **subtype** – A effect subtype, if no subtype -1 should be passed
- **vs** – *Versus* struct
- **cb** – A user defined callback that will be passed an applicable effect's value.
- **extractor** – A function that extracts the value from a particular effect.
- **comparator** – A function taking two T values and returns **true** if the first is greater (Default std::greater<T>)

Returns

iterator to passed last processed effect

6.16.53 nw::reverse

```
template<typename T>
reversion_wrapper<T> nw::reverse(T &&iterable)
```

Creates a reverse iterator for range-for loops.

6.16.54 nw::roll_dice

```
int nw::roll_dice(DiceRoll roll, int multiplier)
```

Rolls a set of dice

Parameters

- **roll** – Dice to roll
- **multiplier** – Roll dice n times

6.16.55 nw::roll_dice_explode

```
int nw::roll_dice_explode(DiceRoll dice, int on, int limit)
```

Rolls a set exploding of dice

Parameters

- **dice** – Dice to roll
- **on** – Value to explode on, default is the sides of the dice
- **limit** – Limit of the number of explosions, default limit is 20

6.16.56 nw::string::desanitize_colors

```
std::string nw::string::desanitize_colors(std::string str)
```

Converts color hex to bytes <cXXXXXX> -> <c\x\x\x>. Note: MOVE in the string.

6.16.57 nw::string::endswith

```
bool nw::string::endswith(std::string_view str, std::string_view suffix)
```

Determines if a string ends with a given suffix.

6.16.58 nw::string::from

```
template<typename T>
std::optional<T> nw::string::from(std::string_view str) = delete
```

String conversions to integral and floating pointing types.

Note: Even those tho this function is deleted, see Template Parameters for specilized versions.

Template Parameters

T – bool, int32_t, uint32_t, int64_t, uint64_t, float, double

Parameters

str – Input string

Returns

std::optional<T>

6.16.59 nw::string::glob_to_regex

std::regex nw::string::glob_to_regex(std::string_view pattern, bool icase = false)

Converts a glob pattern to a regex.

Note: This only supports ?, *, and [seq]

Parameters

- **pattern** – E.g, “file?_nam*.ext”
- **icase** – If true returns a case insensitive regex

Returns

std::regex

6.16.60 nw::string::icmp

bool nw::string::icmp(std::string_view first, std::string_view second)

Case insensitive comparison.

6.16.61 nw::string::join

std::string nw::string::join(const std::vector<std::string> &strings, const char *delim = " ")

Joins a vector of strings.

Parameters

- **strings** – Vector of strings.
- **delim** – Separator. Default “ ”

Returns

std::string

6.16.62 nw::string::ltrim_in_place

std::string *nw::string::ltrim_in_place(std::string *str)

Trims left in place.

6.16.63 `nw::string::rtrim_in_place`

`std::string *nw::string::rtrim_in_place(std::string *str)`

Trims right in place.

6.16.64 `nw::string::sanitize_colors`

`std::string nw::string::sanitize_colors(std::string str)`

Converts color bytes to hex `<c\x\x> -> <cXXXXXX>`. Note: MOVE in the string.

6.16.65 `nw::string::split`

`std::vector<std::string> nw::string::split(const std::string &str, char delim, bool skipEmpty = true, bool trimmed = true)`

Splits a string into an vector of strings.

Parameters

- **str** – String to split
- **delim** – Delimiter
- **skipEmpty** – Ignore empty strings
- **trimmed** – Trim strings after split

Returns

`std::vector<std::string>`

6.16.66 `nw::string::startswith`

`bool nw::string::startswith(std::string_view str, std::string_view prefix)`

Determines if a string starts with a given prefix.

6.16.67 `nw::string::tolower`

`void nw::string::tolower(std::string *str)`

Converts string to lowercase, in place.

6.16.68 `nw::string::trim_in_place`

`std::string *nw::string::trim_in_place(std::string *str)`

Trims string in place.

6.16.69 nw::sum_effects_of

```
template<typename T, typename It, typename Extractor = decltype(&effect_extract_int0), typename Comp =
std::greater<T>>
```

```
std::pair<T, It> nw::sum_effects_of(It begin, It end, nw::EffectType type, int subtype, Versus vs = {}, Extractor
    extractor = &effect_extract_int0, Comp comparator = std::greater<T>{})
    noexcept
```

Finds all applicable effects of a given type / subtype.

Applicable effects are passed to a user supplied callback.

Template Parameters

- **T** – An arbitrary type that can be held in an effect, e.g. a simple integer, a damage roll, etc.
- **It** – An iterator type
- **Extractor** – A function that extracts a value of type T from an *EffectHandle*
- **Comp** – A comparator taking two T values and returns `true` if the first is greater (Default `std::greater<T>`)

Parameters

- **begin** – Start of a range of effect handles of a type/subtype
- **end** – End range of effect handles
- **type** – An `effect_type_*` constant
- **subtype** – A effect subtype, if no subtype -1 should be passed
- **vs** – *Versus* struct
- **extractor** – A function that extracts the value from a particular effect.
- **comparator** – A function taking two T values and returns `true` if the first is greater (Default `std::greater<T>`)

Returns

(result, iterator)

6.16.70 nw::to_base64

```
std::string nw::to_base64(std::span<const uint8_t> bytes)
```

Converts span of bytes to a base64 string.

6.16.71 nw::to_bool

```
template<typename T>
```

```
constexpr bool to_bool(const T thing)
```

Converts enum flag to boolean.

6.16.72 nw::to_json

void nw::to_json(nlohmann::json &json, const *ByteArray* &ba)

Warning: doxygenfunction: Unable to resolve function “to_json” with arguments (nlohmann::json&, const Dialog&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile, ObjectType object_type) const
- nlohmann::json to_json(nw::ResourceType::type restype) const
- void to_json(nlohmann::json &j, ObjectID id)
- void to_json(nlohmann::json &j, ObjectType type)
- void to_json(nlohmann::json &j, const Ability &type)
- void to_json(nlohmann::json &j, const ArmorClass &type)
- void to_json(nlohmann::json &j, const AttackType &type)
- void to_json(nlohmann::json &j, const BaseItem &type)
- void to_json(nlohmann::json &j, const Class &type)
- void to_json(nlohmann::json &j, const CombatMode &type)
- void to_json(nlohmann::json &j, const Damage &type)
- void to_json(nlohmann::json &j, const DamageModType &type)
- void to_json(nlohmann::json &j, const Disease &type)
- void to_json(nlohmann::json &j, const EffectType &type)
- void to_json(nlohmann::json &j, const Feat &type)
- void to_json(nlohmann::json &j, const ItemPropertyType &type)
- void to_json(nlohmann::json &j, const LocString &loc)
- void to_json(nlohmann::json &j, const MasterFeat &type)
- void to_json(nlohmann::json &j, const MissChanceType &type)
- void to_json(nlohmann::json &j, const ModifierType &type)
- void to_json(nlohmann::json &j, const Poison &type)
- void to_json(nlohmann::json &j, const Race &type)
- void to_json(nlohmann::json &j, const Resource &r)
- void to_json(nlohmann::json &j, const Resref &r)
```

```
- void to_json(nlohmann::json &j, const Save &type)
- void to_json(nlohmann::json &j, const SaveVersus &type)
- void to_json(nlohmann::json &j, const Situation &type)
- void to_json(nlohmann::json &j, const Skill &type)
- void to_json(nlohmann::json &j, const SpecialAttack &type)
- void to_json(nlohmann::json &j, const Spell &type)
- void to_json(nlohmann::json &j, const SpellEntry &spell)
- void to_json(nlohmann::json &j, const SpellSchool &type)
- void to_json(nlohmann::json &j, const ByteArray &ba)
- void to_json(nlohmann::json &j, const LevelUp &entry)
- void to_json(nlohmann::json &j, const Location &loc)
- void to_json(nlohmann::json &j, const Saves &saves)
```

Warning: doxygenfunction: Unable to resolve function “to_json” with arguments (nlohmann::json&, const DialogNode&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile, ObjectType object_type) const
- nlohmann::json to_json(nw::ResourceType::type restype) const
- void to_json(nlohmann::json &j, ObjectID id)
- void to_json(nlohmann::json &j, ObjectType type)
- void to_json(nlohmann::json &j, const Ability &type)
- void to_json(nlohmann::json &j, const ArmorClass &type)
- void to_json(nlohmann::json &j, const AttackType &type)
- void to_json(nlohmann::json &j, const BaseItem &type)
- void to_json(nlohmann::json &j, const Class &type)
- void to_json(nlohmann::json &j, const CombatMode &type)
- void to_json(nlohmann::json &j, const Damage &type)
- void to_json(nlohmann::json &j, const DamageModType &type)
- void to_json(nlohmann::json &j, const Disease &type)
```



```

- void to_json(nlohmann::json &j, const EffectType &type)
- void to_json(nlohmann::json &j, const Feat &type)
- void to_json(nlohmann::json &j, const ItemPropertyType &type)
- void to_json(nlohmann::json &j, const LocString &loc)
- void to_json(nlohmann::json &j, const MasterFeat &type)
- void to_json(nlohmann::json &j, const MissChanceType &type)
- void to_json(nlohmann::json &j, const ModifierType &type)
- void to_json(nlohmann::json &j, const Poison &type)
- void to_json(nlohmann::json &j, const Race &type)
- void to_json(nlohmann::json &j, const Resource &r)
- void to_json(nlohmann::json &j, const Resref &r)
- void to_json(nlohmann::json &j, const Save &type)
- void to_json(nlohmann::json &j, const SaveVersus &type)
- void to_json(nlohmann::json &j, const Situation &type)
- void to_json(nlohmann::json &j, const Skill &type)
- void to_json(nlohmann::json &j, const SpecialAttack &type)
- void to_json(nlohmann::json &j, const Spell &type)
- void to_json(nlohmann::json &j, const SpellEntry &spell)
- void to_json(nlohmann::json &j, const SpellSchool &type)
- void to_json(nlohmann::json &j, const ByteArray &ba)
- void to_json(nlohmann::json &j, const LevelUp &entry)
- void to_json(nlohmann::json &j, const Location &loc)
- void to_json(nlohmann::json &j, const Saves &saves)

```

Warning: doxygenfunction: Unable to resolve function “to_json” with arguments (nlohmann::json&, const DialogPtr&) in doxygen xml output for project “rollNW” from directory: build/xml/. Potential matches:

```

- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json() const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile) const
- nlohmann::json to_json(SerializationProfile profile, ObjectType object_type) const
- nlohmann::json to_json(nw::ResourceType::type restype) const

```

```
- void to_json(nlohmann::json &j, ObjectID id)
- void to_json(nlohmann::json &j, ObjectType type)
- void to_json(nlohmann::json &j, const Ability &type)
- void to_json(nlohmann::json &j, const ArmorClass &type)
- void to_json(nlohmann::json &j, const AttackType &type)
- void to_json(nlohmann::json &j, const BaseItem &type)
- void to_json(nlohmann::json &j, const Class &type)
- void to_json(nlohmann::json &j, const CombatMode &type)
- void to_json(nlohmann::json &j, const Damage &type)
- void to_json(nlohmann::json &j, const DamageModType &type)
- void to_json(nlohmann::json &j, const Disease &type)
- void to_json(nlohmann::json &j, const EffectType &type)
- void to_json(nlohmann::json &j, const Feat &type)
- void to_json(nlohmann::json &j, const ItemPropertyType &type)
- void to_json(nlohmann::json &j, const LocString &loc)
- void to_json(nlohmann::json &j, const MasterFeat &type)
- void to_json(nlohmann::json &j, const MissChanceType &type)
- void to_json(nlohmann::json &j, const ModifierType &type)
- void to_json(nlohmann::json &j, const Poison &type)
- void to_json(nlohmann::json &j, const Race &type)
- void to_json(nlohmann::json &j, const Resource &r)
- void to_json(nlohmann::json &j, const Resref &r)
- void to_json(nlohmann::json &j, const Save &type)
- void to_json(nlohmann::json &j, const SaveVersus &type)
- void to_json(nlohmann::json &j, const Situation &type)
- void to_json(nlohmann::json &j, const Skill &type)
- void to_json(nlohmann::json &j, const SpecialAttack &type)
- void to_json(nlohmann::json &j, const Spell &type)
- void to_json(nlohmann::json &j, const SpellEntry &spell)
- void to_json(nlohmann::json &j, const SpellSchool &type)
- void to_json(nlohmann::json &j, const ByteArray &ba)
- void to_json(nlohmann::json &j, const LevelUp &entry)
- void to_json(nlohmann::json &j, const Location &loc)
- void to_json(nlohmann::json &j, const Saves &saves)
```

```
void nw::to_json(nlohmann::json &j, const Location &loc)
```

```
void nw::to_json(nlohmann::json &j, const LocString &loc)
```

```
void nw::to_json(nlohmann::json &j, const Resource &r)
```

```
    nlohmann::json specialization
```

```
void nw::to_json(nlohmann::json &j, const Resref &r)
```

```
    nlohmann::json specialization
```

```
void nw::to_json(nlohmann::json &j, const Saves &saves)
```

```
void nw::to_json(nlohmann::json &j, const SpellEntry &spell)
```

```
void nw::to_json(nlohmann::json &j, ObjectID id)
```

```
    nlohmann::json specialization
```

```
void nw::to_json(nlohmann::json &j, ObjectType type)
```

```
    nlohmann::json specialization
```

6.16.73 nw::to_underlying

template<class **Enum**>
constexpr std::underlying_type_t<*Enum*> nw::to_underlying(*Enum* e) noexcept
Gets the underlying value of an enum.

Note: Replace when C++23 comes around

Template Parameters

Enum – Any enum type.

6.16.74 nw::to_utf8

std::string nw::to_utf8(std::string_view str, std::string_view encoding, bool ignore_errors = false)
Convert to utf8.

6.16.75 nw::to_utf8_by_global_lang

std::string nw::to_utf8_by_global_lang(std::string_view str, bool ignore_errors)

6.16.76 nw::to_utf8_by_langid

std::string nw::to_utf8_by_langid(std::string_view str, *LanguageID* id, bool ignore_errors)

6.16.77 nwn1::base_attack_bonus

int nwn1::base_attack_bonus(const nw::Creature *obj)
Calculates base attack bonus.

6.16.78 nwn1::effect_ability_modifier

nw::Effect *nwn1::effect_ability_modifier(nw::Ability ability, int modifier)
Creates an ability modifier effect.

6.16.79 nwn1::effect_armor_class_modifier

nw::Effect *nwn1::effect_armor_class_modifier(nw::ArmorClass type, int modifier)
Creates an armor class modifier effect.

6.16.80 nwn1::effect_attack_modifier

`nw::Effect *nwn1::effect_attack_modifier(nw::AttackType attack, int modifier)`

Creates an attack modifier effect.

6.16.81 nwn1::effect_concealment

`nw::Effect *nwn1::effect_concealment(int value, nw::MissChanceType type = miss_chance_type_normal)`

Creates concealment effect.

6.16.82 nwn1::effect_haste

`nw::Effect *nwn1::effect_haste()`

Creates a haste effect.

6.16.83 nwn1::effect_miss_chance

`nw::Effect *nwn1::effect_miss_chance(int value, nw::MissChanceType type = miss_chance_type_normal)`

Creates miss chance effect.

6.16.84 nwn1::effect_skill_modifier

`nw::Effect *nwn1::effect_skill_modifier(nw::Skill skill, int modifier)`

Creates an skill modifier effect.

6.16.85 nwn1::get_ability_modifier

`int nwn1::get_ability_modifier(const nw::Creature *obj, nw::Ability ability, bool base = false)`

Gets creatures ability modifier.

6.16.86 nwn1::get_ability_score

`int nwn1::get_ability_score(const nw::Creature *obj, nw::Ability ability, bool base = false)`

Gets creatures ability score.

6.16.87 nwn1::get_caster_level

`int nwn1::get_caster_level(nw::Creature *obj, nw::Class class_)`

Gets creature's caster level for specified class.

6.16.88 nwn1::get_dex_modifier

int nwn1::get_dex_modifier(const nw::Creature *obj)
 Gets creatures dexterity modifier as modified by armor, etc.

6.16.89 nwn1::get_max_hitpoints

int nwn1::get_max_hitpoints(const nw::ObjectBase *obj)
 Gets objects maximum hit points.

6.16.90 nwn1::get_skill_rank

int nwn1::get_skill_rank(const nw::Creature *obj, nw::Skill skill, nw::ObjectBase *versus = nullptr, bool base = false)
 Determines creatures skill rank.

6.16.91 nwn1::get_spell_dc

int nwn1::get_spell_dc(nw::Creature *obj, nw::Class class_, nw::Spell spell)
 Gets spell DC.

6.16.92 nwn1::get_weapon_by_attack_type

nw::Item *nwn1::get_weapon_by_attack_type(const nw::Creature *obj, nw::AttackType type)
 Gets an equipped weapon by attack type.

6.16.93 nwn1::has_effect_type_applied

bool nwn1::has_effect_type_applied(nw::ObjectBase *obj, nw::EffectType type)
 Determines if object has effect type applied.

6.16.94 nwn1::is_creature_weapon

bool nwn1::is_creature_weapon(const nw::Item *item)
 Determines if item is creature weapon.

6.16.95 nwn1::is_ranged_weapon

bool nwn1::is_ranged_weapon(const nw::Item *item)
 Determines if item is ranged weapon.

6.16.96 nwn1::is_shield

bool nwn1::is_shield(nw::BaseItem baseitem)

Determines if item is a shield.

6.16.97 nwn1::is_unarmed_weapon

bool nwn1::is_unarmed_weapon(const nw::Item *item)

Determines if item is unarmed weapon.

6.16.98 nwn1::meets_requirements

Warning: doxygenfunction: Cannot find function “nwn1::meets_requirements” in doxygen xml output for project “rollNW” from directory: build/xml/

6.16.99 nwn1::qual::ability

nw::Qualifier nwn1::qual::ability(nw::Ability id, int min, int max)

6.16.100 nwn1::qual::alignment

nw::Qualifier nwn1::qual::alignment(nw::AlignmentAxis axis, nw::AlignmentFlags flags)

6.16.101 nwn1::qual::class_level

nw::Qualifier nwn1::qual::class_level(nw::Class id, int min, int max)

6.16.102 nwn1::qual::feat

nw::Qualifier nwn1::qual::feat(nw::Feat id)

6.16.103 nwn1::qual::level

nw::Qualifier nwn1::qual::level(int min, int max)

6.16.104 nwn1::qual::race

nw::Qualifier nwn1::qual::race(nw::Race id)

6.16.105 nwn1::qual::skill

nw::Qualifier nwn1::qual::skill(nw::Skill id, int min, int max)

6.16.106 nwn1::resolve_attack

std::unique_ptr<nw::AttackData> nwn1::resolve_attack(nw::Creature *attacker, nw::ObjectBase *target)

Resolves an attack

Note: All transient book keeping is done at the toplevel of this function, any other that attacker and/or target are passed to, are passed as const.

6.16.107 nwn1::resolve_attack_bonus

int nwn1::resolve_attack_bonus(const nw::Creature *obj, nw::AttackType type, const nw::ObjectBase *versus = nullptr)

Resolves attack bonus.

6.16.108 nwn1::resolve_attack_damage

std::unique_ptr<nw::AttackData> nwn1::resolve_attack(nw::Creature *attacker, nw::ObjectBase *target)

Resolves an attack

Note: All transient book keeping is done at the toplevel of this function, any other that attacker and/or target are passed to, are passed as const.

6.16.109 nwn1::resolve_attack_roll

nw::AttackResult nwn1::resolve_attack_roll(const nw::Creature *obj, nw::AttackType type, const nw::ObjectBase *vs, nw::AttackData *data = nullptr)

Resolves an attack roll.

6.16.110 nwn1::resolve_attack_type

`nw::AttackType nwn1::resolve_attack_type(const nw::Creature *obj)`

Resolves attack type.

6.16.111 nwn1::resolve_concealment

`std::pair<int, bool> nwn1::resolve_concealment(const nw::ObjectBase *obj, const nw::ObjectBase *target, bool vs_ranged)`

Resolves an concealment - i.e. the highest of concealment and miss chance

Returns

Concealment amount, bool that if `true` is from attacking creature i.e miss chance, if `false` from target object i.e. concealment

6.16.112 nwn1::resolve_creature_damage

`nw::DiceRoll nwn1::resolve_creature_damage(const nw::Creature *attacker, nw::Item *weapon)`

Resolves creature weapon damage.

6.16.113 nwn1::resolve_critical_multiplier

`int nwn1::resolve_critical_multiplier(const nw::Creature *obj, nw::AttackType type, const nw::ObjectBase *vs = nullptr)`

Resolves critical multiplier.

6.16.114 nwn1::resolve_critical_threat

`int nwn1::resolve_critical_threat(const nw::Creature *obj, nw::AttackType type)`

Resolves critical threat range.

6.16.115 nwn1::resolve_damage_modifiers

`void nwn1::resolve_damage_modifiers(const nw::Creature *obj, const nw::ObjectBase *versus, nw::AttackData *data)`

Resolves damage modifiers - soak, resist, immunity.

6.16.116 nwn1::resolve_dual_wield_penalty

`std::pair<int, int> nwn1::resolve_dual_wield_penalty(const nw::Creature *obj)`

Resolves dual-wield penalty.

6.16.117 nwn1::resolve_iteration_penalty

int nwn1::resolve_iteration_penalty(const nw::Creature *attacker, nw::AttackType type)

Resolves iteration penalty.

6.16.118 nwn1::resolve_number_of_attacks

std::pair<int, int> nwn1::resolve_number_of_attacks(const nw::Creature *obj)

Resolves number of attacks.

6.16.119 nwn1::resolve_saving_throw

bool nwn1::resolve_saving_throw(const nw::ObjectBase *obj, nw::Save type, int dc, nw::SaveVersus type_vs, const nw::ObjectBase *versus)

6.16.120 nwn1::resolve_skill_check

bool nwn1::resolve_skill_check(const nw::Creature *obj, nw::Skill skill, int dc, nw::ObjectBase *versus)

6.16.121 nwn1::resolve_unarmed_damage

nw::DiceRoll nwn1::resolve_unarmed_damage(const nw::Creature *attacker)

Resolve unarmed base damage.

6.16.122 nwn1::resolve_weapon_damage

nw::DiceRoll nwn1::resolve_weapon_damage(const nw::Creature *attacker, nw::BaseItem item)

Resolve weapon base damage

Note: Includes specialization and arcane archer bonuses

6.16.123 nwn1::resolve_weapon_damage_flags

nw::DamageFlag nwn1::resolve_weapon_damage_flags(const nw::Item *weapon)

Resolve weapon base damage flags.

6.16.124 nwn1::saving_throw

int nwn1::saving_throw(const nw::ObjectBase *obj, nw::Save type, nw::SaveVersus type_vs, const nw::ObjectBase *versus)

6.16.125 nwn1::sel::ability

nw::Selector nwn1::sel::ability(nw::Ability id)

6.16.126 nwn1::sel::alignment

nw::Selector nwn1::sel::alignment(nw::AlignmentAxis id)

6.16.127 nwn1::sel::class_level

nw::Selector nwn1::sel::class_level(nw::Class id)

6.16.128 nwn1::sel::feat

nw::Selector nwn1::sel::feat(nw::Feat id)

6.16.129 nwn1::sel::level

nw::Selector nwn1::sel::level()

6.16.130 nwn1::sel::race

nw::Selector nwn1::sel::race()

6.16.131 nwn1::sel::skill

nw::Selector nwn1::sel::skill(nw::Skill id)

6.16.132 nwn1::selector

nw::RuleValue nwn1::selector(const nw::Selector &selector, const nw::ObjectBase *obj)

6.16.133 nwn1::weapon_is_finessable

bool nwn1::weapon_is_finessable(const nw::Creature *obj, nw::Item *weapon)

Determines if a weapon is finessable.

6.16.134 nwn1::weapon_iteration

int nwn1::weapon_iteration(const nw::Creature *obj, const nw::Item *weapon)

Calculates weapon iteration, e.g. 5 or 3 for monk weapons.

6.17 typedefs

6.17.1 nw::AbilityArray

using nw::AbilityArray = RuleTypeArray<Ability, AbilityInfo>

Ability singleton component.

6.17.2 nw::BaseItemArray

using nw::BaseItemArray = RuleTypeArray<BaseItem, BaseItemInfo>

BaseItem singleton component.

6.17.3 nw::DamageFlag

using nw::DamageFlag = RuleFlag<Damage, 32>

6.17.4 nw::EquipItem

using nw::EquipItem = std::variant<Resref, Item*>

6.17.5 nw::FeatArray

using nw::FeatArray = RuleTypeArray<Feat, FeatInfo>

Feat Singleton Component.

6.17.6 nw::LocalVarTable

```
using nw::LocalVarTable = absl::flat_hash_map<std::string, LocalVar>
```

6.17.7 nw::ModifierFunction

```
using nw::ModifierFunction = std::function<ModifierResult(const ObjectBase*)>
```

6.17.8 nw::ModifierInputs

Warning: doxygentypedef: Cannot find typedef “nw::ModifierInputs” in doxygen xml output for project “rollNW” from directory: build/xml/

6.17.9 nw::ModifierOutputs

Warning: doxygentypedef: Cannot find typedef “nw::ModifierOutputs” in doxygen xml output for project “rollNW” from directory: build/xml/

6.17.10 nw::ModifierResult

```
using nw::ModifierResult = Variant<int, float, DamageRoll>
```

6.17.11 nw::ModifierVariant

```
using nw::ModifierVariant = Variant<int, float, DamageRoll, ModifierFunction, ModifierSubFunction, ModifierVsFunction, ModifierSubVsFunction>
```

6.17.12 nw::RaceArray

```
using nw::RaceArray = RuleTypeArray<Race, RaceInfo>  
    Race singleton component.
```

6.17.13 nw::RuleValue

using nw::RuleValue = *Variant*<int32_t, float, std::string>

6.17.14 nw::SkillArray

using nw::SkillArray = *RuleTypeArray*<*Skill*, *SkillInfo*>
Singleton Component for Skills.

6.17.15 nw::SpellArray

using nw::SpellArray = *RuleTypeArray*<*Spell*, *SpellInfo*>
Spell singleton component.

6.17.16 nw::sqlite3_ptr

using nw::sqlite3_ptr = std::unique_ptr<sqlite3, void (*)(sqlite3*)>
sqlite3 database pointer wrapper

6.17.17 nw::unique_container

using nw::unique_container = std::unique_ptr<*Container*>

6.18 rollnw

class rollnw.Appearance

Class containing creature's appearance

body_parts: *BodyParts*

body_parts

hair: int

hair

id: int

Index into appearance.2da

phenotype: int

phenotype

portrait_id: int

Index into portraits.2da

skin: int

skin

```
    tail: int
        tail
    tattoo1: int
        tattoo1
    tattoo2: int
        tattoo2
    wings: int
        wings
class rollnw.Area
    Area object
    comments: str
    creator_id: int
    creatures: List[Creature]
    doors: List[Door]
    encounters: List[Encounter]
    flags: AreaFlags
    height: int
    id: int
    items: List[Item]
    json_archive_version: ClassVar[int]
    listen_check_mod: int
    loadscreen: int
    name: LocString
    no_rest: int
    object_type: ClassVar[int]
    placeables: List[Placeable]
    pvp: int
    scripts: AreaScripts
    shadow_opacity: int
    skybox: int
    sounds: List[Sound]
    spot_check_mod: int
    stores: List[Store]
```

```
    tiles: List[Tile]
    tileset: str
    triggers: List[Trigger]
    version: int
    waypoints: List[Waypoint]
    weather: AreaWeather
    width: int

flag rollnw.AreaFlags(value)
    Valid values are as follows:
    interior = <AreaFlags.interior: 1>
    underground = <AreaFlags.underground: 2>
    natural = <AreaFlags.natural: 4>

class rollnw.AreaScripts
    Area's scripts
    on_enter: str
    on_exit: str
    on_heartbeat: str
    on_user_defined: str

class rollnw.AreaWeather
    Area's weather
    chance_lightning: int
    chance_rain: int
    chance_snow: int
    color_moon_ambient: int
    color_moon_diffuse: int
    color_moon_fog: int
    color_sun_ambient: int
    color_sun_diffuse: int
    color_sun_fog: int
    day_night_cycle: int
    fog_clip_distance: int
    fog_moon_amount: int
```

```
fog_sun_amount: int
is_night: int
lighting_scheme: int
moon_shadows: int
sun_shadows: int
wind_power: int

class rollnw.AttackData
    Class aggregating attack data
    Attributes:
        armor_class: int
        attack_bonus: int
        attack_roll: int
        attacker: Creature
        concealment: int
        is_ranged_attack: bool
        iteration_penalty: int
        multiplier: int
        nth_attack: int
        result: AttackResult
        target: ObjectBase
        target_is_creature: bool
        target_state: int
        threat_range: int
        type: int

enum rollnw.AttackResult(value)
    Attack Result Type
        Member Type
            int

    Valid values are as follows:
    hit_by_auto_success = <AttackResult.hit_by_auto_success: 1>
    hit_by_critical = <AttackResult.hit_by_critical: 2>
    hit_by_roll = <AttackResult.hit_by_roll: 3>
```



```
miss_by_auto_fail = <AttackResult.miss_by_auto_fail: 4>
miss_by_concealment = <AttackResult.miss_by_concealment: 5>
miss_by_miss_chance = <AttackResult.miss_by_miss_chance: 6>
miss_by_roll = <AttackResult.miss_by_roll: 7>
```

class rollnw.BodyParts

Class containing references to creature's body parts

```
belt: int
bicep_left: int
bicep_right: int
foot_left: int
foot_right: int
forearm_left: int
forearm_right: int
hand_left: int
hand_right: int
head: int
neck: int
pelvis: int
shin_left: int
shin_right: int
shoulder_left: int
shoulder_right: int
thigh_left: int
thigh_right: int
```

class rollnw.ClassEntry

Class level data

```
id: int
level: int
spells: SpellBook
```

class rollnw.CombatInfo

Class containing combat related data

```
ac_armor_base: int
```

```
ac_natural_bonus: int
ac_shield_base: int
combat_mode: int
size_ab_modifier: int
size_ac_modifier: int
target_state: int
```

```
class rollnw.Common
```

Class containing attributes common to all objects

```
comment: str
locals: LocalData
location: Location
name: LocString
palette_id: int
resref: str
tag: str
```

```
class rollnw.Container
```

Base container interface

```
all()
    Get all resources

contains(res: Resource | str) → bool
    Get if container contains resource

demand(res: Resource | str) → bytes
    Reads resource data, empty ByteArray if no match.

extract(pattern, output) → int
    Extract elements from a container by regex

extract_by_glob(glob: str, output: str) → int
    Extract elements from a container by glob pattern

name() → str
    Equivalent to basename path()

path() → str
    Path to container, for basic containers, should be canonical

size() → int
    Gets the number of resources, if applicable, of the container

stat(res) → ResourceDescriptor
    Get some general data about a resource
```

valid() → bool

Return true if loaded, false if not.

working_directory() → str

Get container working directory

class rollnw.Creature

Class that represents a Creature object

appearance: *Appearance*

bodybag: int

chunk_death: int

common: *Common*

conversation: str

Dialog resref

cr: float

cr_adjust: int

decay_time: int

deity: str

description: *LocString*

disarmable: int

property equipment: *Equips*

Gets creatures equipped items

faction_id: int

static from_dict(value: dict)

Constructs object from python dict.

static from_file(path: str)

Constructs object from file. The file can be JSON or Gff.

gender: int

good_evil: int

property history: *LevelHistory*

Gets creatures level history

hp: int

hp_current: int

hp_max: int

immortal: int

interruptable: int

```
property inventory: Inventory
    Gets creatures inventory
json_archive_version: ClassVar[int]
lawful_chaotic: int
levels: LevelStats
lootable: int
name_first: LocString
name_last: LocString
object_type: ClassVar[int]
pc: int
perception_range: float
plot: int
race: int
scripts: CreatureScripts
soundset: str
starting_package: int
stats: CreatureStats
    Offensive and defensive stats.
subrace: str
walkrate: int
```

```
class rollnw.CreatureScripts
    A class containing a creature's script set.
    on_attacked: str
    on_blocked: str
    on_conversation: str
    on_damaged: str
    on_death: str
    on_disturbed: str
    on_endround: str
    on_heartbeat: str
    on_perceived: str
    on_rested: str
```

```
    on_spawn: str
    on_spell_cast_at: str
    on_user_defined: str

class rollnw.CreatureStats
    Implementation of a creature's general attributes and stats
    add_feat(feat) → bool
        Attempts to add a feat to a creature, returning true if successful
    get_ability_score(id: int)
        Gets an ability score
    get_skill_rank(id: int)
        Gets a skill rank
    has_feat(feat) → bool
        Determines if creature has feat
    set_ability_score(id: int, value: int) → bool
        Sets an ability score, returning true if successful
    set_skill_rank(id: int, value: int) → bool
        Sets a skill rank, returning true if successful

class rollnw.Dialog
    add() → DialogPtr
        Adds empty Dialog Pointer and Node
    add_ptr(ptr: DialogPtr, is_link: bool = False) → DialogPtr
        Adds Dialog Pointer, if is_link is false no new pointer or node is created. if is_link is true a new pointer
        will created with the node copied from input pointer.
    add_string(value: str, lang: LanguageID = LanguageID.english, feminine: bool = False) → DialogPtr
        Adds Dialog Pointer and Node with string value set
    delay_entry: int = 0
    delay_reply: int = 0
    delete_ptr(ptr: DialogPtr)
        Deletes a dialog pointer @warning ptr should be removed from / not added to a dialog prior to deletion
    static from_file(path: str) → Dialog
        Creates a dialog from a GFF or rollnw JSON file
    json_archive_version: ClassVar[int]
    prevent_zoom: bool = False
    remove_ptr(ptr: DialogPtr)
        Removes Dialog Ptr from underlying node
    restype: ClassVar[ObjectType]
```

save(*path: str*)

Saves a dialog to file, valid extentions are “.dlg” and “.dlg.json”

script_abort: **str**

script_end: **str**

valid() → **bool**

Checks id dialog was successfully parsed

word_count: **int** = 0

enum rollnw.DialogAnimation(*value*)

Member Type

int

Valid values are as follows:

default = <DialogAnimation.default: 0>

taunt = <DialogAnimation.taunt: 28>

greeting = <DialogAnimation.greeting: 29>

listen = <DialogAnimation.listen: 30>

worship = <DialogAnimation.worship: 33>

salute = <DialogAnimation.salute: 34>

bow = <DialogAnimation.bow: 35>

steal = <DialogAnimation.steal: 37>

talk_normal = <DialogAnimation.talk_normal: 38>

talk_pleading = <DialogAnimation.talk_pleading: 39>

talk_forceful = <DialogAnimation.talk_forceful: 40>

talk_laugh = <DialogAnimation.talk_laugh: 41>

victory_1 = <DialogAnimation.victory_1: 44>

victory_2 = <DialogAnimation.victory_2: 45>

victory_3 = <DialogAnimation.victory_3: 46>

look_far = <DialogAnimation.look_far: 48>

drink = <DialogAnimation.drink: 70>

read = <DialogAnimation.read: 71>

none = <DialogAnimation.none: 88>

class rollnw.DialogNode

animation: *DialogAnimation* = 0

```

comment:  str

copy() → DialogNode
    Copies a Node

delay:  int = -1

get_action_param(key: str) → str | None
    Gets action parameter if it exists

parent:  Dialog

pointers:  List[DialogPtr]

quest:  str

quest_entry:  int = -1

remove_action_param(key: str)
    Removes action parameter by key

script_action:  str

set_action_param(key: str, value: str)
    Sets action parameter, if key does not exist key and value are appended

sound:  str

speaker:  str

text:  LocString

type:  DialogNodeType

enum rollnw.DialogNodeType(value)

    Member Type
    int

    Valid values are as follows:

    entry = <DialogNodeType.entry: 0>

    reply = <DialogNodeType.reply: 1>

class rollnw.DialogPtr

    add() → DialogPtr
        Adds empty Dialog Pointer and Node

    add_ptr(ptr: DialogPtr, is_link: bool = False) → DialogPtr
        Adds Dialog Pointer, if is_link is false no new pointer or node is created. if is_link is true a new pointer
        will created with the node copied from input pointer.

    add_string(value: str, lang: LanguageID = LanguageID.english, feminine: bool = False) → DialogPtr
        Adds Dialog Pointer and Node with string value set

    comment:  str

```

copy() → *DialogPtr*

Copies dialog pointer and all sub-nodes

get_condition_param(key: str) → str | None

Gets condition parameter by key

is_link: bool

is_start: bool

node: *DialogNode*

parent: *Dialog*

remove_condition_param(key: str)

Removes condition parameter by key

remove_ptr(ptr: *DialogPtr*)

Removes Dialog Ptr from underlying node

script_appears: str

set_condition_param(key: str, value: str)

Sets condition parameter, if key does not exist key and value are appended

type: *DialogNodeType*

class rollnw.DiceRoll

Dice roll

bonus: int

dice: int

sides: int

class rollnw.Directory(path: str)

Implementation of a directory as a rollnw.Container

Parameters

path (str) – Directory to load

class rollnw.Door

Class that represents a Door object

animation_state: *DoorAnimationState*

appearance: int

conversation: str

Door's conversation resref

description: *LocString*

faction: int

static **from_dict**(value: dict)

Constructs object from python dict.


```
static from_file(path: str)
    Constructs object from file. The file can be JSON or Gff.
generic_type: int
hardness: int
hp: int
hp_current: int
interruptable: int
json_archive_version: ClassVar[int]
linked_to: str
linked_to_flags: int
loadscreen: int
lock: Lock
object_type: ClassVar[int]
plot: int
portrait_id: int
saves: Saves
scripts: DoorScripts
trap: Trap

enum rollnw.DoorAnimationState(value)
    Door animation states
    Valid values are as follows:
    closed = <DoorAnimationState.closed: 1>
    opened1 = <DoorAnimationState.opened1: 2>
    opened2 = <DoorAnimationState.opened2: 3>

class rollnw.DoorScripts
    Door's scripts
    on_click: str
    on_closed: str
    on_damaged: str
    on_death: str
    on_disarm: str
    on_heartbeat: str
```

```
on_lock: str
on_melee_attacked: str
on_open: str
on_open_failure: str
on_spell_cast_at: str
on_trap_triggered: str
on_unlock: str
on_user_defined: str

class rollnw.Effect
    clear()
        Clears the effect such that it's as if default constructed
    get_float(index)
        Gets a floating point value
    get_int(index)
        Gets an integer point value
    get_string(index)
        Gets a string value
    handle()
        Gets the effect's handle
    id()
        Gets the effect's ID
    set_float(index: int, value: float)
        Sets a floating point value
    set_int(index: int, value: int)
        Sets an integer point value
    set_string(index: int, value: str)
        Sets a string value
    set_versus(vs)
        Sets the versus value
    versus()
        Gets the versus value
enum rollnw.EffectCategory(value)
    Effect category
        Member Type
        int
    Valid values are as follows:
    magical = <EffectCategory.magical: 1>
```

```
    extraordinary = <EffectCategory.extraordinary: 2>
    supernatural = <EffectCategory.supernatural: 3>
    item = <EffectCategory.item: 4>
    innate = <EffectCategory.innate: 5>

class rollnw.EffectHandle
    Effect Handle
    category: EffectCategory
    creator: ObjectHandle
    effect: Effect
    spell_id: int
    subtype: int
    type: int

class rollnw.EffectID
    Effect ID
    index: int
    version: int

class rollnw.Encounter
    Class that represents an Encounter object
    active: bool
    creatures: List[SpawnCreature]
    creatures_max: int
    creatures_recommended: int
    difficulty: int
    difficulty_index: int
    faction: int
    static from_dict(value: dict)
        Constructs object from python dict.
    static from_file(path: str)
        Constructs object from file. The file can be JSON or Gff.
    geometry: List[Vector3]
    player_only: bool
    reset: bool
    reset_time: int
```

```
respawns: int
scripts: EncounterScripts
spawn_option: int
spawn_points: List[SpawnPoint]
```

```
class rollnw.EncounterScripts
```

```
    Encounter's scripts
```

```
    on_entered: str
    on_exhausted: str
    on_exit: str
    on_heartbeat: str
    on_user_defined: str
```

```
enum rollnw.EquipIndex(value)
```

```
    Member Type
    int
```

```
    Valid values are as follows:
```

```
    head = <EquipIndex.head: 0>
    chest = <EquipIndex.chest: 1>
    boots = <EquipIndex.boots: 2>
    arms = <EquipIndex.arms: 3>
    righthand = <EquipIndex.righthand: 4>
    lefthand = <EquipIndex.lefthand: 5>
    cloak = <EquipIndex.cloak: 6>
    leftring = <EquipIndex.leftring: 7>
    rightring = <EquipIndex.rightring: 8>
    neck = <EquipIndex.neck: 9>
    belt = <EquipIndex.belt: 10>
    arrows = <EquipIndex.arrows: 11>
    bullets = <EquipIndex.bullets: 12>
    bolts = <EquipIndex.bolts: 13>
    creature_left = <EquipIndex.creature_left: 14>
    creature_right = <EquipIndex.creature_right: 15>
    creature_bite = <EquipIndex.creature_bite: 16>
```

```
    creature_skin = <EquipIndex.creature_skin: 17>
    invalid = <EquipIndex.invalid: 4294967295>
flag rollnw.EquipSlot(value)
    Equipment slot flags
    Valid values are as follows:
    head = <EquipSlot.head: 1>
    chest = <EquipSlot.chest: 2>
    boots = <EquipSlot.boots: 4>
    arms = <EquipSlot.arms: 8>
    righthand = <EquipSlot.righthand: 16>
    lefthand = <EquipSlot.lefthand: 32>
    cloak = <EquipSlot.cloak: 64>
    leftring = <EquipSlot.leftring: 128>
    rightring = <EquipSlot.rightring: 256>
    neck = <EquipSlot.neck: 512>
    belt = <EquipSlot.belt: 1024>
    arrows = <EquipSlot.arrows: 2048>
    bullets = <EquipSlot.bullets: 4096>
    bolts = <EquipSlot.bolts: 8192>
    creature_left = <EquipSlot.creature_left: 16384>
    creature_right = <EquipSlot.creature_right: 32768>
    creature_bite = <EquipSlot.creature_bite: 65536>
    creature_skin = <EquipSlot.creature_skin: 131072>
class rollnw.Equips
    Creature's equipment
    equips: List[str | Item]
        len(equips) == 18
        Type
        Note
    instantiate()
        Instantiates equipment by loading contained items from the resource manager
class rollnw.Erf(path: str)
    Implementation of Erf file format
    Parameters
        path (str) – Erf file to load
```

add(*path*)

Adds resources from path

erase(*resource*)

Removes resource

merge(*container*)

Merges the contents of another rollnw.Container

reload()

Reloads Erf

Notes

Erf:: working_directory() will not change

save()

Saves Erf to Erf:: path()

Notes

It's probably best to call Erf:: reload after save.

save_as(*path*)

Saves Erf to different path

Notes

Current Erf unmodified, to load Erf at new path a new Erf must be constructed.

enum rollnw.**GameVersion**(*value*)

Game versions

Valid values are as follows:

v1_69 = <GameVersion.v1_69: 1>**vEE** = <GameVersion.vEE: 2>**nwn2** = <GameVersion.nwn2: 3>**class** rollnw.**IVector4****w**: int**x**: int**y**: int**z**: int**class** rollnw.**Image**(*filename: str*)

Loads an image

Parameters

filename (*str*) – image file to load

```
channels()
    Gets BPP

data()
    Get raw data

height()
    Get height

valid()
    Determine if successfully loaded.

width()
    Get width

write_to()
    Write Image to file

class rollnw.Ini(filename: str)
    Loads an ini

    Parameters
        filename (str) – ini file to load

get_float(key: str) → float | None
    Gets an INI value

get_int(key: str) → int | None
    Gets an INI value

get_str(key: str) → str | None
    Gets an INI value

valid()
    Deterimes if Ini file was successfully parsed

class rollnw.Inventory
    An Object's inventory

instantiate()
    Instantiates inventory by loading contained items from the resource manager

items: List[InventoryItem]

owner: ObjectBase

class rollnw.InventoryItem
    An inventory item

infinite: bool
    Only applicable to stores

item: str | Item

x: int

y: int
```

```
class rollnw.Item
    Class that represents an Item object
    additional_cost: int
    baseitem: int
    charges: int
    cost: int
    cursed: bool
    description: LocString
        Description
    description_id: LocString
        Description after being identified.
    static from_dict(value: dict)
        Constructs object from python dict.
    static from_file(path: str)
        Constructs object from file. The file can be JSON or Gff.
    identified: bool
    inventory: Inventory
    model_colors: List[int]
    model_parts: List[int]
    model_type: ItemModelType
    plot: bool
        Is a plot item.
    properties: List[ItemProperty]
    stacksize: int
    stolen: bool

enum rollnw.ItemColors(value)
    Valid values are as follows:
    cloth1 = <ItemColors.cloth1: 1>
    cloth2 = <ItemColors.cloth2: 2>
    leather1 = <ItemColors.leather1: 3>
    leather2 = <ItemColors.leather2: 4>
    metal1 = <ItemColors.metal1: 5>
    metal2 = <ItemColors.metal2: 6>
```


enum rollnw.ItemModelParts(*value*)

Valid values are as follows:

```
model1 = <ItemModelParts.model1: 1>
model2 = <ItemModelParts.model2: 2>
model3 = <ItemModelParts.model3: 3>
armor_belt = <ItemModelParts.armor_belt: 4>
armor_lbicep = <ItemModelParts.armor_lbicep: 5>
armor_lfarm = <ItemModelParts.armor_lfarm: 6>
armor_lfoot = <ItemModelParts.armor_lfoot: 7>
armor_lhand = <ItemModelParts.armor_lhand: 8>
armor_lshin = <ItemModelParts.armor_lshin: 9>
armor_lshoul = <ItemModelParts.armor_lshoul: 10>
armor_lthigh = <ItemModelParts.armor_lthigh: 11>
armor_neck = <ItemModelParts.armor_neck: 12>
armor_pelvis = <ItemModelParts.armor_pelvis: 13>
armor_rbicep = <ItemModelParts.armor_rbicep: 14>
armor_rfarm = <ItemModelParts.armor_rfarm: 15>
armor_rfoot = <ItemModelParts.armor_rfoot: 16>
armor_rhand = <ItemModelParts.armor_rhand: 17>
armor_robe = <ItemModelParts.armor_robe: 18>
armor_rshin = <ItemModelParts.armor_rshin: 19>
armor_rshoul = <ItemModelParts.armor_rshoul: 20>
armor_rthigh = <ItemModelParts.armor_rthigh: 21>
armor_torso = <ItemModelParts.armor_torso: 22>
```

enum rollnw.ItemModelType(*value*)

Valid values are as follows:

```
simple = <ItemModelType.simple: 1>
layered = <ItemModelType.layered: 2>
composite = <ItemModelType.composite: 3>
armor = <ItemModelType.armor: 4>
```

class rollnw.ItemProperty

An item property

```
cost_table: int
cost_value: int
param_table: int
param_value: int
subtype: int
type: int
```

```
class rollnw.Key(path: str)
```

Implementation Key/Bif file format as a rollnw.Container

Parameters

path (*str*) – Path to key file

```
class rollnw.Language
```

```
static encoding(language: LanguageID) → str
```

Gets the encoding for a particular language

```
static from_string(string: str) → LanguageID
```

Converts string (short or long form) to ID

```
static has_feminine(language: LanguageID) → bool
```

Determines if language has feminine translations

```
static to_base_id(id: int) → Tuple[LanguageID, bool]
```

Convert runtime language identifier to base language and bool indicating masc/fem.

```
static to_runtime_id(language: LanguageID, feminine: bool = False) → int
```

Convert language ID to runtime identifier.

```
static to_string(language: LanguageID, long_name: bool = False) → str
```

Converts language to string form

```
enum rollnw.LanguageID(value)
```

Member Type

int

Valid values are as follows:

```
invalid = <LanguageID.invalid: -1>
```

```
english = <LanguageID.english: 0>
```

```
french = <LanguageID.french: 1>
```

```
german = <LanguageID.german: 2>
```

```
italian = <LanguageID.italian: 3>
```

```
spanish = <LanguageID.spanish: 4>
```

```
polish = <LanguageID.polish: 5>
```

```
korean = <LanguageID.korean: 128>
```

```
chinese_traditional = <LanguageID.chinese_traditional: 129>
chinese_simplified = <LanguageID.chinese_simplified: 130>
japanese = <LanguageID.japanese: 131>

class rollnw.LevelHistory
    Implements a creatures levelup history
    entries: List[LevelUp]
        Entries for levels

class rollnw.LevelStats
    Implements a creatures level related stats
    entries: List[ClassEntry]
        Entries for levels
    level() → int
        Gets total level
    level_by_class(class_: int) → int
        Gets level by class

class rollnw.LevelUp
    Level up data
    ability: int
        Ability score that was raised, if any. -1 if none
    class_: int
        Class the level was taken as
    epic: bool
        True if level is an epic level
    feats: List[int]
        Added feats
    hitpoints: int
        Hitpoints gained.
    known_spells: List[Tuple[int, int]]
        Level, Spell pair for gained spells
    skillpoints: int
        Roll over skill points
    skills: List[Tuple[int, int]]
        Skill and the amount increased

class rollnw.LocString(strref: int = -1)
    Implements a localized string

    Parameters
    strref (int) – String reference. (default -1)

    add(language: LanguageID, string: str, feminine: bool = False)
        Adds a localized string
```

contains(*language: LanguageID, feminine: bool = False*)

Checks if a localized string is contained

static from_dict(*data: dict*)

Converts python dict to LocString

get(*language: LanguageID, feminine: bool = False*)

Gets a localized string

remove(*language: LanguageID, feminine: bool = False*)

Removes a localized string

size()

Gets number of localized strings

strref()

Gets string reference

to_dict() → DefaultDict

Converts LocString to python dict

class rollnw.LocalData

delete_float(*varname: str*)

Deletes float variable

delete_int(*varname: str*)

Deletes int variable

delete_location(*varname: str*)

Deletes location variable

delete_object(*varname: str*)

Deletes object variable

delete_string(*varname: str*)

Deletes string variable

get_float(*varname: str*)

Gets float variable

get_int(*varname: str*) → int

Gets int variable

get_location(*varname: str*)

Gets location variable

get_object(*varname: str*)

Gets object variable

get_string(*varname: str*) → str

Gets string variable

set_float(*varname: str, value: float*)

Sets float variable

set_int(*varname: str, value: int*)

Sets int variable

```
set_location(varname: str, value: Location)
    Sets location variable
set_object(varname: str, value: ObjectHandle)
    Sets object variable
set_string(varname: str, value: str)
    Sets string variable
size()
    Gets number of variables
class rollnw.Location
    Class representing an objects location
    area: int
    orientation: Vector3
    position: Vector3
class rollnw.Lock
    Class representing a lock on an object
    key_name: str
    key_required: bool
    lock_dc: int
    lockable: bool
    locked: bool
    remove_key: bool
    unlock_dc: int
class rollnw.Module
    Class that represents a Module object
    area_count() → int
        Gets number of areas in module
    creator: int
    dawn_hour: int
    description: LocString
    dusk_hour: int
    entry_area: str
    entry_orientation: Vector3
    entry_position: Vector3
    expansion_pack: int
```

```
get_area(index: int) → Area | None
    Gets number of areas in module

haks: List[str]

id: ByteString

is_save_game: bool

locals: LocalData

min_game_version: int

minutes_per_hour: int

name: LocString

scripts: ModuleScripts

start_day: int

start_hour: int

start_month: int

start_movie: str

start_year: int

tag: str

tlk: str

property uuid: str
    Gets modules UUID

version: int

xpscale: int

class rollnw.ModuleScripts
    Module Scripts

    on_client_enter: str

    on_client_leave: str

    on_cutscene_abort: str

    on_heartbeat: str

    on_item_acquire: str

    on_item_activate: str

    on_item_unacquire: str

    on_load: str

    on_player_chat: str
```

```
on_player_death: str
on_player_dying: str
on_player_equip: str
on_player_level_up: str
on_player_rest: str
on_player_unequip: str
on_spawnbtndn: str
on_start: str
on_user_defined: str
```

```
class rollnw.NWSync(path: str)
```

Implementation of NWSync file format

Parameters

path (*str*) – Path to NWSync repository

get(*manifest*)

Gets a particular manifest as a container

is_loaded()

Gets if NWSync was successfully loaded

manifests()

Get list of all manifests

shard_count()

Get the number of shards

```
class rollnw.NWSyncManifest
```

Implementation of NWSync Manifest as a rollnw.Container

```
class rollnw.ObjectBase
```

handle()

Gets object handle

```
class rollnw.ObjectHandle
```

Object handle

id: **int**

index into object array

type: *ObjectType*

object type

valid()

Determines if handle is valid

version: **int**

object index version

```
enum rollnw.ObjectType(value)
```

Object types

Valid values are as follows:

```
invalid = <ObjectType.invalid: 1>
gui = <ObjectType.gui: 2>
tile = <ObjectType.tile: 3>
module = <ObjectType.module: 4>
area = <ObjectType.area: 5>
creature = <ObjectType.creature: 6>
item = <ObjectType.item: 7>
trigger = <ObjectType.trigger: 8>
projectile = <ObjectType.projectile: 9>
placeable = <ObjectType.placeable: 10>
door = <ObjectType.door: 11>
areaofeffect = <ObjectType.areaofeffect: 12>
waypoint = <ObjectType.waypoint: 13>
encounter = <ObjectType.encounter: 14>
store = <ObjectType.store: 15>
portal = <ObjectType.portal: 16>
sound = <ObjectType.sound: 17>
```

```
class rollnw.Placeable
```

Class that represents a Placeable object

```
animation_state: PlaceableAnimationState
```

```
appearance: int
```

```
bodybag: int
```

```
common: Common
```

```
conversation: str
```

```
description: LocString
```

```
faction: int
```

```
static from_dict(value: dict)
```

Constructs object from python dict.

```
static from_file(path: str)
```

Constructs object from file. The file can be JSON or Gff.


```

hardness: int
has_inventory: bool
hp: int
hp_current: int
interruptable: bool
inventory: Inventory
json_archive_version: ClassVar[int]
lock: Lock
object_type: ClassVar[int]
plot: bool
portrait_id: int
saves: Saves
scripts: PlaceableScripts
static: bool
trap: Trap
useable: bool

enum rollnw.PlaceableAnimationState(value)
    Valid values are as follows:
    none = <PlaceableAnimationState.none: 1>
    open = <PlaceableAnimationState.open: 2>
    closed = <PlaceableAnimationState.closed: 3>
    destroyed = <PlaceableAnimationState.destroyed: 4>
    activated = <PlaceableAnimationState.activated: 5>
    deactivated = <PlaceableAnimationState.deactivated: 6>

class rollnw.PlaceableScripts
    Placeable's scripts
    on_click: str
    on_closed: str
    on_damaged: str
    on_death: str
    on_disarm: str
    on_heartbeat: str

```

```
on_inventory_disturbed: str
on_lock: str
on_melee_attacked: str
on_open: str
on_spell_cast_at: str
on_trap_triggered: str
on_unlock: str
on_used: str
on_user_defined: str
```

```
class rollnw.Player
```

Player character

Warning: This is very incomplete

```
class rollnw.Plt
```

Implementation of PLT file format

```
height()
```

```
pixels()
```

```
valid()
```

```
width()
```

```
class rollnw.PltColors
```

Plt Color Array

Notes

This would be the colors that a player would select

```
colors: List[int]
```

```
enum rollnw.PltLayer(value)
```

Plt layers

Member Type

int

Valid values are as follows:

```
plt_layer_skin = <PltLayer.plt_layer_skin: 0>
```

```
plt_layer_hair = <PltLayer.plt_layer_hair: 1>
```

```
plt_layer_metal1 = <PltLayer.plt_layer_metal1: 2>
```

```

plt_layer_metal2 = <PltLayer.plt_layer_metal2: 3>
plt_layer_cloth1 = <PltLayer.plt_layer_cloth1: 4>
plt_layer_cloth2 = <PltLayer.plt_layer_cloth2: 5>
plt_layer_leather1 = <PltLayer.plt_layer_leather1: 6>
plt_layer_leather2 = <PltLayer.plt_layer_leather2: 7>
plt_layer_tattoo1 = <PltLayer.plt_layer_tattoo1: 8>
plt_layer_tattoo2 = <PltLayer.plt_layer_tattoo2: 9>

```

```
class rollnw.PltPixel
```

Plt pixel

color

layer

```
class rollnw.Resource
```

Resource name

Parameters

- **name** (*str*) – resref or filename
- **type** (*ResourceType* / *None*) – (Default None)

Notes

If a resource type is not passed name is assumed to be a file name, e.g. 'nw_chicken.utc'

resref

Type

str

type

Type

ResourceType

filename() → *str*

Returns resource as 'resref.ext'

static from_filename(*filename: str*) → *Resource*

Creates resource from file name

valid() → *bool*

Determines if is valid resource name

```
class rollnw.ResourceDescriptor
```

Resource descriptor

name

size

mtime

parent

enum rollnw.ResourceType(*value*)

Valid values are as follows:

invalid = <ResourceType.invalid: 1>

container = <ResourceType.container: 2>

gff_archive = <ResourceType.gff_archive: 3>

movie = <ResourceType.movie: 4>

player = <ResourceType.player: 5>

sound = <ResourceType.sound: 6>

texture = <ResourceType.texture: 7>

json = <ResourceType.json: 8>

bmp = <ResourceType.bmp: 9>

mve = <ResourceType.mve: 10>

tga = <ResourceType.tga: 11>

wav = <ResourceType.wav: 12>

plt = <ResourceType.plt: 13>

ini = <ResourceType.ini: 14>

bmu = <ResourceType.bmu: 15>

mpg = <ResourceType.mpg: 16>

txt = <ResourceType.txt: 17>

plh = <ResourceType.plh: 18>

tex = <ResourceType.tex: 19>

mdl = <ResourceType.mdl: 20>

thg = <ResourceType.thg: 21>

fnt = <ResourceType.fnt: 22>

lua = <ResourceType.lua: 23>

slt = <ResourceType.slt: 24>

nss = <ResourceType.nss: 25>

ncs = <ResourceType.ncs: 26>

mod = <ResourceType.mod: 27>

are = <ResourceType.are: 28>
set = <ResourceType.set: 29>
ifo = <ResourceType.ifo: 30>
bic = <ResourceType.bic: 31>
wok = <ResourceType.wok: 32>
twoda = <ResourceType.twoda: 33>
tlk = <ResourceType.tlk: 34>
txi = <ResourceType.txi: 35>
git = <ResourceType.git: 36>
bti = <ResourceType.bti: 37>
uti = <ResourceType.uti: 38>
btc = <ResourceType.btc: 39>
utc = <ResourceType.utc: 40>
dlg = <ResourceType.dlg: 41>
itp = <ResourceType.itp: 42>
btt = <ResourceType.btt: 43>
utt = <ResourceType.utt: 44>
dds = <ResourceType.dds: 45>
bts = <ResourceType.bts: 46>
uts = <ResourceType.uts: 47>
ltr = <ResourceType.ltr: 48>
gff = <ResourceType.gff: 49>
fac = <ResourceType.fac: 50>
bte = <ResourceType.bte: 51>
ute = <ResourceType.ute: 52>
btd = <ResourceType.btd: 53>
utd = <ResourceType.utd: 54>
btp = <ResourceType.btp: 55>
utp = <ResourceType.utp: 56>
dft = <ResourceType.dft: 57>
gic = <ResourceType.gic: 58>

gui = <ResourceType.gui: 59>
css = <ResourceType.css: 60>
ccs = <ResourceType.ccs: 61>
btm = <ResourceType.btm: 62>
utm = <ResourceType.utm: 63>
dwk = <ResourceType.dwk: 64>
pwk = <ResourceType.pwk: 65>
btg = <ResourceType.btg: 66>
utg = <ResourceType.utg: 67>
jrl = <ResourceType.jrl: 68>
sav = <ResourceType.sav: 69>
utw = <ResourceType.utw: 70>
fourpc = <ResourceType.fourpc: 71>
ssf = <ResourceType.ssf: 72>
hak = <ResourceType.hak: 73>
nwm = <ResourceType.nwm: 74>
bik = <ResourceType.bik: 75>
ndb = <ResourceType.ndb: 76>
ptm = <ResourceType.ptm: 77>
ptt = <ResourceType.ptt: 78>
bak = <ResourceType.bak: 79>
dat = <ResourceType.dat: 80>
shd = <ResourceType.shd: 81>
xbc = <ResourceType.xbc: 82>
wbm = <ResourceType.wbm: 83>
mtr = <ResourceType.mtr: 84>
ktx = <ResourceType.ktx: 85>
ttf = <ResourceType.ttf: 86>
sql = <ResourceType.sql: 87>
tml = <ResourceType.tml: 88>
sq3 = <ResourceType.sq3: 89>

```
lod = <ResourceType.lod: 90>
gif = <ResourceType.gif: 91>
png = <ResourceType.png: 92>
jpg = <ResourceType.jpg: 93>
caf = <ResourceType.caf: 94>
ids = <ResourceType.ids: 95>
erf = <ResourceType.erf: 96>
bif = <ResourceType.bif: 97>
key = <ResourceType.key: 98>

class rollnw.Saves
    An objects saves
    fort: int
    reflex: int
    will: int

class rollnw.Sound
    Class that represents a Sound object
    active: bool
    common: Common
    continuous: bool
    distance_max: float
    distance_min: float
    elevation: float
    static from_dict(value: dict)
        Constructs object from python dict.
    static from_file(path: str)
        Constructs object from file. The file can be JSON or Gff.
    generated_type: int
    hours: int
    interval: int
    interval_variation: int
    json_archive_version: ClassVar[int]
    looping: bool
```

```
    object_type: ClassVar[int]
    pitch_variation: float
    positional: bool
    priority: int
    random: bool
    random_position: bool
    random_x: float
    random_y: float
    sounds: List[str]
    times: int
    volume: int
    volume_variation: int

class rollnw.SpawnCreature
    Encounter creature spawn
    appearance: int
    cr: int
    resref: str
    single_spawn: bool

class rollnw.SpawnPoint
    A spawn point
    orientation: Vector3
    position: Vector3

class rollnw.SpecialAbility
    Special Ability
    flags: SpellFlags
    level: int
    spell: int

class rollnw.SpellBook
    Implements a spell casters spellbook
    add_known_spell(level: int, entry: SpellEntry)
        Adds a known spell at level
    add_memorized_spell(level: int, entry: SpellEntry)
        Adds a memorized spell at level
```



```
get_known_spell(level: int, index: int)
    Gets a known spell entry

get_known_spell_count(level: int)
    Gets the number of known at a given level

get_memorized_spell(level: int, index: int)
    Gets a memorized spell entry

get_memorized_spell_count(level: int)
    Gets the number of memorized at a given level

remove_known_spell(level: int, entry: SpellEntry)
    Removes a known spell entry

remove_memorized_spell(level: int, entry: SpellEntry)
    Removes a memorized spell entry

class rollnw.SpellEntry
    An entry in a spellbook

    flags: SpellFlags

    meta: SpellMetaMagic

    spell: int

flag rollnw.SpellFlags(value)
    Valid values are as follows:

    readied = <SpellFlags.readied: 1>

    spontaneous = <SpellFlags.spontaneous: 2>

    unlimited = <SpellFlags.unlimited: 4>

flag rollnw.SpellMetaMagic(value)
    Valid values are as follows:

    empower = <SpellMetaMagic.empower: 1>

    extend = <SpellMetaMagic.extend: 2>

    maximize = <SpellMetaMagic.maximize: 4>

    quicken = <SpellMetaMagic.quicken: 8>

    silent = <SpellMetaMagic.silent: 16>

    still = <SpellMetaMagic.still: 32>

class rollnw.Store
    Class that represents a Store object

    armor: Inventory

    blackmarket: bool

    blackmarket_markdown: int
```

static from_dict(*value: dict*) → *Store*

Constructs object from python dict.

static from_file(*path: str*) → *Store*

Constructs object from file. The file can be JSON or Gff.

gold: int

identify_price: int

json_archive_version: ClassVar[int]

markdown: int

markup: int

max_price: int

miscellaneous: *Inventory*

object_type: ClassVar[int]

potions: *Inventory*

rings: *Inventory*

scripts: *StoreScripts*

weapons: *Inventory*

class rollnw.StoreScripts

A Store's scripts

on_closed: str

on_opened: str

class rollnw.Tile

Area tile

animloop1: int

animloop2: int

animloop3: int

height: int

id: int

mainlight1: int

mainlight2: int

orientation: int

srclight1: int

srclight2: int

```
class rollnw.Tlk(init: str | LanguageID)
```

Implementation of the TLK file format

Parameters

init (*str* / *LanguageID*) – if passed a string, **init** will be treated as a path to a TLK file, if passed a *LanguageID*, default constructs with the TLKs language set to **init**.

```
get(strref: int) → str
```

Gets a tlk entry.

```
language_id()
```

Gets the language ID

```
modified()
```

Is Tlk modified

```
save()
```

Writes TLK to file

```
save_as(path: str)
```

Writes TLK to file

```
set(strref: int, string: str)
```

Sets a localized string

```
size()
```

Gets the highest set strref

```
valid()
```

Gets if successfully parsed

```
class rollnw.Trap
```

Class representing a trap on an object

```
detect_dc: int
```

```
detectable: bool
```

```
disarm_dc: int
```

```
disarmable: bool
```

```
is_trapped: bool
```

```
one_shot: bool
```

```
type: int
```

```
class rollnw.Trigger
```

Class that represents a Trigger object

```
cursor: int
```

```
faction: int
```

```
static from_dict(value: dict) → Trigger
```

Constructs object from python dict.

static **from_file**(*path: str*) → *Trigger*

Constructs object from file. The file can be JSON or Gff.

geometry: List[*Vector3*]

highlight_height: float

linked_to: str

linked_to_flags: int

loadscreen: int

portrait: int

scripts: *TriggerScripts*

trap: *Trap*

type: int

class rollnw.**TriggerScripts**

A trigger's scripts

on_click: str

on_disarm: str

on_enter: str

on_exit: str

on_heartbeat: str

on_trap_triggered: str

on_user_defined: str

class rollnw.**TwoDA**(*filename: str*)

Implementation of 2da file format

Parameters

filename (*str*) – 2da file to load

get(*row: int, column: int | str*)

Gets a TwoDA value

Parameters

- **row** (*int*) – Row number
- **column** (*int | str*) – Column number or label

Returns

An int | float | string depending on the underlying value

set(*row: int, column: int | str, value: int | float | str*)

Sets a TwoDA value

Parameters

- **row** (*int*) – Row number

- **column**(*int* / *str*) – Column number or label
- **value**(*int* / *float* / *str*) – New value

class rollnw.Vector2

x: float

y: float

class rollnw.Vector3

x: float

y: float

z: float

class rollnw.Vector4

w: float

x: float

y: float

z: float

class rollnw.Waypoint

Class that represents a Waypoint object

appearance: int

description: *LocString*

static from_dict(*value: dict*)

Constructs object from python dict.

static from_file(*path: str*)

Constructs object from file. The file can be JSON or Gff.

has_map_note: bool

Has a map note

linked_to: str

Tag of linked object

map_note: *LocString*

map_note_enabled: bool

class rollnw.Zip(*path: str*)

Implementation of Zip file format as a container

Parameters

path (*str*) – Path to zip file

rollnw.decode_plt_color(*plt: Plt, colors: PltColors, x: int, y: int*) → List[int]

Decodes PLT and user selected colors to RBGA

`rollnw.resmatch(res: Resource, pattern: str) → bool`

Analog of `fnmatch` but for resource names

Parameters

- **res** (`Resource`) – Resource name
- **pattern** (`str`) – glob pattern

6.19 rollnw.kernel

class `rollnw.kernel.Config`

Configuration service

initialize(*options*: `ConfigOptions`)

Initialize config system

install_path() → `str`

Gets game install path

options() → `ConfigOptions`

Gets config options

set_paths(*install*: `str`, *user*: `str`)

Sets game paths

Note: Must be called before `initialize`

set_version(*version*: `GameVersion`)

Sets game paths

Note: Must be called before `initialize`

user_path() → `str`

Gets game install path

class `rollnw.kernel.ConfigOptions`

Configuration options

include_install: `bool` = `True`

If true, load base game data.

include_nwsync: `bool` = `True`

If true, load NWSync data.

include_user: `bool` = `True`

If true, load user data.

class `rollnw.kernel.EffectSystem`

add_effect(*type*, *apply*, *remove*)

Adds an effect type to the registry

add_itemprop(*type*, *generator*)

Adds an item property type to the registry

```

apply(obj: ObjectBase, effect: Effect) → bool
    Applies an effect to an object

create(type) → Effect
    Creates an effect

destroy(effect: Effect) → None
    Destroys an effect

effect_limits_ability() → Tuple[int, int]
    Gets ability effect minimum and maximum

effect_limits_armor_class() → Tuple[int, int]
    Gets armor class effect minimum and maximum

effect_limits_attack() → Tuple[int, int]
    Gets attack effect minimum and maximum

effect_limits_skill() → Tuple[int, int]
    Gets skill effect minimum and maximum

ip_cost_table(table: int) → TwoDA | None
    Gets an item property cost table

ip_definition(type)
    Gets an item property definition

ip_param_table(table: int) → TwoDA | None
    Gets an item property param table

remove(obj: ObjectBase, effect: Effect) → bool
    Removes an effect to an object

set_effect_limits_ability(min: int, max: int) → None
    Sets ability effect minimum and maximum

set_effect_limits_armor_class(min: int, max: int) → None
    Sets armor class effect minimum and maximum

set_effect_limits_attack(min: int, max: int) → None
    Sets attack effect minimum and maximum

set_effect_limits_skill(min: int, max: int) → None
    Sets skill effect minimum and maximum

stats() → EffectSystemStats
    Gets stats regarding the effect system

class rollnw.kernel.EffectSystemStats
    Effect system stat data

    free_list_size: int

    pool_size: int

class rollnw.kernel.Objects
    The object system creates, serializes, and deserializes entities

```

area(*resref: str*) → *Area*

creature(*resref: str*) → *Creature*

destroy(*obj: ObjectHandle*) → None

Destroys an object and removes it from object system

door(*resref: str*) → *Door*

encounter(*resref: str*) → *Encounter*

get(*handle: ObjectHandle*)

Gets an object by its handle

get_by_tag(*tag: str, nth: int = 0*) → *ObjectBase* | None

Gets an object with specific tag

placeable(*resref: str*) → *Placeable*

store(*resref: str*) → *Store*

trigger(*resref: str*) → *Trigger*

valid(*handle: ObjectHandle*) → bool

Checks if an object handle is still valid

waypoint(*resref: str*) → *Waypoint*

class rollnw.kernel.**Resources**(*parent: Resources* | None)

Resources service

class rollnw.kernel.**Rules**

Rules service

class rollnw.kernel.**Strings**

Strings service

class rollnw.kernel.**TwoDACache**

2da cache

get(*name: str* | *Resource*) → *TwoDA* | None

Gets a cached twoda

rollnw.kernel.**config**()

Gets config service

rollnw.kernel.**effects**()

Gets effects service

rollnw.kernel.**load_module**(*path: str, manifest: str*) → *Module*

Loads a module

Parameters

- **path** (*str*) – path to module, can be a directory (with module.ifo), a mod file, or a zip file
- **manifest** (*str*) – NWSynch manifest hash

rollnw.kernel.**objects**()

Gets objects service

`rollnw.kernel.resman()` → *Resources*

Gets resman service

`rollnw.kernel.rules()`

Gets rules service

`rollnw.kernel.start(options: ConfigOptions | None)`

Starts kernel services

Parameters

config (*rollnw.ConfigOptions* | *None*) – Optionally pass in configuration. Default behavior is to search for whatever NWN(:EE) install that it can find

`rollnw.kernel.strings()`

Gets strings service

`rollnw.kernel.unload_module()` → *None*

Unloads the currently loaded module

6.20 rollnw.model

class `rollnw.model.Mdl`

Implementation of ASCII Mdl file format

static `from_file(path)`

Loads mdl file from file path

model: *MdlModel*

The parsed model

valid()

Determines if file was successfully parsed

class `rollnw.model.MdlAABBEntry`

AABB Entry

bmax: *Vector3*

bmin: *Vector3*

leaf_face: *int*

plane: *int*

class `rollnw.model.MdlAABBNode`

AABB model node

entries: *List[MdlAABBEntry]*

class `rollnw.model.MdlAnimation`

Class containing model animation

anim_root: *str*

events: *List[MdlAnimationEvent]*

```
    length: float
    transition_time: float
class rollnw.model.MdlAnimationEvent
    Animation Event
    name: str
    time: float
class rollnw.model.MdlAnimeshNode
    Animated mesh node
    animtverts: List[Vector3]
    animverts: List[Vector3]
    sampleperiod: float
class rollnw.model.MdlCameraNode
    Camera node
enum rollnw.model.MdlClassification(value)
    Model classes
        Member Type
        int
    Valid values are as follows:
    invalid = <MdlClassification.invalid: 1>
    effect = <MdlClassification.effect: 2>
    tile = <MdlClassification.tile: 3>
    character = <MdlClassification.character: 4>
    door = <MdlClassification.door: 5>
    item = <MdlClassification.item: 6>
    gui = <MdlClassification.gui: 7>
class rollnw.model.MdlControllerKey
    Model controller
    columns: int
    data_offset: int
    is_key: bool
    key_offset: int
    name: str
    rows: int
    time_offset: int
```

```
    type: int
class rollnw.model.MdlControllerType
    Controller types
    alpha: ClassVar[int]
    alpha_end: ClassVar[int]
    alpha_mid: ClassVar[int]
    alpha_start: ClassVar[int]
    birthrate: ClassVar[int]
    blur_length: ClassVar[int]
    bounce_co: ClassVar[int]
    color: ClassVar[int]
    color_end: ClassVar[int]
    color_mid: ClassVar[int]
    color_start: ClassVar[int]
    combine_time: ClassVar[int]
    detonate: ClassVar[int]
    drag: ClassVar[int]
    fps: ClassVar[int]
    frame_end: ClassVar[int]
    frame_start: ClassVar[int]
    grav: ClassVar[int]
    life_exp: ClassVar[int]
    lightning_delay: ClassVar[int]
    lightning_radius: ClassVar[int]
    lightning_scale: ClassVar[int]
    lightning_subdiv: ClassVar[int]
    mass: ClassVar[int]
    multiplier: ClassVar[int]
    orientation: ClassVar[int]
    p2p_bezier2: ClassVar[int]
    p2p_bezier3: ClassVar[int]
```

```
particle_rot: ClassVar[int]
percent_end: ClassVar[int]
percent_mid: ClassVar[int]
percent_start: ClassVar[int]
position: ClassVar[int]
radius: ClassVar[int]
rand_vel: ClassVar[int]
scale: ClassVar[int]
self_illum_color: ClassVar[int]
shadow_radius: ClassVar[int]
size_end: ClassVar[int]
size_end_y: ClassVar[int]
size_mid: ClassVar[int]
size_mid_y: ClassVar[int]
size_start: ClassVar[int]
size_start_y: ClassVar[int]
spread: ClassVar[int]
threshold: ClassVar[int]
velocity: ClassVar[int]
vertical_displacement: ClassVar[int]
wirecolor: ClassVar[int]
xsize: ClassVar[int]
ysize: ClassVar[int]

class rollnw.model.MdlDanglymeshNode
    constraints: List[float]
    displacement: float
    period: float
    tightness: float

class rollnw.model.MdlDummyNode
    Dummy node

class rollnw.model.MdlEmitterNode
    Emitter node
```

```
blastlength: float
blastradius: float
blend: str
blend_sel: int
chunkname: str
deadspace: float
flags: int
loop: int
opacity: float
p2p_type: str
render: str
render_sel: int
renderorder: int
spawntype: int
spawntype_sel: int
texture: str
twosidedtex: int
update: str
update_sel: int
xgrid: int
ygrid: int

class rollnw.model.MdlFace
    Model face
    material_idx: int
    shader_group_idx: int
    tvert_idx: List[int]
    vert_idx: List[int]

class rollnw.model.MdlGeometry
    Class containing model geometry
    name: str
    type: int
```

enum rollnw.model.MdlGeometryFlag(*value*)

Geometry flags

Member Type

int

Valid values are as follows:

geometry = <MdlGeometryFlag.geometry: 1>

model = <MdlGeometryFlag.model: 2>

animation = <MdlGeometryFlag.animation: 3>

binary = <MdlGeometryFlag.binary: 4>

enum rollnw.model.MdlGeometryType(*value*)

Geometry types

Member Type

int

Valid values are as follows:

geometry = <MdlGeometryType.geometry: 1>

model = <MdlGeometryType.model: 2>

animation = <MdlGeometryType.animation: 3>

class rollnw.model.MdlLightNode

Light node

affectdynamic: int

ambientonly: int

color: *Vector3*

dynamic: bool

fadinglight: int

flarecolorshifts: List[*Vector3*]

flarepositions: List[float]

flareradius: float

flaresizes: List[float]

generateflare: int

lensflares: float

lightpriority: int

multiplier: float

shadow: int

```
    textures: List[str]

class rollnw.model.MdlModel
    A parsed model
    animation_count()
        Gets the number of animations
    animations()
        Gets an iterator of animations
    animationscale: float
    bmax: Vector3
    bmin: Vector3
    classification: int
    file_dependency: str
    get_animation(index: int)
        Gets an animation
    ignorefog: bool
    radius: float
    supermodel: Mdl | None
    supermodel_name: str

class rollnw.model.MdlNode
    Base Model Node
    children: List[MdlNode]

    get_controller(type: int, is_key: bool) → Tuple[MdlControllerKey, List[float], List[float]]
        Gets a controller key and times and key data



---


    Note: If not an animation, time will be empty


---



    inheritcolor: bool
    name: str
    parent: MdlNode
    type: int

class rollnw.model.MdlNodeFlags
    Model node flags
    aabb: ClassVar[int]
    anim: ClassVar[int]
    camera: ClassVar[int]
```

```
dangly: ClassVar[int]
emitter: ClassVar[int]
header: ClassVar[int]
light: ClassVar[int]
mesh: ClassVar[int]
patch: ClassVar[int]
reference: ClassVar[int]
skin: ClassVar[int]
class rollnw.model.MdlNodeType
    Model node types
    aabb: ClassVar[int]
    animmesh: ClassVar[int]
    camera: ClassVar[int]
    danglymesh: ClassVar[int]
    dummy: ClassVar[int]
    emitter: ClassVar[int]
    light: ClassVar[int]
    patch: ClassVar[int]
    reference: ClassVar[int]
    skin: ClassVar[int]
    trimesh: ClassVar[int]
class rollnw.model.MdlPatchNode
    Patch node
class rollnw.model.MdlReferenceNode
    Reference node
    reattachable: bool
    refmodel: str
class rollnw.model.MdlSkinNode
    Skin mesh node
    vertices: List[SkinVertex]
        List of vertex positions, texcoords, normals, tangents
```



```
enum rollnw.model.MdlTriangleMode(value)
```

Triangle mode

Member Type

int

Valid values are as follows:

```
triangle = <MdlTriangleMode.triangle: 1>
```

```
triangle_strip = <MdlTriangleMode.triangle_strip: 2>
```

```
class rollnw.model.MdlTrimeshNode
```

Trimesh Node

```
ambient: Vector3
```

```
beaming: bool
```

```
bitmap: str
```

```
bmax: Vector3
```

```
bmin: Vector3
```

```
center: Vector3
```

```
diffuse: Vector3
```

```
displtype: int
```

```
indices: List[int]
```

List of vertex indices

```
lightmapped: int
```

```
materialname: str
```

```
multimaterial: List[str]
```

```
render: bool
```

```
renderhint: str
```

```
rotatetexture: bool
```

```
shadow: bool
```

```
shininess: float
```

```
showdispl: bool
```

```
specular: Vector3
```

```
textures: List[str]
```

```
tilefade: int
```

```
transparencyhint: int
```

vertices: List[*Vertex*]

List of vertex positions, texcoords, normals, tangents

class rollnw.model.ModelEmitterFlag

Emitter flags

affected_by_wind: ClassVar[int]

bounce: ClassVar[int]

inherit: ClassVar[int]

inherit_local: ClassVar[int]

inherit_part: ClassVar[int]

inherit_vel: ClassVar[int]

is_tinted: ClassVar[int]

p2p: ClassVar[int]

p2p_sel: ClassVar[int]

random: ClassVar[int]

splat: ClassVar[int]

class rollnw.model.SkinVertex

Skin Vertex data

bones: *IVector4*

normal: *Vector3*

position: *Vector3*

tangent: *Vector4*

tex_coords: *Vector2*

weights: *Vector4*

class rollnw.model.Vertex

Vertex data

normal: *Vector3*

position: *Vector3*

tangent: *Vector3*

tex_coords: *Vector2*

6.21 rollnw.nwn1

`rollnw.nwn1.attacks_per_second(obj: Creature, type, versus: ObjectBase) → float`

Number of attacks per second

`rollnw.nwn1.base_attack_bonus(obj: Creature) → int`

Calculates base attack bonus

`rollnw.nwn1.calculate_ac_versus(obj: ObjectBase, versus: ObjectBase | None = None, is_touch_attack: bool = False) → int`

Calculate Armor Class versus another object

`rollnw.nwn1.calculate_item_ac(obj: Item) → int`

Calculates the armor class of a piece of armor

`rollnw.nwn1.can_equip_item(obj: Creature, item: Item, slot: int)`

Determines if an item can be equipped

`rollnw.nwn1.can_use_monk_abilities(obj: Creature) → Tuple[bool, int]`

Determines if monk class abilities are usable and monk class level

`rollnw.nwn1.effect_ability_modifier(ability, modifier) → Effect`

Creates an ability modifier effect

`rollnw.nwn1.effect_armor_class_modifier(type, modifier) → Effect`

Creates an armor class modifier effect

`rollnw.nwn1.effect_attack_modifier(attack, modifier) → Effect`

Creates an attack modifier effect

`rollnw.nwn1.effect_haste() → Effect`

Creates a haste effect

`rollnw.nwn1.effect_skill_modifier(skill, modifier) → Effect`

Creates an skill modifier effect

`rollnw.nwn1.equip_index_to_attack_type(equip)`

Converts an equip index to an attack type

`rollnw.nwn1.equip_item(obj: Creature, item: Item, slot: int)`

Equip an item

`rollnw.nwn1.get_ability_modifier(obj: Creature, ability, base: bool = False) → int`

Gets creatures ability modifier

`rollnw.nwn1.get_ability_score(obj: Creature, ability, base: bool = False) → int`

Gets creatures ability score

`rollnw.nwn1.get_caster_level(obj: Creature, class_: int) → int`

Gets creatures caster level

`rollnw.nwn1.get_dex_modifier(obj: Creature) → int`

Gets creatures dexterity modifier as modified by armor, etc.

`rollnw.nwn1.get_equipped_item(obj: Creature, slot)`

Gets an equipped item

`rollnw.nwn1.get_skill_rank(obj: Creature, skill, versus=None, base=False)`

Determines creatures skill rank

`rollnw.nwn1.get_spell_dc(obj: Creature, class_: int, spell: int) → int`

Gets spell DC

`rollnw.nwn1.get_weapon_by_attack_type(obj: Creature, type) → Item`

Gets an equipped weapon by attack type

`rollnw.nwn1.is_flanked(target: Creature, attacker: Creature) → bool`

`rollnw.nwn1.is_ranged_weapon(item: Item) → bool`

Determines if weapon is ranged

`rollnw.nwn1.is_shield(baseitem) → bool`

Determines if item is a shield

`rollnw.nwn1.itemprop_ability_modifier(ability, modifier) → ItemProperty`

Creates ability modifier item property

`rollnw.nwn1.itemprop_armor_class_modifier(value) → ItemProperty`

Creates armor modifier item property

`rollnw.nwn1.itemprop_attack_modifier(value) → ItemProperty`

Creates attack modifier item property

`rollnw.nwn1.itemprop_enhancement_modifier(value) → ItemProperty`

Creates enhancement modifier item property

`rollnw.nwn1.itemprop_haste() → ItemProperty`

Creates haste item property

`rollnw.nwn1.itemprop_skill_modifier(skill, modifier) → ItemProperty`

Creates skill modifier item property

`rollnw.nwn1.queue_remove_effect_by(obj: ObjectBase, creator: ObjectHandle)`

Queues remove effect events by effect creator

`rollnw.nwn1.resolve_attack(obj: Creature, type, versus: ObjectBase)`

Resolves an attack

`rollnw.nwn1.resolve_attack_bonus(obj: Creature, type, versus: ObjectBase | None = None) → int`

Calculates attack bonus

`rollnw.nwn1.resolve_attack_damage(obj: Creature, versus: ObjectBase, data: AttackData) → int`

Resolves damage from an attack

`rollnw.nwn1.resolve_concealment(obj: ObjectBase, type, target: ObjectBase, vs_ranged: bool) → Tuple[int, bool]`

Resolves an concealment - i.e. the highest of concealment and miss chance

`rollnw.nwn1.resolve_critical_multiplier(obj: Creature, type, versus: ObjectBase | None = None) → int`

Resolves critical multiplier

`rollnw.nwn1.resolve_critical_threat(obj: Creature, type) → int`

Resolves critical multiplier

```
rollnw.nwn1.resolve_damage_immunity(obj: ObjectBase, dmg_type, versus: ObjectBase | None = None) →
    int
    Resolves damage immunity

rollnw.nwn1.resolve_damage_modifiers(obj: Creature, versus: ObjectBase, data: AttackData) → None
    Resolves resistance, immunity, and reduction

rollnw.nwn1.resolve_damage_reduction(obj: ObjectBase, power: int, versus: ObjectBase | None = None) →
    Tuple[int, Effect]
    Resolves damage reduction

rollnw.nwn1.resolve_damage_resistance(obj: ObjectBase, dmg_type, versus: ObjectBase | None = None) →
    Tuple[int, Effect]
    Resolves damage resistance

rollnw.nwn1.resolve_dual_wield_penalty(obj: Creature) → Tuple[int, int]
    Resolves dual wield attack bonus penalty

rollnw.nwn1.resolve_iteration_penalty(obj: Creature, attack_type)
    Resolves iteration attack bonus penalty

rollnw.nwn1.resolve_number_of_attacks(obj: Creature, offhand: bool = False) → Tuple[int, int]
    Calculates number of attacks

rollnw.nwn1.resolve_target_state(obj: Creature, versus: ObjectBase)
    Resolves damage from an attack

rollnw.nwn1.resolve_unarmed_damage(obj: Creature) → DiceRoll
    Resolves unarmed damage

rollnw.nwn1.resolve_weapon_damage(obj: Creature, weapon: Item) → DiceRoll
    Resolves weapon damage

rollnw.nwn1.resolve_weapon_power(obj: Creature, weapon: Item) → int
    Resolves weapon power

rollnw.nwn1.unequip_item(obj: Creature, slot: int)
    Unequips an item

rollnw.nwn1.weapon_is_finessable(obj: Creature, weapon: Item) → bool
    Determines if a weapon is finessable

rollnw.nwn1.weapon_iteration(obj: Creature, weapon: Item) → int
    Calculates weapon iteration, e.g. 5 or 3 for monk weapons
```

6.22 rollnw.script

```
class rollnw.script.AssignExpression
```

Assignment operation expression

```
lhs: VariableExpression | DotExpression
```

Expression being assigned to. Note that in a simple language like NWScript this can only be a variable expression or a dot expression (i.e. assigning a struct member)

operator: *NssToken*

The assignment operator, '=', '+=', etc, etc.

rhs: *Expression*

The expression being assigned

class rollnw.script.**Ast**

Class containing a parsed ast

__getitem__(*index: int*) → *Declaration*

Gets a toplevel declaration

__iter__() → Iterator[*Declaration*]

Gets an iterator of toplevel declarations

__len__() → int

Gets number of toplevel declarations

comments() → List[*Comment*]

Gets all comments in Ast

defines: dict[str, str]

Defines from #define directive. Only used in command script, i.e. nwscript.nss

find_comment(*line*) → str

Finds first comment that the source range of which ends on line or line - 1

includes: List[*Include*]

Scripts that are included in the current script

class rollnw.script.**AstNode**

Base Ast Node class

complete(*needle: str*) → List[*Symbol*]

Find completions for any Ast Node

@note This function does not traverse dependencies

class rollnw.script.**BinaryExpression**

Binary operation expression

lhs: *Expression*

Lefthand side of the binary expression

operator: *NssToken*

The binary operator, '+', '-', etc, etc.

rhs: *Expression*

Righthand side of the binary expression

class rollnw.script.**BlockStatement**

Block statement

range

Range in source code

Type

SourceRange

__getitem__(*idx: int*) → *Statement*

Gets a statement in the block

__iter__() → *Iterator[Statement]*

Gets iterator of statements

__len__() → *int*

Gets the number of statements

class rollnw.script.**CallExpression**

Call operation expression

__getitem__(*idx: int*) → *Expression*

Gets an argument

__iter__() → *Iterator[Expression]*

Gets iterator of arguments

__len__() → *int*

Gets the number of arguments

expr: *Expression*

The expression prior to (...)

class rollnw.script.**Comment**

Abstracts Comment

__str__() → *str*

Return str(self).

class rollnw.script.**ComparisonExpression**

Comparison operation expression

lhs: *Expression*

Lefthand side of the Comparison expression

operator: *NssToken*

The Comparison operator, '==', '<', etc, etc.

rhs: *Expression*

Righthand side of the Comparison expression

class rollnw.script.**ConditionalExpression**

Conditional operation expression

false_branch: *Statement*

The branch where test is False

test: *Expression*

The expression that is tested

true_branch: *Statement*

The branch where test is True

class rollnw.script.**Context**(*include_paths: List[str] = [], command_script: str = 'nwscript'*)

Provides a context for parsing a NWScript file

Every context contains its own resource manager that has as a parent the global resource manager. Ultimately, this will be changed to each context having its own unique resource manager.

Parameters

- **include_paths** (*[str]*, *optional*) – A list of include paths to load into internal resource manager. Default: [].
- **command_script** (*str*, *optional*) – Command script to load. Default: “nwscript”.

__init__ (*include_paths: List[str] = []*, *command_script: str = 'nwscript'*)

add_include_path (*path: str*)

Adds path to internal resman

command_script () → *Nss* | None

Gets the command script for the current context

get (*resref: str*, *is_command_script: bool = False*) → *Nss* | None

Gets a script from the context’s internal resman

class rollnw.script.DeclList

__getitem__ (*idx: int*) → *Declaration*

Gets a declaration

__iter__ () → Iterator[*Declaration*]

Gets iterator of statements

__len__ () → int

Gets the number of declarations

class rollnw.script.Declaration

Base Declaration class type

identifier () → str

Get declaration identifier

class rollnw.script.Diagnostic

Information for a script diagnostic

location: *SourceRange*

Source range in script

message: str

A helpful message

script: str

Name of script

severity: *DiagnosticSeverity*

The severity of the diagnostic

type: *DiagnosticType*

The type of the diagnostic

enum rollnw.script.DiagnosticSeverity(*value*)

Member Type

int

Valid values are as follows:


```

    error = <DiagnosticSeverity.error: 1>
    hint = <DiagnosticSeverity.hint: 2>
    information = <DiagnosticSeverity.information: 3>
    warning = <DiagnosticSeverity.warning: 4>
enum rollnw.script.DiagnosticType(value)
    Member Type
    int
Valid values are as follows:
    lexical = <DiagnosticType.lexical: 1>
    parse = <DiagnosticType.parse: 2>
    semantic = <DiagnosticType.semantic: 3>
class rollnw.script.DoStatement
    Do statement
    block: BlockStatement
        The do block statement
    test: Expression
        The test at the end of the block
class rollnw.script.DotExpression
    Dot operation expression
    lhs: VariableExpression | CallExpression
        In NWScript the only two possible expressions on the left hand of the dot are var_expr.var_expr or
        call_expr.var_expr
    rhs: VariableExpression
        The right hand side of a dot operator
class rollnw.script.EmptyExpression
    Empty expression only used in case of expression parsing erros
class rollnw.script.EmptyStatement
    Empty statement
class rollnw.script.ExprStatement
    Expression statement
    expr: Expression
        An expression
class rollnw.script.Expression
    Base Expression AST node
class rollnw.script.ForStatement
    For statement
    block: Statement
        While this is called block, any (single) statement can follow a for loop.

```

increment: *Expression* | None

An optional increment expression

init: *ASTNode* | None

An optional initialization. Normally this is a Declaration or just an expression

test: *Expression* | None

An optional expression that determines if the loop is to continue

class rollnw.script.FunctionDecl

Function declaration

__getitem__(idx: int) → *Declaration*

Gets a parameter

__iter__() → Iterator[*Declaration*]

Gets iterator of parameters

__len__() → int

Gets the number of parameters

class rollnw.script.FunctionDefinition

Function definition

block: *BlockStatement*

Block of the function

decl: *FunctionDecl*

Declaration of the function definition

class rollnw.script.GroupingExpression

Grouping operation expression

expr: *Expression*

Expression contained in the grouping parenthesis.

class rollnw.script.IfStatement

If statement

false_branch: *Statement*

The optional branch where test is False

test: *Expression*

The expression that is tested

true_branch: *Statement*

The branch where test is True

class rollnw.script.Include

Abstracts a script include

location: *SourceRange*

Source range in script

resref: str

Resref of included script

script: *Nss*
Loaded script

used: *int*
Number of times include is used in script file

class rollnw.script.**InlayHint**
An inlay source code hint for an LSP

message: *str*
Helpful message to display inline or a type, etc.

position: *SourcePosition*
The position where the hint should be displayed

class rollnw.script.**JumpStatement**
Jump statement

expr: *Expression* | *None*
Optional expression when returning a value

operator: *NssToken*
Token representing the jump statement (i.e. return, break, continue)

class rollnw.script.**LabelStatement**
Label statement

expr: *Expression* | *None*
Expression when label is a case.

label: *NssToken*
Token representing the label statement (i.e. case, default)

class rollnw.script.**LiteralExpression**
Literal expression

data: *int* | *str* | *float* | *Location*
Data of the literal value

literal: *NssToken*
Token of the literal value

class rollnw.script.**LiteralVectorExpression**
Literal vector expression

x: *NssToken*
Token representation for x value

y: *NssToken*
Token representation for y value

z: *NssToken*
Token representation for z value

class rollnw.script.**LogicalExpression**
Logical operation expression

lhs: *Expression*

Lefthand side of the logical expression

operator: *NssToken*

The logical operator, '||', '&&', etc, etc.

rhs: *Expression*

Righthand side of the logical expression

class rollnw.script.Nss(path: str, ctx: *Context*, is_command_script: bool = False)

Implementation of nwscript

__init__(path: str, ctx: *Context*, is_command_script: bool = False)

Constructs Nss object

ast() → *Ast*

Gets the parsed script

complete(needle: str) → List[*Symbol*]

Generates a list of potential completions (excluding dependencies)

complete_at(needle: str, line: int, character: int) → List[*Symbol*]

Get all completions (including dependencies)

complete_dot(needle: str, line: int, character: int) → List[*Symbol*]

Get all completions for struct fields

diagnostics() → List[*Diagnostic*]

errors() → int

Gets number of errors encountered while parsing

exports() → List[*Symbol*]

Gets all of the scripts exports, i.e. top level declarations

static from_string(string: str, ctx: *Context*, is_command_script: bool = False) → *Nss*

Loads Nss from string

locate_export(is_type: bool, search_dependencies: bool = False) → *Symbol*

Locate export, i.e. a top level symbols

locate_symbol(symbol: str, line: int, character: int) → *Symbol*

Locate symbol in source file

name() → str

Gets script's name

parse()

Parses the script

process_includes()

Process includes and dependencies

resolve()

Resolves and type-checks Ast

signature_help(line: int, character: int) → *SignatureHelp*

Gets signature help for a call expression that contains the provided position

```
view_from_range(range: SourceRange) → str
    Gets string view of the source at range

warnings() → int
    Gets number of errors encountered while parsing

class rollnw.script.NssLexer(script: str)
    A nwscript lexer

    __init__(script: str)
        Constructs lexer from a string

    current()
        Gets next token

    next()
        Gets next token

class rollnw.script.NssToken
    Nss token

    loc: SourceLocation
        The location of the token in a source file

    type: NssTokenType
        The type of the token

enum rollnw.script.NssTokenType(value)

    Member Type
        int

    Valid values are as follows:

    INVALID = <NssTokenType.INVALID: 1>

    END = <NssTokenType.END: 2>

    IDENTIFIER = <NssTokenType.IDENTIFIER: 3>

    LPAREN = <NssTokenType.LPAREN: 4>

    RPAREN = <NssTokenType.RPAREN: 5>

    LBRACE = <NssTokenType.LBRACE: 6>

    RBRACE = <NssTokenType.RBRACE: 7>

    LBRACKET = <NssTokenType.LBRACKET: 8>

    RBRACKET = <NssTokenType.RBRACKET: 9>

    COMMA = <NssTokenType.COMMA: 10>

    COLON = <NssTokenType.COLON: 11>

    QUESTION = <NssTokenType.QUESTION: 12>

    SEMICOLON = <NssTokenType.SEMICOLON: 13>
```

POUND = <NssTokenType.POUND: 14>
DOT = <NssTokenType.DOT: 15>
AND = <NssTokenType.AND: 16>
ANDAND = <NssTokenType.ANDAND: 17>
ANDEQ = <NssTokenType.ANDEQ: 18>
DIV = <NssTokenType.DIV: 19>
DIVEQ = <NssTokenType.DIVEQ: 20>
EQ = <NssTokenType.EQ: 21>
EQEQ = <NssTokenType.EQEQ: 22>
GT = <NssTokenType.GT: 23>
GTEQ = <NssTokenType.GTEQ: 24>
LT = <NssTokenType.LT: 25>
LTEQ = <NssTokenType.LTEQ: 26>
MINUS = <NssTokenType.MINUS: 27>
MINUSEQ = <NssTokenType.MINUSEQ: 28>
MINUSMINUS = <NssTokenType.MINUSMINUS: 29>
MOD = <NssTokenType.MOD: 30>
MODEQ = <NssTokenType.MODEQ: 31>
TIMES = <NssTokenType.TIMES: 32>
TIMESEQ = <NssTokenType.TIMESEQ: 33>
NOT = <NssTokenType.NOT: 34>
NOTEQ = <NssTokenType.NOTEQ: 35>
OR = <NssTokenType.OR: 36>
OREQ = <NssTokenType.OREQ: 37>
OROR = <NssTokenType.OROR: 38>
PLUS = <NssTokenType.PLUS: 39>
PLUSEQ = <NssTokenType.PLUSEQ: 40>
PLUSPLUS = <NssTokenType.PLUSPLUS: 41>
SL = <NssTokenType.SL: 42>
SLEQ = <NssTokenType.SLEQ: 43>
SR = <NssTokenType.SR: 44>

SREQ = <NssTokenType.SREQ: 45>
TILDE = <NssTokenType.TILDE: 46>
USR = <NssTokenType.USR: 47>
USREQ = <NssTokenType.USREQ: 48>
XOR = <NssTokenType.XOR: 49>
XOREQ = <NssTokenType.XOREQ: 50>
FLOAT_CONST = <NssTokenType.FLOAT_CONST: 51>
INTEGER_CONST = <NssTokenType.INTEGER_CONST: 52>
OBJECT_INVALID_CONST = <NssTokenType.OBJECT_INVALID_CONST: 53>
OBJECT_SELF_CONST = <NssTokenType.OBJECT_SELF_CONST: 54>
STRING_CONST = <NssTokenType.STRING_CONST: 55>
STRING_RAW_CONST = <NssTokenType.STRING_RAW_CONST: 56>
ACTION = <NssTokenType.ACTION: 57>
BREAK = <NssTokenType.BREAK: 58>
CASE = <NssTokenType.CASE: 59>
CASSOWARY = <NssTokenType.CASSOWARY: 60>
CONST = <NssTokenType.CONST: 61>
CONTINUE = <NssTokenType.CONTINUE: 62>
DEFAULT = <NssTokenType.DEFAULT: 63>
DO = <NssTokenType.DO: 64>
EFFECT = <NssTokenType.EFFECT: 65>
ELSE = <NssTokenType.ELSE: 66>
EVENT = <NssTokenType.EVENT: 67>
FLOAT = <NssTokenType.FLOAT: 68>
FOR = <NssTokenType.FOR: 69>
IF = <NssTokenType.IF: 70>
INT = <NssTokenType.INT: 71>
ITEMPROPERTY = <NssTokenType.ITEMPROPERTY: 72>
JSON = <NssTokenType.JSON: 73>
LOCATION = <NssTokenType.LOCATION: 74>
OBJECT = <NssTokenType.OBJECT: 75>

```
RETURN = <NssTokenType.RETURN: 76>
STRING = <NssTokenType.STRING: 77>
STRUCT = <NssTokenType.STRUCT: 78>
SQLQUERY = <NssTokenType.SQLQUERY: 79>
SWITCH = <NssTokenType.SWITCH: 80>
TALENT = <NssTokenType.TALENT: 81>
VECTOR = <NssTokenType.VECTOR: 82>
VOID = <NssTokenType.VOID: 83>
WHILE = <NssTokenType.WHILE: 84>
JSON_CONST = <NssTokenType.JSON_CONST: 85>
LOCATION_INVALID = <NssTokenType.LOCATION_INVALID: 86>
```

```
class rollnw.script.PostfixExpression
```

Postfix operation expression

lhs: *Expression*

Lefthand side of the postfix expression

operator: *NssToken*

The postix operator, ‘++’, ‘-’, etc.

```
class rollnw.script.SignatureHelp
```

Data required for providing Signature Help in an LSP

active_param: *int*

The currently active parameter, i.e. where the cursor is in the parameter

decl: *Declaration*

The declaration for expr

expr: *CallExpression*

The current call expression

```
class rollnw.script.SourceLocation
```

Nss source location

length() → *int*

Length of the source location

range: *SourceRange*

Range in source code

view() → *str*

String view of the location

```
class rollnw.script.SourcePosition
```

Position in source code


```
column: int
    Starting column

line: int
    Starting line

class rollnw.script.SourceRange
    Range into the source code

end: SourcePosition
    End

start: SourcePosition
    Start

class rollnw.script.Statement
    Base statement class

class rollnw.script.StructDecl
    Struct declaration

    __getitem__(idx: int) → Declaration
        Gets a struct member declaration

    __iter__() → Iterator[Declaration]
        Gets iterator of statements

    __len__() → int
        Gets the number of struct members

class rollnw.script.SwitchStatement
    Switch statement

    block: BlockStatement
        The block of labels and stuff

    target: Expression
        The target expression for the switch

class rollnw.script.Symbol
    Info regarding a particular symbol somewhere in a source file

    comment: str
        Comment associated with the line the symbol is on or the line prior

    decl: Declaration
        The declaration of the symbol

    kind: SymbolKind
        The symbols kind, for use with an LSP

    node: AstNode | None
        The ast node where the symbol was found, if available

    provider: Nss
        The script in which the symbol was found
```

type: `str`

The symbols type as a string

view: `str`

A string view of the symbol in source

enum `rollnw.script.SymbolKind(value)`

Enum of different symbol kinds

Member Type

`int`

Valid values are as follows:

variable = `<SymbolKind.variable: 1>`

function = `<SymbolKind.function: 2>`

type = `<SymbolKind.type: 3>`

param = `<SymbolKind.param: 4>`

field = `<SymbolKind.field: 5>`

class `rollnw.script.UnaryExpression`

Unary operation expression

operator: `NssToken`

The postfix operator, '++', '--', etc.

rhs: `Expression`

Righthand side of the postfix expression

class `rollnw.script.VarDecl`

Variable declaration

init: `Expression | None`

An optional expression to initialize declaration

class `rollnw.script.VariableExpression`

Variable expression

var: `NssToken`

Token containing variable identifier

class `rollnw.script.WhileStatement`

While statement

block: `Statement`

While this is called block, any (single) statement can follow a for loop.

test: `Expression`

The expression that determines if the loop is to continue

6.23 are

```

all:
    ChanceLightning: int
    ChanceRain: int
    ChanceSnow: int
    Comments: string
    Creator_ID: int
    DayNightCycle: byte
    Expansion_List: # Obsolete
        - {}
    Flags: dword
    FogClipDist: float
    Height: int
    ID: int
    IsNight: byte
    LightingScheme: byte
    LoadScreenID: word
    ModListenCheck: int
    ModSpotCheck: int
    MoonAmbientColor: dword
    MoonDiffuseColor: dword
    MoonFogAmount: byte
    MoonFogColor: dword
    MoonShadows: byte
    Name: locstring
    NoRest: byte
    OnEnter: resref
    OnExit: resref
    OnHeartbeat: resref
    OnUserDefined: resref
    PlayerVsPlayer: byte
    ResRef: resref
    ShadowOpacity: byte
    SkyBox: byte
    SunAmbientColor: dword
    SunDiffuseColor: dword
    SunFogAmount: byte
    SunFogColor: dword
    SunShadows: byte
    Tag: string
    Tile_List:
        - $struct_id: 1
            Tile_AnimLoop1: byte
            Tile_AnimLoop2: byte
            Tile_AnimLoop3: byte
            Tile_Height: int
            Tile_ID: int
            Tile_MainLight1: byte
            Tile_MainLight2: byte
            Tile_Orientation: int
            Tile_SrcLight1: byte

```

(continues on next page)

(continued from previous page)

```

    Tile_SrcLight2: byte
    Tileset: resref
    Version: dword
    Width: int
    WindPower: int

```

6.24 bic

```

# [TODO] - A lot

instances:
  $inherit: utc.yaml
  Age: int
  LvlStatList:
    - $struct_id: 0
      EpicLevel: byte
      FeatList:
        - $struct_id: 0
          Feat: word
      KnownList{0-9}?:
        - $struct_id: 0
          Spell: word
      LvlStatAbility: byte?
      LvlStatClass: byte
      LvlStatHitDie: byte
      SkillList:
        - $struct_id: 0
          Rank: byte
      SkillPoints: word
  # Spells

```

6.25 dlg

```

all:
  DelayEntry: dword
  DelayReply: dword
  EndConverAbort: resref
  EndConversation: resref
  EntryList:
    - AnimLoop: byte
      Animation: dword
      Comment: cexostr
      Delay: dword
      Quest: cexostr
      RepliesList:
        - $struct_id: index
          Active: resref

```

(continues on next page)

(continued from previous page)

```

    Index: dword
    IsChild: byte
    LinkComment: cexostr
    Script: resref
    Sound: resref
    Speaker: cexostr
    Text: cexolocstr
NumWords: dword
PreventZoomIn: byte
ReplyList:
- $struct_id: index
  AnimLoop: byte
  Animation: dword
  Comment: cexostr
  Delay: dword
  EntriesList:
  - $struct_id: index
    Active: resref
    Index: dword
    IsChild: byte
    LinkComment: cexostr
  Quest: cexostr
  QuestEntry: dword
  Script: resref
  Sound: resref
  Text: cexolocstr
StartingList:
- $struct_id: index
  Active: resref
  Index: dword

```

6.26 fac

```

FactionList:
- $struct_id: index
  FactionGlobal: word
  FactionName: string
  FactionParentID: dword
ReplList:
- $struct_id: index
  FactionID1: dword
  FactionID2: dword
  FactionRep: dword

```

6.27 gic

```
Creature List:
- $struct_id: 4
  Comment: string
Door List:
- $struct_id: 8
  Comment: string
Encounter List:
- $struct_id: 7
  Comment: string
List:
- $struct_id: 0
  Comment: string
Placeable List:
- $struct_id: 9
  Comment: string
SoundList:
- $struct_id: 6
  Comment: string
  PlayInToolset: byte
StoreList:
- $struct_id: 11
  Comment: string
TriggerList:
- $struct_id: 1
  Comment: string
WaypointList:
- $struct_id: 5
  Comment: string
```

6.28 git

```
AreaProperties:
  $struct_id: 100
  AmbientSndDay: int
  AmbientSndDayVol: int
  AmbientSndNight: int
  AmbientSndNitVol: int
  EnvAudio: int
  MusicBattle: int
  MusicDay: int
  MusicDelay: int
  MusicNight: int
Creature List:
- $struct_id: 4
  utc.yml: instance
Door List:
- $struct_id: 8
  utd.yml: instance
```

(continues on next page)

(continued from previous page)

```

Encounter List:
- $struct_id: 7
  ute.yml: instance
List:
- $struct_id: 0
  uti.yml: instance
Placeable List:
- $struct_id: 9
  utp.yml: instance
SoundList:
- $struct_id: 6
  uts.yml: instance
StoreList:
- $struct_id: 11
  utm.yml: instance
TriggerList:
- $struct_id: 1
  utt.yml: instance
VarTable: variable.yml
WaypointList:
- $struct_id: 5
  utw.yml: instance

```

6.29 ifo

```

all:
  Expansion_Pack: word
  Mod_Area_list:
    - $struct_id: 6
      Area_Name: resref
  Mod_CacheNSSLList: # Obsolete
    - {}
  Mod_Creator_ID: int # Obsolete, always 2
  Mod_CustomTlk: string
  Mod_CutSceneList: # Obsolete
    - {}
  Mod_DawnHour: byte
  Mod_Description: locstring
  Mod_DuskHour: byte
  Mod_Entry_Area: resref
  Mod_Entry_Dir_X: float
  Mod_Entry_Dir_Y: float
  Mod_Entry_X: float
  Mod_Entry_Y: float
  Mod_Entry_Z: float
  Mod_Expan_List: # Obsolete
    - {}
  Mod_GVar_List: # Obsolete
    - {}
  Mod_HakList:

```

(continues on next page)

(continued from previous page)

```

- $struct_id: 8
  Mod_Hak: string
Mod_ID: void
Mod_IsSaveGame: byte
Mod_MinGameVer: string
Mod_MinPerHour: byte
Mod_Name: locstring
Mod_OnAcquirItem: resref
Mod_OnActvtItem: resref
Mod_OnClientEntr: resref
Mod_OnClientLeav: resref
Mod_OnCutsnAbort: resref
Mod_OnHeartbeat: resref
Mod_OnModLoad: resref
Mod_OnModStart: resref
Mod_OnPlrChat: resref
Mod_OnPlrDeath: resref
Mod_OnPlrDying: resref
Mod_OnPlrEqItm: resref
Mod_OnPlrLvlUp: resref
Mod_OnPlrRest: resref
Mod_OnPlrUnEqItm: resref
Mod_OnSpawnBtnDn: resref
Mod_OnUnAqreItem: resref
Mod_OnUsrDefined: resref
Mod_StartDay: byte
Mod_StartHour: byte
Mod_StartMonth: byte
Mod_StartMovie: resref
Mod_StartYear: dword
Mod_Tag: string
Mod_UUID: string
Mod_Version: dword
Mod_XPScale: byte
VarTable: vartable.yml

```

6.30 itp

```
# Note, this is not good
```

MAIN:

```

- $struct_id: 1
  ID: byte
  LIST:
    - $struct_id: 1
      CR: float
      FACTION: string
      ID: byte
      LIST:
        - $struct_id: 1

```

(continues on next page)

(continued from previous page)

```

    NAME: string
    RESREF: resref
    STRREF: dword
NAME: string
RESREF: resref
STRREF: dword
STRREF: dword

```

6.31 jrl

Categories:

```

- $struct_id: index
  Comment: cexostr
  EntryList:
    - $struct_id: index
      End: word
      ID: dword
      Text: cexolocstr
  Name: cexolocstr
  Picture: word
  Priority: dword
  Tag: cexostr
  XP: dword

```

6.32 utc

all:

```

Appearance_Head: byte
Appearance_Type: word
ArmorPart_RFoot: byte
BodyBag: byte
BodyPart_Belt: byte
BodyPart_LBicep: byte
BodyPart_LFArm: byte
BodyPart_LFoot: byte
BodyPart_LHand: byte
BodyPart_LShin: byte
BodyPart_LShoul: byte
BodyPart_LThigh: byte
BodyPart_Neck: byte
BodyPart_Pelvis: byte
BodyPart_RBicep: byte
BodyPart_RFArm: byte
BodyPart_RHand: byte
BodyPart_RShin: byte
BodyPart_RShoul: byte
BodyPart_RThigh: byte

```

(continues on next page)

(continued from previous page)

```
BodyPart_Torso: byte
CRAdjust: int
Cha: byte
ChallengeRating: float
ClassList:
  - Class: int
  ClassLevel: short
  KnownList0:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList1:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList2:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList3:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList4:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList5:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList6:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList7:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList8:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  KnownList9:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  MemorizedList0:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
  MemorizedList1:
```

(continues on next page)

(continued from previous page)

```

    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList2:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList3:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList4:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList5:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList6:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList7:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList8:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
MemorizedList9:
    - Spell: word
      SpellFlags: byte
      SpellMetaMagic: byte
Color_Hair: byte
Color_Skin: byte
Color_Tattoo1: byte
Color_Tattoo2: byte
Con: byte
Conversation: resref
CurrentHitPoints: short
DecayTime: dword
Deity: cexostr
Description: cexolocstr
Dex: byte
Disarmable: byte
FactionID: word
FeatList:
    - Feat: word
FirstName: cexolocstr
Gender: byte

```

(continues on next page)

(continued from previous page)

```

GoodEvil: byte
HitPoints: short
Int: byte
Interruptable: byte
IsImmortal: byte
IsPC: byte
LastName: cexolocstr
LawfulChaotic: byte
Lootable: byte
MaxHitPoints: short
NaturalAC: byte
NoPermDeath: byte
PerceptionRange: byte
Phenotype: int
Plot: byte
PortraitId: word
Race: byte
ScriptAttacked: resref
ScriptDamaged: resref
ScriptDeath: resref
ScriptDialogue: resref
ScriptDisturbed: resref
ScriptEndRound: resref
ScriptHeartbeat: resref
ScriptOnBlocked: resref
ScriptOnNotice: resref
ScriptRested: resref
ScriptSpawn: resref
ScriptSpellAt: resref
ScriptUserDefine: resref
SkillList:
  - Rank: byte
SoundSetFile: word
SpecAbilityList:
  - Spell: word
    SpellCasterLevel: byte
    SpellFlags: byte
StartingPackage: byte
Str: byte
Subrace: cexostr
Tag: cexostr
Tail_New: dword # 1.69
TemplateList:
  - TemplateID: word
TemplateResRef: resref
VarTable: vartable.yml
WalkRate: int
Wings_New: dword # 1.69
Wis: byte
fortbonus: short
refbonus: short
willbonus: short

```

(continues on next page)

(continued from previous page)

```

blueprint:
  Comment: cexostr
  Equip_ItemList:
    - Dropable: byte
      EquippedRes: resref
  ItemList:
    - Dropable: byte
      InventoryRes: resref
      Pickpocketable: byte
      Repos_PosX: word
      Repos_Posy: word
  PaletteID: byte

instance:
  Equip_ItemList:
    - uti.yml: instance
      Dropable: byte
  ItemList:
    - uti.yml: instance
      Dropable: byte
      Pickpocketable: byte
      Repos_PosX: word
      Repos_Posy: word

```

6.33 utd

```

all:
  AnimationState: byte
  Appearance: dword
  AutoRemoveKey: byte
  CloseLockDC: byte
  Conversation: resref
  CurrentHP: short
  Description: cexolocstr
  DisarmDC: byte
  Faction: dword
  Fort: byte
  GenericType_New: dword # 1.69
  GenericType: byte # until 1.69
  HP: short
  Hardness: byte
  Interruptable: byte
  KeyName: string
  KeyRequired: byte
  LinkedTo: string
  LinkedToFlags: byte
  LoadScreenID: word
  LocName: cexolocstr
  Lockable: byte

```

(continues on next page)

(continued from previous page)

```

Locked: byte
OnClick: resref
OnClosed: resref
OnDamaged: resref
OnDeath: resref
OnDisarm: resref
OnFailToOpen: resref
OnHeartbeat: resref
OnLock: resref
OnMeleeAttacked: resref
OnOpen: resref
OnSpellCastAt: resref
OnTrapTriggered: resref
OnUnlock: resref
OnUserDefined: resref
OpenLockDC: byte
Plot: byte
PortraitId: word
Ref: byte
Tag: string
TemplateResRef: resref
TrapDetectDC: byte
TrapDetectable: byte
TrapDisarmable: byte
TrapFlag: byte
TrapOneShot: byte
TrapType: byte
VarTable: vartable.yml
Will: byte

blueprint:
  Comment: string
  PaletteID: byte

instance:
  Bearing: float
  X: float
  "Y": float
  Z: float

```

6.34 ute

```

all:
  Active: byte
  CreatureList:
    - $struct_id: 0
      Appearance: int
      CR: float
      ResRef: resref
      SingleSpawn: byte

```

(continues on next page)

(continued from previous page)

```

Difficulty: int
DifficultyIndex: int
Faction: dword
LocalizedName: cexolocstr
MaxCreatures: int
OnEntered: resref
OnExhausted: resref
OnExit: resref
OnHeartbeat: resref
OnUserDefined: resref
PlayerOnly: byte
RecCreatures: int
Reset: byte
ResetTime: int
Respawns: int
SpawnOption: int
Tag: cexostr
TemplateResRef: resref

blueprint:
  Comment: cexostr
  PaletteID: byte

instance:
  Geometry:
    - $struct_id: 1
      X: float
      "Y": float
      Z: float
  SpawnPointList:
    - $struct_id: 0
      Orientation: float
      X: float
      "Y": float
      Z: float
  XPosition: float
  YPosition: float
  ZPosition: float

```

6.35 uti

```

all:
  AddCost: dword
  ArmorPart_Belt: byte
  ArmorPart_LBicep: byte
  ArmorPart_LFArm: byte
  ArmorPart_LFoot: byte
  ArmorPart_LHand: byte
  ArmorPart_LShin: byte
  ArmorPart_LShoul: byte

```

(continues on next page)

(continued from previous page)

```

ArmorPart_LThigh: byte
ArmorPart_Neck: byte
ArmorPart_Pelvis: byte
ArmorPart_RBicep: byte
ArmorPart_RFarm: byte
ArmorPart_RFoot: byte
ArmorPart_RHand: byte
ArmorPart_RShin: byte
ArmorPart_RShoul: byte
ArmorPart_RThigh: byte
ArmorPart_Robe: byte
ArmorPart_Torso: byte
BaseItem: int
Charges: byte
Cloth1Color: byte
Cloth2Color: byte
Cost: dword
Cursed: byte
DescIdentified: locstring
Description: locstring
Identified: byte
Leather1Color: byte
Leather2Color: byte
LocalizedName: locstring
Metal1Color: byte
Metal2Color: byte
ModelPart1: byte
ModelPart2: byte
ModelPart3: byte
Plot: byte
PropertiesList:
- ChanceAppear: byte
  CostTable: byte
  CostValue: word
  Param1: byte
  Param1Value: byte
  PropertyName: word
  Subtype: word
StackSize: word
Stolen: byte
Tag: cexostr
TemplateResRef: resref
VarTable: vartable.yml

blueprint:
  Comment: cexostr
  PaletteID: byte

instance:
  XOrientation: float
  XPosition: float
  YOrientation: float

```

(continues on next page)

(continued from previous page)

```
YPosition: float
ZPosition: float
```

6.36 utm

```
all:
  BM_MarkDown: int
  BlackMarket: byte
  ID: byte
  IdentifyPrice: int
  LocName: locstring
  MarkDown: int
  MarkUp: int
  MaxBuyPrice: int
  OnOpenStore: resref
  OnStoreClosed: resref
  ResRef: resref
  StoreGold: int
  Tag: string
  VarTable: variable.yml
  WillNotBuy:
    - BaseItem: int
  WillOnlyBuy:
    - BaseItem: int

blueprint:
  Comment: string
  StoreList:
    - ItemList:
        - Infinite: byte
        InventoryRes: resref
        Repos_PosX: word
        Repos_Posy: word

instance:
  StoreList:
    - Comment: string
    ItemList:
      - uti.yml: instance
      Infinite: byte
      Repos_PosX: word
      Repos_Posy: word
  XOrientation: float
  XPosition: float
  YOrientation: float
  YPosition: float
  ZPosition: float
```

6.37 utp

```
all:
  AnimationState: byte
  Appearance: dword
  AutoRemoveKey: byte
  BodyBag: byte
  CloseLockDC: byte
  Conversation: resref
  CurrentHP: short
  Description: locstring
  DisarmDC: byte
  Faction: dword
  Fort: byte
  HP: short
  Hardness: byte
  HasInventory: byte
  Interruptable: byte
  KeyName: string
  KeyRequired: byte
  LocName: locstring
  Lockable: byte
  Locked: byte
  OnClick: resref
  OnClosed: resref
  OnDamaged: resref
  OnDeath: resref
  OnDisarm: resref
  OnHeartbeat: resref
  OnInvDisturbed: resref
  OnLock: resref
  OnMeleeAttacked: resref
  OnOpen: resref
  OnSpellCastAt: resref
  OnTrapTriggered: resref
  OnUnlock: resref
  OnUsed: resref
  OnUserDefined: resref
  OpenLockDC: byte
  Plot: byte
  PortraitId: word
  Ref: byte
  Static: byte
  Tag: string
  TemplateResRef: resref
  TrapDetectDC: byte
  TrapDetectable: byte
  TrapDisarmable: byte
  TrapFlag: byte
  TrapOneShot: byte
  TrapType: byte
  Type: byte
```

(continues on next page)

(continued from previous page)

```

Useable: byte
VarTable: vartable.yml
Will: byte

blueprint:
  Comment: string
  ItemList:
    - $struct_id: index
      InventoryRes: resref
      Repos_PosX: word
      Repos_Posy: word
  PaletteID: byte

instance:
  Bearing: float
  ItemList:
    - $struct_id: index
      uti.yml: instance
      Repos_PosX: word
      Repos_Posy: word
  X: float
  "Y": float
  Z: float

```

6.38 uts

```

all:
  Active: byte
  Continuous: byte
  Elevation: float
  Hours: dword
  Interval: dword
  IntervalVrtn: dword
  LocName: locstring
  Looping: byte
  MaxDistance: float
  MinDistance: float
  PitchVariation: float
  Positional: byte
  Priority: byte
  Random: byte
  RandomPosition: byte
  RandomRangeX: float
  RandomRangeY: float
  Sounds:
    - $struct_id: 0
      Sound: resref
  Tag: string
  TemplateResRef: resref
  Times: byte

```

(continues on next page)

(continued from previous page)

```

Volume: byte
VolumeVrtn: byte

blueprint:
  Comment: string
  PaletteID: byte

instance:
  GeneratedType: dword # Docs say byte, but GFFs say dword
  XPosition: float
  YPosition: float
  ZPosition: float

```

6.39 utt

```

all:
  AutoRemoveKey: byte # Obsolete
  Cursor: byte
  DisarmDC: byte
  Faction: dword
  HighlightHeight: float
  KeyName: string # Obsolete
  LinkedTo: string
  LinkedToFlags: byte
  LoadScreenID: word
  LocalizedName: locstring
  OnClick: resref
  OnDisarm: resref
  OnTrapTriggered: resref
  PortraitId: word
  ScriptHeartbeat: resref
  ScriptOnEnter: resref
  ScriptOnExit: resref
  ScriptUserDefine: resref
  Tag: string
  TemplateResRef: resref
  TrapDetectDC: byte
  TrapDetectable: byte
  TrapDisarmable: byte
  TrapFlag: byte
  TrapOneShot: byte
  TrapType: byte
  Type: int
  VarTable: vartable.yml

blueprint:
  Comment: string
  PaletteID: byte

instance:

```

(continues on next page)

(continued from previous page)

```

Geometry:
- $struct_id: 3
  PointX: float
  PointY: float
  PointZ: float
XOrientation: float
XPosition: float
YOrientation: float
YPosition: float
ZOrientation: float
ZPosition: float

```

6.40 utw

```

all:
  Appearance: byte
  Description: locstring
  HasMapNote: byte
  LinkedTo: string
  LocalizedName: locstring
  MapNote: locstring
  MapNoteEnabled: byte
  Tag: string
  TemplateResRef: resref
  VarTable: variable.yml

blueprint:
  Comment: string
  PaletteID: byte

instance:
  XOrientation: float
  XPosition: float
  YOrientation: float
  YPosition: float
  ZPosition: float

```

6.41 variable

```

VarTable:
- Name: string
  Type: dword
  Value: string|int|float|location|object # Not sure if any of the others are ever
↪ saved.

```


PYTHON MODULE INDEX

r

- `rollnw`, 305
- `rollnw.kernel`, 346
- `rollnw.model`, 349
- `rollnw.nwn1`, 359
- `rollnw.script`, 361

Symbols

[__getitem__\(\)](#) (*rollnw.script.Ast* method), 362
[__getitem__\(\)](#) (*rollnw.script.BlockStatement* method), 362
[__getitem__\(\)](#) (*rollnw.script.CallExpression* method), 363
[__getitem__\(\)](#) (*rollnw.script.DeclList* method), 364
[__getitem__\(\)](#) (*rollnw.script.FunctionDecl* method), 366
[__getitem__\(\)](#) (*rollnw.script.StructDecl* method), 373
[__init__\(\)](#) (*rollnw.script.Context* method), 364
[__init__\(\)](#) (*rollnw.script.Nss* method), 368
[__init__\(\)](#) (*rollnw.script.NssLexer* method), 369
[__iter__\(\)](#) (*rollnw.script.Ast* method), 362
[__iter__\(\)](#) (*rollnw.script.BlockStatement* method), 363
[__iter__\(\)](#) (*rollnw.script.CallExpression* method), 363
[__iter__\(\)](#) (*rollnw.script.DeclList* method), 364
[__iter__\(\)](#) (*rollnw.script.FunctionDecl* method), 366
[__iter__\(\)](#) (*rollnw.script.StructDecl* method), 373
[__len__\(\)](#) (*rollnw.script.Ast* method), 362
[__len__\(\)](#) (*rollnw.script.BlockStatement* method), 363
[__len__\(\)](#) (*rollnw.script.CallExpression* method), 363
[__len__\(\)](#) (*rollnw.script.DeclList* method), 364
[__len__\(\)](#) (*rollnw.script.FunctionDecl* method), 366
[__len__\(\)](#) (*rollnw.script.StructDecl* method), 373
[__str__\(\)](#) (*rollnw.script.Comment* method), 363

A

[aabb](#) (*rollnw.model.MdlNodeFlags* attribute), 355
[aabb](#) (*rollnw.model.MdlNodeType* attribute), 356
[ability](#) (*rollnw.LevelUp* attribute), 327
[ac_armor_base](#) (*rollnw.CombatInfo* attribute), 309
[ac_natural_bonus](#) (*rollnw.CombatInfo* attribute), 309
[ac_shield_base](#) (*rollnw.CombatInfo* attribute), 310
[ACTION](#) (*rollnw.script.NssTokenType* attribute), 371
[activated](#) (*rollnw.PlaceableAnimationState* attribute), 333
[active](#) (*rollnw.Encounter* attribute), 319
[active](#) (*rollnw.Sound* attribute), 339
[active_param](#) (*rollnw.script.SignatureHelp* attribute), 372
[add\(\)](#) (*rollnw.Dialog* method), 313

[add\(\)](#) (*rollnw.DialogPtr* method), 315
[add\(\)](#) (*rollnw.Erf* method), 321
[add\(\)](#) (*rollnw.LocString* method), 327
[add_effect\(\)](#) (*rollnw.kernel.EffectSystem* method), 346
[add_feat\(\)](#) (*rollnw.CreatureStats* method), 313
[add_include_path\(\)](#) (*rollnw.script.Context* method), 364
[add_itemprop\(\)](#) (*rollnw.kernel.EffectSystem* method), 346
[add_known_spell\(\)](#) (*rollnw.SpellBook* method), 340
[add_memorized_spell\(\)](#) (*rollnw.SpellBook* method), 340
[add_ptr\(\)](#) (*rollnw.Dialog* method), 313
[add_ptr\(\)](#) (*rollnw.DialogPtr* method), 315
[add_string\(\)](#) (*rollnw.Dialog* method), 313
[add_string\(\)](#) (*rollnw.DialogPtr* method), 315
[additional_cost](#) (*rollnw.Item* attribute), 324
[affectdynamic](#) (*rollnw.model.MdlLightNode* attribute), 354
[affected_by_wind](#) (*rollnw.model.ModelEmitterFlag* attribute), 358
[all\(\)](#) (*rollnw.Container* method), 310
[alpha](#) (*rollnw.model.MdlControllerType* attribute), 351
[alpha_end](#) (*rollnw.model.MdlControllerType* attribute), 351
[alpha_mid](#) (*rollnw.model.MdlControllerType* attribute), 351
[alpha_start](#) (*rollnw.model.MdlControllerType* attribute), 351
[ambient](#) (*rollnw.model.MdlTrimeshNode* attribute), 357
[ambientonly](#) (*rollnw.model.MdlLightNode* attribute), 354
[AND](#) (*rollnw.script.NssTokenType* attribute), 370
[ANDAND](#) (*rollnw.script.NssTokenType* attribute), 370
[ANDEQ](#) (*rollnw.script.NssTokenType* attribute), 370
[anim](#) (*rollnw.model.MdlNodeFlags* attribute), 355
[anim_root](#) (*rollnw.model.MdlAnimation* attribute), 349
[animation](#) (*rollnw.DialogNode* attribute), 314
[animation](#) (*rollnw.model.MdlGeometryFlag* attribute), 354
[animation](#) (*rollnw.model.MdlGeometryType* attribute), 354

- animation_count() (rollnw.model.MdlModel method), 355
 animation_state (rollnw.Door attribute), 316
 animation_state (rollnw.Placeable attribute), 332
 animations() (rollnw.model.MdlModel method), 355
 animationscale (rollnw.model.MdlModel attribute), 355
 animloop1 (rollnw.Tile attribute), 342
 animloop2 (rollnw.Tile attribute), 342
 animloop3 (rollnw.Tile attribute), 342
 animmesh (rollnw.model.MdlNodeType attribute), 356
 animtverts (rollnw.model.MdlAnimeshNode attribute), 350
 animverts (rollnw.model.MdlAnimeshNode attribute), 350
 Appearance (class in rollnw), 305
 appearance (rollnw.Creature attribute), 311
 appearance (rollnw.Door attribute), 316
 appearance (rollnw.Placeable attribute), 332
 appearance (rollnw.SpawnCreature attribute), 340
 appearance (rollnw.Waypoint attribute), 345
 apply() (rollnw.kernel.EffectSystem method), 346
 are (rollnw.ResourceType attribute), 336
 Area (class in rollnw), 306
 area (rollnw.Location attribute), 329
 area (rollnw.ObjectType attribute), 332
 area() (rollnw.kernel.Objects method), 347
 area_count() (rollnw.Module method), 329
 areaofeffect (rollnw.ObjectType attribute), 332
 AreaScripts (class in rollnw), 307
 AreaWeather (class in rollnw), 307
 armor (rollnw.ItemModelType attribute), 325
 armor (rollnw.Store attribute), 341
 armor_belt (rollnw.ItemModelParts attribute), 325
 armor_class (rollnw.AttackData attribute), 308
 armor_lbicep (rollnw.ItemModelParts attribute), 325
 armor_lfarm (rollnw.ItemModelParts attribute), 325
 armor_lfoot (rollnw.ItemModelParts attribute), 325
 armor_lhand (rollnw.ItemModelParts attribute), 325
 armor_lshin (rollnw.ItemModelParts attribute), 325
 armor_lshoul (rollnw.ItemModelParts attribute), 325
 armor_lthigh (rollnw.ItemModelParts attribute), 325
 armor_neck (rollnw.ItemModelParts attribute), 325
 armor_pelvis (rollnw.ItemModelParts attribute), 325
 armor_rbicep (rollnw.ItemModelParts attribute), 325
 armor_rfarm (rollnw.ItemModelParts attribute), 325
 armor_rfoot (rollnw.ItemModelParts attribute), 325
 armor_rhand (rollnw.ItemModelParts attribute), 325
 armor_robe (rollnw.ItemModelParts attribute), 325
 armor_rshin (rollnw.ItemModelParts attribute), 325
 armor_rshoul (rollnw.ItemModelParts attribute), 325
 armor_rthigh (rollnw.ItemModelParts attribute), 325
 armor_torso (rollnw.ItemModelParts attribute), 325
 arms (rollnw.EquipIndex attribute), 320
 arms (rollnw.EquipSlot attribute), 321
 arrows (rollnw.EquipIndex attribute), 320
 arrows (rollnw.EquipSlot attribute), 321
 AssignExpression (class in rollnw.script), 361
 Ast (class in rollnw.script), 362
 ast() (rollnw.script.Nss method), 368
 AstNode (class in rollnw.script), 362
 attack_bonus (rollnw.AttackData attribute), 308
 attack_roll (rollnw.AttackData attribute), 308
 AttackData (class in rollnw), 308
 attacker (rollnw.AttackData attribute), 308
 attacks_per_second() (in module rollnw.nwn1), 359
- ## B
- bak (rollnw.ResourceType attribute), 338
 base_attack_bonus() (in module rollnw.nwn1), 359
 baseitem (rollnw.Item attribute), 324
 beaming (rollnw.model.MdlTrimeshNode attribute), 357
 belt (rollnw.BodyParts attribute), 309
 belt (rollnw.EquipIndex attribute), 320
 belt (rollnw.EquipSlot attribute), 321
 bic (rollnw.ResourceType attribute), 337
 bicep_left (rollnw.BodyParts attribute), 309
 bicep_right (rollnw.BodyParts attribute), 309
 bif (rollnw.ResourceType attribute), 339
 bik (rollnw.ResourceType attribute), 338
 binary (rollnw.model.MdlGeometryFlag attribute), 354
 BinaryExpression (class in rollnw.script), 362
 birthrate (rollnw.model.MdlControllerType attribute), 351
 bitmap (rollnw.model.MdlTrimeshNode attribute), 357
 blackmarket (rollnw.Store attribute), 341
 blackmarket_markdown (rollnw.Store attribute), 341
 blastlength (rollnw.model.MdlEmitterNode attribute), 352
 blastradius (rollnw.model.MdlEmitterNode attribute), 353
 blend (rollnw.model.MdlEmitterNode attribute), 353
 blend_sel (rollnw.model.MdlEmitterNode attribute), 353
 block (rollnw.script.DoStatement attribute), 365
 block (rollnw.script.ForStatement attribute), 365
 block (rollnw.script.FunctionDefinition attribute), 366
 block (rollnw.script.SwitchStatement attribute), 373
 block (rollnw.script.WhileStatement attribute), 374
 BlockStatement (class in rollnw.script), 362
 blur_length (rollnw.model.MdlControllerType attribute), 351
 bmax (rollnw.model.MdlAABBEntry attribute), 349
 bmax (rollnw.model.MdlModel attribute), 355
 bmax (rollnw.model.MdlTrimeshNode attribute), 357
 bmin (rollnw.model.MdlAABBEntry attribute), 349
 bmin (rollnw.model.MdlModel attribute), 355
 bmin (rollnw.model.MdlTrimeshNode attribute), 357

bmp (*rollnw.ResourceType* attribute), 336
 bmu (*rollnw.ResourceType* attribute), 336
 body_parts (*rollnw.Appearance* attribute), 305
 bodybag (*rollnw.Creature* attribute), 311
 bodybag (*rollnw.Placeable* attribute), 332
 BodyParts (class in *rollnw*), 309
 bolts (*rollnw.EquipIndex* attribute), 320
 bolts (*rollnw.EquipSlot* attribute), 321
 bones (*rollnw.model.SkinVertex* attribute), 358
 bonus (*rollnw.DiceRoll* attribute), 316
 boots (*rollnw.EquipIndex* attribute), 320
 boots (*rollnw.EquipSlot* attribute), 321
 bounce (*rollnw.model.ModelEmitterFlag* attribute), 358
 bounce_co (*rollnw.model.MdlControllerType* attribute), 351
 bow (*rollnw.DialogAnimation* attribute), 314
 BREAK (*rollnw.script.NssTokenType* attribute), 371
 btc (*rollnw.ResourceType* attribute), 337
 btd (*rollnw.ResourceType* attribute), 337
 bte (*rollnw.ResourceType* attribute), 337
 btg (*rollnw.ResourceType* attribute), 338
 bti (*rollnw.ResourceType* attribute), 337
 btm (*rollnw.ResourceType* attribute), 338
 btp (*rollnw.ResourceType* attribute), 337
 bts (*rollnw.ResourceType* attribute), 337
 btt (*rollnw.ResourceType* attribute), 337
 bullets (*rollnw.EquipIndex* attribute), 320
 bullets (*rollnw.EquipSlot* attribute), 321
C
 caf (*rollnw.ResourceType* attribute), 339
 calculate_ac_versus() (in module *rollnw.nwnI*), 359
 calculate_item_ac() (in module *rollnw.nwnI*), 359
 CallExpression (class in *rollnw.script*), 363
 camera (*rollnw.model.MdlNodeFlags* attribute), 355
 camera (*rollnw.model.MdlNodeType* attribute), 356
 can_equip_item() (in module *rollnw.nwnI*), 359
 can_use_monk_abilities() (in module *rollnw.nwnI*), 359
 CASE (*rollnw.script.NssTokenType* attribute), 371
 CASSOWARY (*rollnw.script.NssTokenType* attribute), 371
 category (*rollnw.EffectHandle* attribute), 319
 ccs (*rollnw.ResourceType* attribute), 338
 center (*rollnw.model.MdlTrimeshNode* attribute), 357
 chance_lightning (*rollnw.AreaWeather* attribute), 307
 chance_rain (*rollnw.AreaWeather* attribute), 307
 chance_snow (*rollnw.AreaWeather* attribute), 307
 channels() (*rollnw.Image* method), 322
 character (*rollnw.model.MdlClassification* attribute), 350
 charges (*rollnw.Item* attribute), 324
 chest (*rollnw.EquipIndex* attribute), 320
 chest (*rollnw.EquipSlot* attribute), 321
 children (*rollnw.model.MdlNode* attribute), 355

chinese_simplified (*rollnw.LanguageID* attribute), 327
 chinese_traditional (*rollnw.LanguageID* attribute), 326
 chunk_death (*rollnw.Creature* attribute), 311
 chunkname (*rollnw.model.MdlEmitterNode* attribute), 353
 class_ (*rollnw.LevelUp* attribute), 327
 ClassEntry (class in *rollnw*), 309
 classification (*rollnw.model.MdlModel* attribute), 355
 clear() (*rollnw.Effect* method), 318
 cloak (*rollnw.EquipIndex* attribute), 320
 cloak (*rollnw.EquipSlot* attribute), 321
 closed (*rollnw.DoorAnimationState* attribute), 317
 closed (*rollnw.PlaceableAnimationState* attribute), 333
 cloth1 (*rollnw.ItemColors* attribute), 324
 cloth2 (*rollnw.ItemColors* attribute), 324
 COLON (*rollnw.script.NssTokenType* attribute), 369
 color (*rollnw.model.MdlControllerType* attribute), 351
 color (*rollnw.model.MdlLightNode* attribute), 354
 color (*rollnw.PlrPixel* attribute), 335
 color_end (*rollnw.model.MdlControllerType* attribute), 351
 color_mid (*rollnw.model.MdlControllerType* attribute), 351
 color_moon_ambient (*rollnw.AreaWeather* attribute), 307
 color_moon_diffuse (*rollnw.AreaWeather* attribute), 307
 color_moon_fog (*rollnw.AreaWeather* attribute), 307
 color_start (*rollnw.model.MdlControllerType* attribute), 351
 color_sun_ambient (*rollnw.AreaWeather* attribute), 307
 color_sun_diffuse (*rollnw.AreaWeather* attribute), 307
 color_sun_fog (*rollnw.AreaWeather* attribute), 307
 colors (*rollnw.PlrColors* attribute), 334
 column (*rollnw.script.SourcePosition* attribute), 372
 columns (*rollnw.model.MdlControllerKey* attribute), 350
 combat_mode (*rollnw.CombatInfo* attribute), 310
 CombatInfo (class in *rollnw*), 309
 combine_time (*rollnw.model.MdlControllerType* attribute), 351
 COMMA (*rollnw.script.NssTokenType* attribute), 369
 command_script() (*rollnw.script.Context* method), 364
 Comment (class in *rollnw.script*), 363
 comment (*rollnw.Common* attribute), 310
 comment (*rollnw.DialogNode* attribute), 314
 comment (*rollnw.DialogPtr* attribute), 315
 comment (*rollnw.script.Symbol* attribute), 373
 comments (*rollnw.Area* attribute), 306
 comments() (*rollnw.script.Ast* method), 362

Common (class in rollnw), 310
common (rollnw.Creature attribute), 311
common (rollnw.Placeable attribute), 332
common (rollnw.Sound attribute), 339
ComparisonExpression (class in rollnw.script), 363
complete() (rollnw.script.AstNode method), 362
complete() (rollnw.script.Nss method), 368
complete_at() (rollnw.script.Nss method), 368
complete_dot() (rollnw.script.Nss method), 368
composite (rollnw.ItemModelType attribute), 325
concealment (rollnw.AttackData attribute), 308
ConditionalExpression (class in rollnw.script), 363
Config (class in rollnw.kernel), 346
config() (in module rollnw.kernel), 348
ConfigOptions (class in rollnw.kernel), 346
CONST (rollnw.script.NssTokenType attribute), 371
constraints (rollnw.model.MdlDanglymeshNode attribute), 352
Container (class in rollnw), 310
container (rollnw.ResourceType attribute), 336
contains() (rollnw.Container method), 310
contains() (rollnw.LocString method), 327
Context (class in rollnw.script), 363
CONTINUE (rollnw.script.NssTokenType attribute), 371
continuous (rollnw.Sound attribute), 339
conversation (rollnw.Creature attribute), 311
conversation (rollnw.Door attribute), 316
conversation (rollnw.Placeable attribute), 332
copy() (rollnw.DialogNode method), 315
copy() (rollnw.DialogPtr method), 315
cost (rollnw.Item attribute), 324
cost_table (rollnw.ItemProperty attribute), 325
cost_value (rollnw.ItemProperty attribute), 326
cr (rollnw.Creature attribute), 311
cr (rollnw.SpawnCreature attribute), 340
cr_adjust (rollnw.Creature attribute), 311
create() (rollnw.kernel.EffectSystem method), 347
creator (rollnw.EffectHandle attribute), 319
creator (rollnw.Module attribute), 329
creator_id (rollnw.Area attribute), 306
Creature (class in rollnw), 311
creature (rollnw.ObjectType attribute), 332
creature() (rollnw.kernel.Objects method), 348
creature_bite (rollnw.EquipIndex attribute), 320
creature_bite (rollnw.EquipSlot attribute), 321
creature_left (rollnw.EquipIndex attribute), 320
creature_left (rollnw.EquipSlot attribute), 321
creature_right (rollnw.EquipIndex attribute), 320
creature_right (rollnw.EquipSlot attribute), 321
creature_skin (rollnw.EquipIndex attribute), 320
creature_skin (rollnw.EquipSlot attribute), 321
creatures (rollnw.Area attribute), 306
creatures (rollnw.Encounter attribute), 319
creatures_max (rollnw.Encounter attribute), 319

creatures_recommended (rollnw.Encounter attribute), 319
CreatureScripts (class in rollnw), 312
CreatureStats (class in rollnw), 313
css (rollnw.ResourceType attribute), 338
current() (rollnw.script.NssLexer method), 369
cursed (rollnw.Item attribute), 324
cursor (rollnw.Trigger attribute), 343

D

dangly (rollnw.model.MdlNodeFlags attribute), 355
danglymesh (rollnw.model.MdlNodeType attribute), 356
dat (rollnw.ResourceType attribute), 338
data (rollnw.script.LiteralExpression attribute), 367
data() (rollnw.Image method), 323
data_offset (rollnw.model.MdlControllerKey attribute), 350
dawn_hour (rollnw.Module attribute), 329
day_night_cycle (rollnw.AreaWeather attribute), 307
dds (rollnw.ResourceType attribute), 337
deactivated (rollnw.PlaceableAnimationState attribute), 333
deadspace (rollnw.model.MdlEmitterNode attribute), 353
decay_time (rollnw.Creature attribute), 311
decl (rollnw.script.FunctionDefinition attribute), 366
decl (rollnw.script.SignatureHelp attribute), 372
decl (rollnw.script.Symbol attribute), 373
Declaration (class in rollnw.script), 364
DeclList (class in rollnw.script), 364
decode_plt_color() (in module rollnw), 345
default (rollnw.DialogAnimation attribute), 314
DEFAULT (rollnw.script.NssTokenType attribute), 371
DEFINE_ENUM_FLAGS (C macro), 252
defines (rollnw.script.Ast attribute), 362
deity (rollnw.Creature attribute), 311
delay (rollnw.DialogNode attribute), 315
delay_entry (rollnw.Dialog attribute), 313
delay_reply (rollnw.Dialog attribute), 313
delete_float() (rollnw.LocalData method), 328
delete_int() (rollnw.LocalData method), 328
delete_location() (rollnw.LocalData method), 328
delete_object() (rollnw.LocalData method), 328
delete_ptr() (rollnw.Dialog method), 313
delete_string() (rollnw.LocalData method), 328
demand() (rollnw.Container method), 310
description (rollnw.Creature attribute), 311
description (rollnw.Door attribute), 316
description (rollnw.Item attribute), 324
description (rollnw.Module attribute), 329
description (rollnw.Placeable attribute), 332
description (rollnw.Waypoint attribute), 345
description_id (rollnw.Item attribute), 324
destroy() (rollnw.kernel.EffectSystem method), 347

- destroy() (*rollnw.kernel.Objects* method), 348
 destroyed (*rollnw.PlaceableAnimationState* attribute), 333
 detect_dc (*rollnw.Trap* attribute), 343
 detectable (*rollnw.Trap* attribute), 343
 detonate (*rollnw.model.MdlControllerType* attribute), 351
 dft (*rollnw.ResourceType* attribute), 337
 Diagnostic (class in *rollnw.script*), 364
 diagnostics() (*rollnw.script.Nss* method), 368
 Dialog (class in *rollnw*), 313
 DialogNode (class in *rollnw*), 314
 DialogPtr (class in *rollnw*), 315
 dice (*rollnw.DiceRoll* attribute), 316
 DiceRoll (class in *rollnw*), 316
 difficulty (*rollnw.Encounter* attribute), 319
 difficulty_index (*rollnw.Encounter* attribute), 319
 diffuse (*rollnw.model.MdlTrimeshNode* attribute), 357
 Directory (class in *rollnw*), 316
 disarm_dc (*rollnw.Trap* attribute), 343
 disarmable (*rollnw.Creature* attribute), 311
 disarmable (*rollnw.Trap* attribute), 343
 displacement (*rollnw.model.MdlDanglymeshNode* attribute), 352
 displtype (*rollnw.model.MdlTrimeshNode* attribute), 357
 distance_max (*rollnw.Sound* attribute), 339
 distance_min (*rollnw.Sound* attribute), 339
 DIV (*rollnw.script.NssTokenType* attribute), 370
 DIVEQ (*rollnw.script.NssTokenType* attribute), 370
 dlg (*rollnw.ResourceType* attribute), 337
 DO (*rollnw.script.NssTokenType* attribute), 371
 Door (class in *rollnw*), 316
 door (*rollnw.model.MdlClassification* attribute), 350
 door (*rollnw.ObjectType* attribute), 332
 door() (*rollnw.kernel.Objects* method), 348
 doors (*rollnw.Area* attribute), 306
 DoorScripts (class in *rollnw*), 317
 DoStatement (class in *rollnw.script*), 365
 DOT (*rollnw.script.NssTokenType* attribute), 370
 DotExpression (class in *rollnw.script*), 365
 drag (*rollnw.model.MdlControllerType* attribute), 351
 drink (*rollnw.DialogAnimation* attribute), 314
 dummy (*rollnw.model.MdlNodeType* attribute), 356
 dusk_hour (*rollnw.Module* attribute), 329
 dwk (*rollnw.ResourceType* attribute), 338
 dynamic (*rollnw.model.MdlLightNode* attribute), 354
- ## E
- Effect (class in *rollnw*), 318
 effect (*rollnw.EffectHandle* attribute), 319
 effect (*rollnw.model.MdlClassification* attribute), 350
 EFFECT (*rollnw.script.NssTokenType* attribute), 371
 effect_ability_modifier() (in module *rollnw.nwn1*), 359
 effect_armor_class_modifier() (in module *rollnw.nwn1*), 359
 effect_attack_modifier() (in module *rollnw.nwn1*), 359
 effect_haste() (in module *rollnw.nwn1*), 359
 effect_limits_ability() (*rollnw.kernel.EffectSystem* method), 347
 effect_limits_armor_class() (*rollnw.kernel.EffectSystem* method), 347
 effect_limits_attack() (*rollnw.kernel.EffectSystem* method), 347
 effect_limits_skill() (*rollnw.kernel.EffectSystem* method), 347
 effect_skill_modifier() (in module *rollnw.nwn1*), 359
 EffectHandle (class in *rollnw*), 319
 EffectID (class in *rollnw*), 319
 effects() (in module *rollnw.kernel*), 348
 EffectSystem (class in *rollnw.kernel*), 346
 EffectSystemStats (class in *rollnw.kernel*), 347
 elevation (*rollnw.Sound* attribute), 339
 ELSE (*rollnw.script.NssTokenType* attribute), 371
 emitter (*rollnw.model.MdlNodeFlags* attribute), 356
 emitter (*rollnw.model.MdlNodeType* attribute), 356
 empower (*rollnw.SpellMetaMagic* attribute), 341
 EmptyExpression (class in *rollnw.script*), 365
 EmptyStatement (class in *rollnw.script*), 365
 encoding() (*rollnw.Language* static method), 326
 Encounter (class in *rollnw*), 319
 encounter (*rollnw.ObjectType* attribute), 332
 encounter() (*rollnw.kernel.Objects* method), 348
 encounters (*rollnw.Area* attribute), 306
 EncounterScripts (class in *rollnw*), 320
 END (*rollnw.script.NssTokenType* attribute), 369
 end (*rollnw.script.SourceRange* attribute), 373
 english (*rollnw.LanguageID* attribute), 326
 entries (*rollnw.LevelHistory* attribute), 327
 entries (*rollnw.LevelStats* attribute), 327
 entries (*rollnw.model.MdlAABBNode* attribute), 349
 entry (*rollnw.DialogNodeType* attribute), 315
 entry_area (*rollnw.Module* attribute), 329
 entry_orientation (*rollnw.Module* attribute), 329
 entry_position (*rollnw.Module* attribute), 329
 epic (*rollnw.LevelUp* attribute), 327
 EQ (*rollnw.script.NssTokenType* attribute), 370
 EQEQ (*rollnw.script.NssTokenType* attribute), 370
 equip_index_to_attack_type() (in module *rollnw.nwn1*), 359
 equip_item() (in module *rollnw.nwn1*), 359
 equipment (*rollnw.Creature* property), 311
 Equips (class in *rollnw*), 321
 equips (*rollnw.Equips* attribute), 321

erase() (*rollnw.Erf* method), 322
 Erf (class in *rollnw*), 321
 erf (*rollnw.ResourceType* attribute), 339
 error (*rollnw.script.DiagnosticSeverity* attribute), 364
 errors() (*rollnw.script.Nss* method), 368
 EVENT (*rollnw.script.NssTokenType* attribute), 371
 events (*rollnw.model.MdlAnimation* attribute), 349
 expansion_pack (*rollnw.Module* attribute), 329
 exports() (*rollnw.script.Nss* method), 368
 expr (*rollnw.script.CallExpression* attribute), 363
 expr (*rollnw.script.ExprStatement* attribute), 365
 expr (*rollnw.script.GroupingExpression* attribute), 366
 expr (*rollnw.script.JumpStatement* attribute), 367
 expr (*rollnw.script.LabelStatement* attribute), 367
 expr (*rollnw.script.SignatureHelp* attribute), 372
 Expression (class in *rollnw.script*), 365
 ExprStatement (class in *rollnw.script*), 365
 extend (*rollnw.SpellMetaMagic* attribute), 341
 extract() (*rollnw.Container* method), 310
 extract_by_glob() (*rollnw.Container* method), 310
 extraordinary (*rollnw.EffectCategory* attribute), 318

F

fac (*rollnw.ResourceType* attribute), 337
 faction (*rollnw.Door* attribute), 316
 faction (*rollnw.Encounter* attribute), 319
 faction (*rollnw.Placeable* attribute), 332
 faction (*rollnw.Trigger* attribute), 343
 faction_id (*rollnw.Creature* attribute), 311
 fadinglight (*rollnw.model.MdlLightNode* attribute), 354
 false_branch (*rollnw.script.ConditionalExpression* attribute), 363
 false_branch (*rollnw.script.IfStatement* attribute), 366
 feats (*rollnw.LevelUp* attribute), 327
 field (*rollnw.script.SymbolKind* attribute), 374
 file_dependency (*rollnw.model.MdlModel* attribute), 355
 filename() (*rollnw.Resource* method), 335
 find_comment() (*rollnw.script.Ast* method), 362
 flags (*rollnw.Area* attribute), 306
 flags (*rollnw.model.MdlEmitterNode* attribute), 353
 flags (*rollnw.SpecialAbility* attribute), 340
 flags (*rollnw.SpellEntry* attribute), 341
 flarecolorshifts (*rollnw.model.MdlLightNode* attribute), 354
 flarepositions (*rollnw.model.MdlLightNode* attribute), 354
 flareradius (*rollnw.model.MdlLightNode* attribute), 354
 flaresizes (*rollnw.model.MdlLightNode* attribute), 354
 FLOAT (*rollnw.script.NssTokenType* attribute), 371
 FLOAT_CONST (*rollnw.script.NssTokenType* attribute), 371

fnt (*rollnw.ResourceType* attribute), 336
 fog_clip_distance (*rollnw.AreaWeather* attribute), 307
 fog_moon_amount (*rollnw.AreaWeather* attribute), 307
 fog_sun_amount (*rollnw.AreaWeather* attribute), 307
 foot_left (*rollnw.BodyParts* attribute), 309
 foot_right (*rollnw.BodyParts* attribute), 309
 FOR (*rollnw.script.NssTokenType* attribute), 371
 forearm_left (*rollnw.BodyParts* attribute), 309
 forearm_right (*rollnw.BodyParts* attribute), 309
 ForStatement (class in *rollnw.script*), 365
 fort (*rollnw.Saves* attribute), 339
 fourpc (*rollnw.ResourceType* attribute), 338
 fps (*rollnw.model.MdlControllerType* attribute), 351
 frame_end (*rollnw.model.MdlControllerType* attribute), 351
 frame_start (*rollnw.model.MdlControllerType* attribute), 351
 free_list_size (*rollnw.kernel.EffectSystemStats* attribute), 347
 french (*rollnw.LanguageID* attribute), 326
 from_dict() (*rollnw.Creature* static method), 311
 from_dict() (*rollnw.Door* static method), 316
 from_dict() (*rollnw.Encounter* static method), 319
 from_dict() (*rollnw.Item* static method), 324
 from_dict() (*rollnw.LocString* static method), 328
 from_dict() (*rollnw.Placeable* static method), 332
 from_dict() (*rollnw.Sound* static method), 339
 from_dict() (*rollnw.Store* static method), 341
 from_dict() (*rollnw.Trigger* static method), 343
 from_dict() (*rollnw.Waypoint* static method), 345
 from_file() (*rollnw.Creature* static method), 311
 from_file() (*rollnw.Dialog* static method), 313
 from_file() (*rollnw.Door* static method), 316
 from_file() (*rollnw.Encounter* static method), 319
 from_file() (*rollnw.Item* static method), 324
 from_file() (*rollnw.model.Mdl* static method), 349
 from_file() (*rollnw.Placeable* static method), 332
 from_file() (*rollnw.Sound* static method), 339
 from_file() (*rollnw.Store* static method), 342
 from_file() (*rollnw.Trigger* static method), 343
 from_file() (*rollnw.Waypoint* static method), 345
 from_filename() (*rollnw.Resource* static method), 335
 from_string() (*rollnw.Language* static method), 326
 from_string() (*rollnw.script.Nss* static method), 368
 function (*rollnw.script.SymbolKind* attribute), 374
 FunctionDecl (class in *rollnw.script*), 366
 FunctionDefinition (class in *rollnw.script*), 366

G

gender (*rollnw.Creature* attribute), 311
 generated_type (*rollnw.Sound* attribute), 339
 generateflare (*rollnw.model.MdlLightNode* attribute), 354

- generic_type (rollnw.Door attribute), 317
 geometry (rollnw.Encounter attribute), 319
 geometry (rollnw.model.MdlGeometryFlag attribute), 354
 geometry (rollnw.model.MdlGeometryType attribute), 354
 geometry (rollnw.Trigger attribute), 344
 german (rollnw.LanguageID attribute), 326
 get() (rollnw.kernel.Objects method), 348
 get() (rollnw.kernel.TwoDACCACHE method), 348
 get() (rollnw.LocString method), 328
 get() (rollnw.NWSync method), 331
 get() (rollnw.script.Context method), 364
 get() (rollnw.Tlk method), 343
 get() (rollnw.TwoDA method), 344
 get_ability_modifier() (in module rollnw.nwn1), 359
 get_ability_score() (in module rollnw.nwn1), 359
 get_ability_score() (rollnw.CreatureStats method), 313
 get_action_param() (rollnw.DialogNode method), 315
 get_animation() (rollnw.model.MdlModel method), 355
 get_area() (rollnw.Module method), 329
 get_by_tag() (rollnw.kernel.Objects method), 348
 get_caster_level() (in module rollnw.nwn1), 359
 get_condition_param() (rollnw.DialogPtr method), 316
 get_controller() (rollnw.model.MdlNode method), 355
 get_dex_modifier() (in module rollnw.nwn1), 359
 get_equipped_item() (in module rollnw.nwn1), 359
 get_float() (rollnw.Effect method), 318
 get_float() (rollnw.Ini method), 323
 get_float() (rollnw.LocalData method), 328
 get_int() (rollnw.Effect method), 318
 get_int() (rollnw.Ini method), 323
 get_int() (rollnw.LocalData method), 328
 get_known_spell() (rollnw.SpellBook method), 340
 get_known_spell_count() (rollnw.SpellBook method), 341
 get_location() (rollnw.LocalData method), 328
 get_memorized_spell() (rollnw.SpellBook method), 341
 get_memorized_spell_count() (rollnw.SpellBook method), 341
 get_object() (rollnw.LocalData method), 328
 get_skill_rank() (in module rollnw.nwn1), 359
 get_skill_rank() (rollnw.CreatureStats method), 313
 get_spell_dc() (in module rollnw.nwn1), 360
 get_str() (rollnw.Ini method), 323
 get_string() (rollnw.Effect method), 318
 get_string() (rollnw.LocalData method), 328
 get_weapon_by_attack_type() (in module rollnw.nwn1), 360
 gff (rollnw.ResourceType attribute), 337
 gff_archive (rollnw.ResourceType attribute), 336
 gic (rollnw.ResourceType attribute), 337
 gif (rollnw.ResourceType attribute), 339
 git (rollnw.ResourceType attribute), 337
 gold (rollnw.Store attribute), 342
 good_evil (rollnw.Creature attribute), 311
 grav (rollnw.model.MdlControllerType attribute), 351
 greeting (rollnw.DialogAnimation attribute), 314
 GroupingExpression (class in rollnw.script), 366
 GT (rollnw.script.NssTokenType attribute), 370
 GTEQ (rollnw.script.NssTokenType attribute), 370
 gui (rollnw.model.MdlClassification attribute), 350
 gui (rollnw.ObjectType attribute), 332
 gui (rollnw.ResourceType attribute), 337
- ## H
- hair (rollnw.Appearance attribute), 305
 hak (rollnw.ResourceType attribute), 338
 haks (rollnw.Module attribute), 330
 hand_left (rollnw.BodyParts attribute), 309
 hand_right (rollnw.BodyParts attribute), 309
 handle() (rollnw.Effect method), 318
 handle() (rollnw.ObjectBase method), 331
 hardness (rollnw.Door attribute), 317
 hardness (rollnw.Placeable attribute), 332
 has_feat() (rollnw.CreatureStats method), 313
 has_feminine() (rollnw.Language static method), 326
 has_inventory (rollnw.Placeable attribute), 333
 has_map_note (rollnw.Waypoint attribute), 345
 head (rollnw.BodyParts attribute), 309
 head (rollnw.EquipIndex attribute), 320
 head (rollnw.EquipSlot attribute), 321
 header (rollnw.model.MdlNodeFlags attribute), 356
 height (rollnw.Area attribute), 306
 height (rollnw.Tile attribute), 342
 height() (rollnw.Image method), 323
 height() (rollnw.Placement method), 334
 highlight_height (rollnw.Trigger attribute), 344
 hint (rollnw.script.DiagnosticSeverity attribute), 365
 history (rollnw.Creature property), 311
 hit_by_auto_success (rollnw.AttackResult attribute), 308
 hit_by_critical (rollnw.AttackResult attribute), 308
 hit_by_roll (rollnw.AttackResult attribute), 308
 hitpoints (rollnw.LevelUp attribute), 327
 hours (rollnw.Sound attribute), 339
 hp (rollnw.Creature attribute), 311
 hp (rollnw.Door attribute), 317
 hp (rollnw.Placeable attribute), 333
 hp_current (rollnw.Creature attribute), 311
 hp_current (rollnw.Door attribute), 317

hp_current (rollnw.Placeable attribute), 333

hp_max (rollnw.Creature attribute), 311

I

id (rollnw.Appearance attribute), 305

id (rollnw.Area attribute), 306

id (rollnw.ClassEntry attribute), 309

id (rollnw.Module attribute), 330

id (rollnw.ObjectHandle attribute), 331

id (rollnw.Tile attribute), 342

id() (rollnw.Effect method), 318

identified (rollnw.Item attribute), 324

IDENTIFIER (rollnw.script.NssTokenType attribute), 369

identifier() (rollnw.script.Declaration method), 364

identify_price (rollnw.Store attribute), 342

ids (rollnw.ResourceType attribute), 339

IF (rollnw.script.NssTokenType attribute), 371

ifo (rollnw.ResourceType attribute), 337

IfStatement (class in rollnw.script), 366

ignorefog (rollnw.model.MdlModel attribute), 355

Image (class in rollnw), 322

immortal (rollnw.Creature attribute), 311

Include (class in rollnw.script), 366

include_install (rollnw.kernel.ConfigOptions attribute), 346

include_nwsync (rollnw.kernel.ConfigOptions attribute), 346

include_user (rollnw.kernel.ConfigOptions attribute), 346

includes (rollnw.script.Ast attribute), 362

increment (rollnw.script.ForStatement attribute), 365

index (rollnw.EffectID attribute), 319

indices (rollnw.model.MdlTrimeshNode attribute), 357

infinite (rollnw.InventoryItem attribute), 323

information (rollnw.script.DiagnosticSeverity attribute), 365

inherit (rollnw.model.ModelEmitterFlag attribute), 358

inherit_local (rollnw.model.ModelEmitterFlag attribute), 358

inherit_part (rollnw.model.ModelEmitterFlag attribute), 358

inherit_vel (rollnw.model.ModelEmitterFlag attribute), 358

inheritcolor (rollnw.model.MdlNode attribute), 355

Ini (class in rollnw), 323

ini (rollnw.ResourceType attribute), 336

init (rollnw.script.ForStatement attribute), 366

init (rollnw.script.VarDecl attribute), 374

initialize() (rollnw.kernel.Config method), 346

InlayHint (class in rollnw.script), 367

innate (rollnw.EffectCategory attribute), 319

install_path() (rollnw.kernel.Config method), 346

instantiate() (rollnw.Equips method), 321

instantiate() (rollnw.Inventory method), 323

INT (rollnw.script.NssTokenType attribute), 371

INTEGER_CONST (rollnw.script.NssTokenType attribute), 371

interior (rollnw.AreaFlags attribute), 307

interruptable (rollnw.Creature attribute), 311

interruptable (rollnw.Door attribute), 317

interruptable (rollnw.Placeable attribute), 333

interval (rollnw.Sound attribute), 339

interval_variation (rollnw.Sound attribute), 339

invalid (rollnw.EquipIndex attribute), 321

invalid (rollnw.LanguageID attribute), 326

invalid (rollnw.model.MdlClassification attribute), 350

invalid (rollnw.ObjectType attribute), 332

invalid (rollnw.ResourceType attribute), 336

INVALID (rollnw.script.NssTokenType attribute), 369

Inventory (class in rollnw), 323

inventory (rollnw.Creature property), 311

inventory (rollnw.Item attribute), 324

inventory (rollnw.Placeable attribute), 333

InventoryItem (class in rollnw), 323

ip_cost_table() (rollnw.kernel.EffectSystem method), 347

ip_definition() (rollnw.kernel.EffectSystem method), 347

ip_param_table() (rollnw.kernel.EffectSystem method), 347

is_flanked() (in module rollnw.nwnI), 360

is_key (rollnw.model.MdlControllerKey attribute), 350

is_link (rollnw.DialogPtr attribute), 316

is_loaded() (rollnw.NWSync method), 331

is_night (rollnw.AreaWeather attribute), 308

is_ranged_attack (rollnw.AttackData attribute), 308

is_ranged_weapon() (in module rollnw.nwnI), 360

is_save_game (rollnw.Module attribute), 330

is_shield() (in module rollnw.nwnI), 360

is_start (rollnw.DialogPtr attribute), 316

is_tinted (rollnw.model.ModelEmitterFlag attribute), 358

is_trapped (rollnw.Trap attribute), 343

italian (rollnw.LanguageID attribute), 326

Item (class in rollnw), 323

item (rollnw.EffectCategory attribute), 319

item (rollnw.InventoryItem attribute), 323

item (rollnw.model.MdlClassification attribute), 350

item (rollnw.ObjectType attribute), 332

itemprop_ability_modifier() (in module rollnw.nwnI), 360

itemprop_armor_class_modifier() (in module rollnw.nwnI), 360

itemprop_attack_modifier() (in module rollnw.nwnI), 360

itemprop_enhancement_modifier() (in module rollnw.nwnI), 360

itemprop_haste() (in module rollnw.nwnI), 360

- itemprop_skill_modifier() (in module *rollnw.nwn1*), 360
 ItemProperty (class in *rollnw*), 325
 ITEMPROPERTY (*rollnw.script.NssTokenType* attribute), 371
 items (*rollnw.Area* attribute), 306
 items (*rollnw.Inventory* attribute), 323
 iteration_penalty (*rollnw.AttackData* attribute), 308
 itp (*rollnw.ResourceType* attribute), 337
 IVector4 (class in *rollnw*), 322
- ## J
- japanese (*rollnw.LanguageID* attribute), 327
 jpg (*rollnw.ResourceType* attribute), 339
 jrl (*rollnw.ResourceType* attribute), 338
 json (*rollnw.ResourceType* attribute), 336
 JSON (*rollnw.script.NssTokenType* attribute), 371
 json_archive_version (*rollnw.Area* attribute), 306
 json_archive_version (*rollnw.Creature* attribute), 312
 json_archive_version (*rollnw.Dialog* attribute), 313
 json_archive_version (*rollnw.Door* attribute), 317
 json_archive_version (*rollnw.Placeable* attribute), 333
 json_archive_version (*rollnw.Sound* attribute), 339
 json_archive_version (*rollnw.Store* attribute), 342
 JSON_CONST (*rollnw.script.NssTokenType* attribute), 372
 JumpStatement (class in *rollnw.script*), 367
- ## K
- Key (class in *rollnw*), 326
 key (*rollnw.ResourceType* attribute), 339
 key_name (*rollnw.Lock* attribute), 329
 key_offset (*rollnw.model.MdlControllerKey* attribute), 350
 key_required (*rollnw.Lock* attribute), 329
 kind (*rollnw.script.Symbol* attribute), 373
 known_spells (*rollnw.LevelUp* attribute), 327
 korean (*rollnw.LanguageID* attribute), 326
 ktx (*rollnw.ResourceType* attribute), 338
- ## L
- label (*rollnw.script.LabelStatement* attribute), 367
 LabelStatement (class in *rollnw.script*), 367
 Language (class in *rollnw*), 326
 language_id() (*rollnw.Tlk* method), 343
 lawful_chaotic (*rollnw.Creature* attribute), 312
 layer (*rollnw.PltPixel* attribute), 335
 layered (*rollnw.ItemModelType* attribute), 325
 LBRACE (*rollnw.script.NssTokenType* attribute), 369
 LBRACKET (*rollnw.script.NssTokenType* attribute), 369
 leaf_face (*rollnw.model.MdlAABEntry* attribute), 349
 leather1 (*rollnw.ItemColors* attribute), 324
 leather2 (*rollnw.ItemColors* attribute), 324
 lefthand (*rollnw.EquipIndex* attribute), 320
 lefthand (*rollnw.EquipSlot* attribute), 321
 leftring (*rollnw.EquipIndex* attribute), 320
 leftring (*rollnw.EquipSlot* attribute), 321
 length (*rollnw.model.MdlAnimation* attribute), 349
 length() (*rollnw.script.SourceLocation* method), 372
 lensflares (*rollnw.model.MdlLightNode* attribute), 354
 level (*rollnw.ClassEntry* attribute), 309
 level (*rollnw.SpecialAbility* attribute), 340
 level() (*rollnw.LevelStats* method), 327
 level_by_class() (*rollnw.LevelStats* method), 327
 LevelHistory (class in *rollnw*), 327
 levels (*rollnw.Creature* attribute), 312
 LevelStats (class in *rollnw*), 327
 LevelUp (class in *rollnw*), 327
 lexical (*rollnw.script.DiagnosticType* attribute), 365
 lhs (*rollnw.script.AssignExpression* attribute), 361
 lhs (*rollnw.script.BinaryExpression* attribute), 362
 lhs (*rollnw.script.ComparisonExpression* attribute), 363
 lhs (*rollnw.script.DotExpression* attribute), 365
 lhs (*rollnw.script.LogicalExpression* attribute), 367
 lhs (*rollnw.script.PostfixExpression* attribute), 372
 life_exp (*rollnw.model.MdlControllerType* attribute), 351
 light (*rollnw.model.MdlNodeFlags* attribute), 356
 light (*rollnw.model.MdlNodeType* attribute), 356
 lighting_scheme (*rollnw.AreaWeather* attribute), 308
 lightmapped (*rollnw.model.MdlTrimeshNode* attribute), 357
 lightning_delay (*rollnw.model.MdlControllerType* attribute), 351
 lightning_radius (*rollnw.model.MdlControllerType* attribute), 351
 lightning_scale (*rollnw.model.MdlControllerType* attribute), 351
 lightning_subdiv (*rollnw.model.MdlControllerType* attribute), 351
 lightpriority (*rollnw.model.MdlLightNode* attribute), 354
 line (*rollnw.script.SourcePosition* attribute), 373
 linked_to (*rollnw.Door* attribute), 317
 linked_to (*rollnw.Trigger* attribute), 344
 linked_to (*rollnw.Waypoint* attribute), 345
 linked_to_flags (*rollnw.Door* attribute), 317
 linked_to_flags (*rollnw.Trigger* attribute), 344
 listen (*rollnw.DialogAnimation* attribute), 314
 listen_check_mod (*rollnw.Area* attribute), 306
 literal (*rollnw.script.LiteralExpression* attribute), 367
 LiteralExpression (class in *rollnw.script*), 367
 LiteralVectorExpression (class in *rollnw.script*), 367
 load_module() (in module *rollnw.kernel*), 348
 loadscreen (*rollnw.Area* attribute), 306
 loadscreen (*rollnw.Door* attribute), 317

loadscreen (*rollnw.Trigger attribute*), 344
 loc (*rollnw.script.NssToken attribute*), 369
 LocalData (*class in rollnw*), 328
 locals (*rollnw.Common attribute*), 310
 locals (*rollnw.Module attribute*), 330
 locate_export() (*rollnw.script.Nss method*), 368
 locate_symbol() (*rollnw.script.Nss method*), 368
 Location (*class in rollnw*), 329
 location (*rollnw.Common attribute*), 310
 location (*rollnw.script.Diagnostic attribute*), 364
 location (*rollnw.script.Include attribute*), 366
 LOCATION (*rollnw.script.NssTokenType attribute*), 371
 LOCATION_INVALID (*rollnw.script.NssTokenType attribute*), 372
 Lock (*class in rollnw*), 329
 lock (*rollnw.Door attribute*), 317
 lock (*rollnw.Placeable attribute*), 333
 lock_dc (*rollnw.Lock attribute*), 329
 lockable (*rollnw.Lock attribute*), 329
 locked (*rollnw.Lock attribute*), 329
 LocString (*class in rollnw*), 327
 lod (*rollnw.ResourceType attribute*), 338
 LogicalExpression (*class in rollnw.script*), 367
 look_far (*rollnw.DialogAnimation attribute*), 314
 loop (*rollnw.model.MdlEmitterNode attribute*), 353
 looping (*rollnw.Sound attribute*), 339
 lootable (*rollnw.Creature attribute*), 312
 LPAREN (*rollnw.script.NssTokenType attribute*), 369
 LT (*rollnw.script.NssTokenType attribute*), 370
 LTEQ (*rollnw.script.NssTokenType attribute*), 370
 ltr (*rollnw.ResourceType attribute*), 337
 lua (*rollnw.ResourceType attribute*), 336

M

magical (*rollnw.EffectCategory attribute*), 318
 mainlight1 (*rollnw.Tile attribute*), 342
 mainlight2 (*rollnw.Tile attribute*), 342
 manifests() (*rollnw.NWSync method*), 331
 map_note (*rollnw.Waypoint attribute*), 345
 map_note_enabled (*rollnw.Waypoint attribute*), 345
 markdown (*rollnw.Store attribute*), 342
 markup (*rollnw.Store attribute*), 342
 mass (*rollnw.model.MdlControllerType attribute*), 351
 material_idx (*rollnw.model.MdlFace attribute*), 353
 materialname (*rollnw.model.MdlTrimeshNode attribute*), 357
 max_price (*rollnw.Store attribute*), 342
 maximize (*rollnw.SpellMetaMagic attribute*), 341
 Mdl (*class in rollnw.model*), 349
 mdl (*rollnw.ResourceType attribute*), 336
 MdlAABBEntry (*class in rollnw.model*), 349
 MdlAABBNode (*class in rollnw.model*), 349
 MdlAnimation (*class in rollnw.model*), 349
 MdlAnimationEvent (*class in rollnw.model*), 350

MdlAnimeshNode (*class in rollnw.model*), 350
 MdlCameraNode (*class in rollnw.model*), 350
 MdlControllerKey (*class in rollnw.model*), 350
 MdlControllerType (*class in rollnw.model*), 351
 MdlDanglymeshNode (*class in rollnw.model*), 352
 MdlDummyNode (*class in rollnw.model*), 352
 MdlEmitterNode (*class in rollnw.model*), 352
 MdlFace (*class in rollnw.model*), 353
 MdlGeometry (*class in rollnw.model*), 353
 MdlLightNode (*class in rollnw.model*), 354
 MdlModel (*class in rollnw.model*), 355
 MdlNode (*class in rollnw.model*), 355
 MdlNodeFlags (*class in rollnw.model*), 355
 MdlNodeType (*class in rollnw.model*), 356
 MdlPatchNode (*class in rollnw.model*), 356
 MdlReferenceNode (*class in rollnw.model*), 356
 MdlSkinNode (*class in rollnw.model*), 356
 MdlTrimeshNode (*class in rollnw.model*), 357
 merge() (*rollnw.Erf method*), 322
 mesh (*rollnw.model.MdlNodeFlags attribute*), 356
 message (*rollnw.script.Diagnostic attribute*), 364
 message (*rollnw.script.InlayHint attribute*), 367
 meta (*rollnw.SpellEntry attribute*), 341
 metal1 (*rollnw.ItemColors attribute*), 324
 metal2 (*rollnw.ItemColors attribute*), 324
 min_game_version (*rollnw.Module attribute*), 330
 MINUS (*rollnw.script.NssTokenType attribute*), 370
 MINUSEQ (*rollnw.script.NssTokenType attribute*), 370
 MINUSMINUS (*rollnw.script.NssTokenType attribute*), 370
 minutes_per_hour (*rollnw.Module attribute*), 330
 miscellaneous (*rollnw.Store attribute*), 342
 miss_by_auto_fail (*rollnw.AttackResult attribute*), 308
 miss_by_concealment (*rollnw.AttackResult attribute*), 309
 miss_by_miss_chance (*rollnw.AttackResult attribute*), 309
 miss_by_roll (*rollnw.AttackResult attribute*), 309
 mod (*rollnw.ResourceType attribute*), 336
 MOD (*rollnw.script.NssTokenType attribute*), 370
 model (*rollnw.model.Mdl attribute*), 349
 model (*rollnw.model.MdlGeometryFlag attribute*), 354
 model (*rollnw.model.MdlGeometryType attribute*), 354
 model1 (*rollnw.ItemModelParts attribute*), 325
 model2 (*rollnw.ItemModelParts attribute*), 325
 model3 (*rollnw.ItemModelParts attribute*), 325
 model_colors (*rollnw.Item attribute*), 324
 model_parts (*rollnw.Item attribute*), 324
 model_type (*rollnw.Item attribute*), 324
 ModelEmitterFlag (*class in rollnw.model*), 358
 MODEQ (*rollnw.script.NssTokenType attribute*), 370
 modified() (*rollnw.Tlk method*), 343
 module
 rollnw, 305

- rollnw.kernel, 346
- rollnw.model, 349
- rollnw.nwn1, 359
- rollnw.script, 361
- Module (class in rollnw), 329
- module (rollnw.ObjectType attribute), 332
- ModuleScripts (class in rollnw), 330
- moon_shadows (rollnw.AreaWeather attribute), 308
- movie (rollnw.ResourceType attribute), 336
- mpg (rollnw.ResourceType attribute), 336
- mtime (rollnw.ResourceDescriptor attribute), 335
- mtr (rollnw.ResourceType attribute), 338
- multimaterial (rollnw.model.MdlTrimeshNode attribute), 357
- multiplier (rollnw.AttackData attribute), 308
- multiplier (rollnw.model.MdlControllerType attribute), 351
- multiplier (rollnw.model.MdlLightNode attribute), 354
- mve (rollnw.ResourceType attribute), 336
- N**
- name (rollnw.Area attribute), 306
- name (rollnw.Common attribute), 310
- name (rollnw.model.MdlAnimationEvent attribute), 350
- name (rollnw.model.MdlControllerKey attribute), 350
- name (rollnw.model.MdlGeometry attribute), 353
- name (rollnw.model.MdlNode attribute), 355
- name (rollnw.Module attribute), 330
- name (rollnw.ResourceDescriptor attribute), 335
- name() (rollnw.Container method), 310
- name() (rollnw.script.Nss method), 368
- name_first (rollnw.Creature attribute), 312
- name_last (rollnw.Creature attribute), 312
- natural (rollnw.AreaFlags attribute), 307
- ncs (rollnw.ResourceType attribute), 336
- ndb (rollnw.ResourceType attribute), 338
- neck (rollnw.BodyParts attribute), 309
- neck (rollnw.EquipIndex attribute), 320
- neck (rollnw.EquipSlot attribute), 321
- next() (rollnw.script.NssLexer method), 369
- no_rest (rollnw.Area attribute), 306
- node (rollnw.DialogPtr attribute), 316
- node (rollnw.script.Symbol attribute), 373
- none (rollnw.DialogAnimation attribute), 314
- none (rollnw.PlaceableAnimationState attribute), 333
- normal (rollnw.model.SkinVertex attribute), 358
- normal (rollnw.model.Vertex attribute), 358
- NOT (rollnw.script.NssTokenType attribute), 370
- NOTEQ (rollnw.script.NssTokenType attribute), 370
- Nss (class in rollnw.script), 368
- nss (rollnw.ResourceType attribute), 336
- NssLexer (class in rollnw.script), 369
- NssToken (class in rollnw.script), 369
- nth_attack (rollnw.AttackData attribute), 308
- nw::Ability (C++ struct), 39
- nw::Ability::idx (C++ function), 39
- nw::Ability::invalid (C++ function), 39
- nw::Ability::make (C++ function), 39
- nw::Ability::operator* (C++ function), 39
- nw::Ability::operator== (C++ function), 39
- nw::Ability::operator<=> (C++ function), 39
- nw::AbilityArray (C++ type), 303
- nw::AbilityInfo (C++ struct), 40
- nw::AbilityInfo::constant (C++ member), 40
- nw::AbilityInfo::name (C++ member), 40
- nw::AbilityInfo::valid (C++ function), 40
- nw::alignment_axis_from_flags (C++ function), 270
- nw::AxisAlignment (C++ enum), 252
- nw::AxisAlignment::both (C++ enumerator), 252
- nw::AxisAlignment::good_evil (C++ enumerator), 252
- nw::AxisAlignment::law_chaos (C++ enumerator), 252
- nw::AxisAlignment::neither (C++ enumerator), 252
- nw::AlignmentFlags (C++ enum), 253
- nw::AlignmentFlags::chaotic (C++ enumerator), 253
- nw::AlignmentFlags::evil (C++ enumerator), 253
- nw::AlignmentFlags::good (C++ enumerator), 253
- nw::AlignmentFlags::lawful (C++ enumerator), 253
- nw::AlignmentFlags::neutral (C++ enumerator), 253
- nw::AlignmentFlags::none (C++ enumerator), 253
- nw::AlignmentType (C++ enum), 253
- nw::AlignmentType::all (C++ enumerator), 253
- nw::AlignmentType::chaotic (C++ enumerator), 253
- nw::AlignmentType::evil (C++ enumerator), 253
- nw::AlignmentType::good (C++ enumerator), 253
- nw::AlignmentType::lawful (C++ enumerator), 253
- nw::AlignmentType::neutral (C++ enumerator), 253
- nw::always_false (C++ function), 270
- nw::Appearance (C++ struct), 40
- nw::Appearance::body_parts (C++ member), 40
- nw::Appearance::from_json (C++ function), 40
- nw::Appearance::hair (C++ member), 40
- nw::Appearance::id (C++ member), 40
- nw::Appearance::phenotype (C++ member), 40
- nw::Appearance::portrait_id (C++ member), 40
- nw::Appearance::skin (C++ member), 40
- nw::Appearance::tail (C++ member), 40
- nw::Appearance::tattoo1 (C++ member), 40
- nw::Appearance::tattoo2 (C++ member), 41
- nw::Appearance::to_json (C++ function), 40

nw::Appearance::wings (C++ member), 40
 nw::Area (C++ struct), 41
 nw::Area::Area (C++ function), 41
 nw::Area::as_area (C++ function), 41
 nw::Area::as_common (C++ function), 41
 nw::Area::as_creature (C++ function), 41
 nw::Area::as_door (C++ function), 41
 nw::Area::as_encounter (C++ function), 41
 nw::Area::as_item (C++ function), 41
 nw::Area::as_module (C++ function), 41
 nw::Area::as_placeable (C++ function), 41
 nw::Area::as_player (C++ function), 42
 nw::Area::as_sound (C++ function), 42
 nw::Area::as_store (C++ function), 42
 nw::Area::as_trigger (C++ function), 42
 nw::Area::as_waypoint (C++ function), 42
 nw::Area::comments (C++ member), 42
 nw::Area::common (C++ member), 42
 nw::Area::creator_id (C++ member), 43
 nw::Area::creatures (C++ member), 42
 nw::Area::deserialize (C++ function), 43
 nw::Area::doors (C++ member), 42
 nw::Area::effects (C++ function), 41
 nw::Area::encounters (C++ member), 42
 nw::Area::flags (C++ member), 43
 nw::Area::handle (C++ function), 41
 nw::Area::height (C++ member), 43
 nw::Area::id (C++ member), 43
 nw::Area::instantiate (C++ function), 41
 nw::Area::items (C++ member), 42
 nw::Area::json_archive_version (C++ member), 44
 nw::Area::listen_check_mod (C++ member), 43
 nw::Area::loadscreen (C++ member), 43
 nw::Area::name (C++ member), 43
 nw::Area::no_rest (C++ member), 43
 nw::Area::object_type (C++ member), 44
 nw::Area::placeables (C++ member), 42
 nw::Area::pvp (C++ member), 43
 nw::Area::restype (C++ member), 44
 nw::Area::scripts (C++ member), 42
 nw::Area::serialize (C++ function), 44
 nw::Area::set_handle (C++ function), 41
 nw::Area::shadow_opacity (C++ member), 43
 nw::Area::skybox (C++ member), 43
 nw::Area::sounds (C++ member), 42
 nw::Area::spot_check_mod (C++ member), 43
 nw::Area::stores (C++ member), 42
 nw::Area::tag (C++ function), 41
 nw::Area::tiles (C++ member), 43
 nw::Area::tileset (C++ member), 43
 nw::Area::triggers (C++ member), 42
 nw::Area::version (C++ member), 43
 nw::Area::versus_me (C++ function), 41
 nw::Area::waypoints (C++ member), 42
 nw::Area::weather (C++ member), 42
 nw::Area::width (C++ member), 43
 nw::AreaFlags (C++ enum), 253
 nw::AreaFlags::interior (C++ enumerator), 253
 nw::AreaFlags::natural (C++ enumerator), 254
 nw::AreaFlags::none (C++ enumerator), 253
 nw::AreaFlags::underground (C++ enumerator), 254
 nw::AreaScripts (C++ struct), 44
 nw::AreaScripts::AreaScripts (C++ function), 44
 nw::AreaScripts::from_json (C++ function), 44
 nw::AreaScripts::on_enter (C++ member), 44
 nw::AreaScripts::on_exit (C++ member), 44
 nw::AreaScripts::on_heartbeat (C++ member), 44
 nw::AreaScripts::on_user_defined (C++ member), 44
 nw::AreaScripts::to_json (C++ function), 44
 nw::AreaWeather (C++ struct), 45
 nw::AreaWeather::AreaWeather (C++ function), 45
 nw::AreaWeather::chance_lightning (C++ member), 45
 nw::AreaWeather::chance_rain (C++ member), 45
 nw::AreaWeather::chance_snow (C++ member), 45
 nw::AreaWeather::color_moon_ambient (C++ member), 45
 nw::AreaWeather::color_moon_diffuse (C++ member), 45
 nw::AreaWeather::color_moon_fog (C++ member), 45
 nw::AreaWeather::color_sun_ambient (C++ member), 45
 nw::AreaWeather::color_sun_diffuse (C++ member), 45
 nw::AreaWeather::color_sun_fog (C++ member), 45
 nw::AreaWeather::day_night_cycle (C++ member), 45
 nw::AreaWeather::fog_clip_distance (C++ member), 45
 nw::AreaWeather::fog_moon_amount (C++ member), 45
 nw::AreaWeather::fog_sun_amount (C++ member), 46
 nw::AreaWeather::from_json (C++ function), 45
 nw::AreaWeather::is_night (C++ member), 45
 nw::AreaWeather::lighting_scheme (C++ member), 45
 nw::AreaWeather::moon_shadows (C++ member), 45
 nw::AreaWeather::sun_shadows (C++ member), 46
 nw::AreaWeather::to_json (C++ function), 45
 nw::AreaWeather::wind_power (C++ member), 45
 nw::AttackData (C++ struct), 46
 nw::AttackData::add (C++ function), 46

nw::AttackData::armor_class (C++ member), 47
 nw::AttackData::attack_bonus (C++ member), 47
 nw::AttackData::attack_roll (C++ member), 47
 nw::AttackData::attacker (C++ member), 46
 nw::AttackData::concealment (C++ member), 47
 nw::AttackData::damage_base (C++ member), 47
 nw::AttackData::damage_total (C++ member), 47
 nw::AttackData::DamageArray (C++ type), 46
 nw::AttackData::damages (C++ function), 46
 nw::AttackData::effects_to_apply (C++ member), 47
 nw::AttackData::effects_to_remove (C++ member), 47
 nw::AttackData::is_killing_blow (C++ member), 47
 nw::AttackData::is_ranged_attack (C++ member), 46
 nw::AttackData::iteration_penalty (C++ member), 47
 nw::AttackData::multiplier (C++ member), 47
 nw::AttackData::nth_attack (C++ member), 47
 nw::AttackData::result (C++ member), 46
 nw::AttackData::target (C++ member), 46
 nw::AttackData::target_is_creature (C++ member), 46
 nw::AttackData::target_state (C++ member), 46
 nw::AttackData::threat_range (C++ member), 47
 nw::AttackData::type (C++ member), 46
 nw::AttackData::weapon (C++ member), 46
 nw::AttackResult (C++ enum), 254
 nw::AttackResult::hit_by_auto_success (C++ enumerator), 254
 nw::AttackResult::hit_by_critical (C++ enumerator), 254
 nw::AttackResult::hit_by_roll (C++ enumerator), 254
 nw::AttackResult::miss_by_auto_fail (C++ enumerator), 254
 nw::AttackResult::miss_by_concealment (C++ enumerator), 254
 nw::AttackResult::miss_by_miss_chance (C++ enumerator), 254
 nw::AttackResult::miss_by_roll (C++ enumerator), 254
 nw::BaseItem (C++ struct), 47
 nw::BaseItem::idx (C++ function), 48
 nw::BaseItem::invalid (C++ function), 48
 nw::BaseItem::make (C++ function), 48
 nw::BaseItem::operator* (C++ function), 48
 nw::BaseItem::operator== (C++ function), 48
 nw::BaseItem::operator<=> (C++ function), 48
 nw::BaseItemArray (C++ type), 303
 nw::BeamdogInstall (C++ struct), 48
 nw::BeamdogInstall::appid (C++ member), 48
 nw::BeamdogInstall::path (C++ member), 48
 nw::Bif (C++ struct), 48
 nw::Bif::Bif (C++ function), 48
 nw::Bif::demand (C++ function), 49
 nw::Bif::operator= (C++ function), 48
 nw::BodyParts (C++ struct), 49
 nw::BodyParts::belt (C++ member), 49
 nw::BodyParts::bicep_left (C++ member), 49
 nw::BodyParts::bicep_right (C++ member), 49
 nw::BodyParts::foot_left (C++ member), 49
 nw::BodyParts::foot_right (C++ member), 49
 nw::BodyParts::forearm_left (C++ member), 49
 nw::BodyParts::forearm_right (C++ member), 49
 nw::BodyParts::hand_left (C++ member), 49
 nw::BodyParts::hand_right (C++ member), 49
 nw::BodyParts::head (C++ member), 49
 nw::BodyParts::neck (C++ member), 49
 nw::BodyParts::pelvis (C++ member), 49
 nw::BodyParts::shin_left (C++ member), 49
 nw::BodyParts::shin_right (C++ member), 49
 nw::BodyParts::shoulder_left (C++ member), 49
 nw::BodyParts::shoulder_right (C++ member), 50
 nw::BodyParts::thigh_left (C++ member), 50
 nw::BodyParts::thigh_right (C++ member), 50
 nw::BodyParts::torso (C++ member), 50
 nw::ByteArray (C++ struct), 50
 nw::ByteArray::append (C++ function), 50
 nw::ByteArray::Base (C++ type), 50
 nw::ByteArray::ByteArray (C++ function), 50
 nw::ByteArray::clear (C++ function), 50
 nw::ByteArray::const_iterator (C++ type), 50
 nw::ByteArray::data (C++ function), 51
 nw::ByteArray::from_file (C++ function), 51
 nw::ByteArray::iterator (C++ type), 50
 nw::ByteArray::operator= (C++ function), 50
 nw::ByteArray::operator== (C++ function), 50
 nw::ByteArray::operator[] (C++ function), 50
 nw::ByteArray::push_back (C++ function), 51
 nw::ByteArray::read_at (C++ function), 51
 nw::ByteArray::reserve (C++ function), 51
 nw::ByteArray::resize (C++ function), 51
 nw::ByteArray::size (C++ function), 51
 nw::ByteArray::size_type (C++ type), 50
 nw::ByteArray::span (C++ function), 51
 nw::ByteArray::string_view (C++ function), 51
 nw::ByteArray::write_to (C++ function), 51
 nw::Class (C++ struct), 51
 nw::Class::idx (C++ function), 52
 nw::Class::invalid (C++ function), 52
 nw::Class::make (C++ function), 52
 nw::Class::operator* (C++ function), 52
 nw::Class::operator== (C++ function), 52
 nw::Class::operator<=> (C++ function), 52
 nw::ClassArray (C++ struct), 52

nw::ClassArray::attack_tables (C++ member), 53
 nw::ClassArray::constant_to_index (C++ member), 53
 nw::ClassArray::entries (C++ member), 53
 nw::ClassArray::from_constant (C++ function), 52
 nw::ClassArray::get (C++ function), 52
 nw::ClassArray::get_base_attack_bonus (C++ function), 52
 nw::ClassArray::get_class_save_bonus (C++ function), 52
 nw::ClassArray::get_is_class_skill (C++ function), 52
 nw::ClassArray::get_natural_ac (C++ function), 52
 nw::ClassArray::get_requirement (C++ function), 52
 nw::ClassArray::get_stat_gain (C++ function), 53
 nw::ClassArray::is_valid (C++ function), 52
 nw::ClassArray::map_type (C++ type), 52
 nw::ClassArray::stat_gain_tables (C++ member), 53
 nw::ClassEntry (C++ struct), 53
 nw::ClassEntry::id (C++ member), 53
 nw::ClassEntry::level (C++ member), 53
 nw::ClassEntry::spells (C++ member), 53
 nw::ClassInfo (C++ struct), 53
 nw::ClassInfo::alignment_restriction (C++ member), 54
 nw::ClassInfo::alignment_restriction_type (C++ member), 55
 nw::ClassInfo::arcane (C++ member), 55
 nw::ClassInfo::arcane_spell_failure (C++ member), 55
 nw::ClassInfo::arcane_spellgain_mod (C++ member), 55
 nw::ClassInfo::attack_bonus_table (C++ member), 54
 nw::ClassInfo::bonus_feats_table (C++ member), 54
 nw::ClassInfo::can_cast_spontaneously (C++ member), 56
 nw::ClassInfo::caster_ability (C++ member), 55
 nw::ClassInfo::caster_level_multiplier (C++ member), 56
 nw::ClassInfo::class_saves (C++ member), 54
 nw::ClassInfo::class_skills (C++ member), 54
 nw::ClassInfo::class_stat_gain (C++ member), 55
 nw::ClassInfo::ClassInfo (C++ function), 53
 nw::ClassInfo::constant (C++ member), 55
 nw::ClassInfo::description (C++ member), 54
 nw::ClassInfo::divine_spellgain_mod (C++ member), 55
 nw::ClassInfo::epic_level_limit (C++ member), 55
 nw::ClassInfo::feats_table (C++ member), 54
 nw::ClassInfo::hitdie (C++ member), 54
 nw::ClassInfo::icon (C++ member), 54
 nw::ClassInfo::invert_restriction (C++ member), 55
 nw::ClassInfo::learn_scroll (C++ member), 55
 nw::ClassInfo::level_min_associate (C++ member), 56
 nw::ClassInfo::level_min_caster (C++ member), 56
 nw::ClassInfo::lower (C++ member), 54
 nw::ClassInfo::max_level (C++ member), 55
 nw::ClassInfo::memorizes_spells (C++ member), 55
 nw::ClassInfo::name (C++ member), 54
 nw::ClassInfo::package (C++ member), 55
 nw::ClassInfo::pick_domains (C++ member), 55
 nw::ClassInfo::pick_school (C++ member), 55
 nw::ClassInfo::player_class (C++ member), 54
 nw::ClassInfo::plural (C++ member), 54
 nw::ClassInfo::prereq_table (C++ member), 55
 nw::ClassInfo::primary_ability (C++ member), 54
 nw::ClassInfo::requirements (C++ member), 54
 nw::ClassInfo::saving_throw_table (C++ member), 54
 nw::ClassInfo::skill_point_base (C++ member), 54
 nw::ClassInfo::skill_table (C++ member), 54
 nw::ClassInfo::spell_gain_table (C++ member), 54
 nw::ClassInfo::spell_known_table (C++ member), 54
 nw::ClassInfo::spell_table_column (C++ member), 55
 nw::ClassInfo::spellbook_restricted (C++ member), 55
 nw::ClassInfo::spellcaster (C++ member), 54
 nw::ClassInfo::stat_gain_table (C++ member), 55
 nw::ClassInfo::valid (C++ function), 53
 nw::ClassInfo::xp_penalty (C++ member), 55
 nw::CombatInfo (C++ struct), 56
 nw::CombatInfo::ac_armor_base (C++ member), 57
 nw::CombatInfo::ac_natural_bonus (C++ member), 56
 nw::CombatInfo::ac_shield_base (C++ member), 57
 nw::CombatInfo::attack_current (C++ member), 56
 nw::CombatInfo::attacks_extra (C++ member), 56
 nw::CombatInfo::attacks_offhand (C++ member), 56

nw::CombatInfo::attacks_onhand (C++ member), 56
 nw::CombatInfo::combat_mode (C++ member), 57
 nw::CombatInfo::CombatInfo (C++ function), 56
 nw::CombatInfo::from_json (C++ function), 56
 nw::CombatInfo::operator= (C++ function), 56
 nw::CombatInfo::size_ab_modifier (C++ member), 57
 nw::CombatInfo::size_ac_modifier (C++ member), 57
 nw::CombatInfo::special_abilities (C++ member), 57
 nw::CombatInfo::target (C++ member), 56
 nw::CombatInfo::target_distance_sq (C++ member), 57
 nw::CombatInfo::target_state (C++ member), 57
 nw::CombatInfo::to_json (C++ function), 56
 nw::Common (C++ struct), 57
 nw::Common::comment (C++ member), 58
 nw::Common::from_json (C++ function), 57
 nw::Common::locals (C++ member), 57
 nw::Common::location (C++ member), 57
 nw::Common::name (C++ member), 57
 nw::Common::palette_id (C++ member), 58
 nw::Common::resref (C++ member), 57
 nw::Common::tag (C++ member), 57
 nw::Common::to_json (C++ function), 57
 nw::Common::uuid (C++ member), 57
 nw::Common::valid (C++ function), 57
 nw::CompressionHeader (C++ struct), 58
 nw::CompressionHeader::algorithm (C++ member), 58
 nw::CompressionHeader::magic (C++ member), 58
 nw::CompressionHeader::uncompressed_size (C++ member), 58
 nw::CompressionHeader::version (C++ member), 58
 nw::ConfigOptions (C++ struct), 58
 nw::ConfigOptions::include_install (C++ member), 58
 nw::ConfigOptions::include_nwsync (C++ member), 58
 nw::ConfigOptions::include_user (C++ member), 58
 nw::Container (C++ struct), 59
 nw::Container::~~Container (C++ function), 59
 nw::Container::all (C++ function), 59
 nw::Container::Container (C++ function), 59
 nw::Container::contains (C++ function), 59
 nw::Container::demand (C++ function), 59
 nw::Container::extract (C++ function), 59
 nw::Container::extract_by_glob (C++ function), 59
 nw::Container::name (C++ function), 59
 nw::Container::path (C++ function), 59
 nw::Container::size (C++ function), 59
 nw::Container::stat (C++ function), 59
 nw::Container::valid (C++ function), 59
 nw::Container::visit (C++ function), 59
 nw::Container::working_directory (C++ function), 59
 nw::count_feats_in_range (C++ function), 270
 nw::create_unique_tmp_path (C++ function), 270
 nw::Creature (C++ struct), 60
 nw::Creature::appearance (C++ member), 61
 nw::Creature::as_area (C++ function), 60
 nw::Creature::as_common (C++ function), 60
 nw::Creature::as_creature (C++ function), 60
 nw::Creature::as_door (C++ function), 60
 nw::Creature::as_encounter (C++ function), 60
 nw::Creature::as_item (C++ function), 60
 nw::Creature::as_module (C++ function), 60
 nw::Creature::as_placeable (C++ function), 60
 nw::Creature::as_player (C++ function), 60
 nw::Creature::as_sound (C++ function), 60, 61
 nw::Creature::as_store (C++ function), 61
 nw::Creature::as_trigger (C++ function), 61
 nw::Creature::as_waypoint (C++ function), 61
 nw::Creature::bodybag (C++ member), 62
 nw::Creature::chunk_death (C++ member), 62
 nw::Creature::combat_info (C++ member), 61
 nw::Creature::common (C++ member), 61
 nw::Creature::conversation (C++ member), 61
 nw::Creature::cr (C++ member), 62
 nw::Creature::cr_adjust (C++ member), 62
 nw::Creature::Creature (C++ function), 60
 nw::Creature::decay_time (C++ member), 62
 nw::Creature::deity (C++ member), 61
 nw::Creature::description (C++ member), 61
 nw::Creature::deserialize (C++ function), 63
 nw::Creature::disarmable (C++ member), 62
 nw::Creature::effects (C++ function), 60
 nw::Creature::equipment (C++ member), 61
 nw::Creature::faction_id (C++ member), 62
 nw::Creature::gender (C++ member), 62
 nw::Creature::good_evil (C++ member), 62
 nw::Creature::handle (C++ function), 60
 nw::Creature::hasted (C++ member), 62
 nw::Creature::history (C++ member), 61
 nw::Creature::hp (C++ member), 62
 nw::Creature::hp_current (C++ member), 62
 nw::Creature::hp_max (C++ member), 62
 nw::Creature::hp_temp (C++ member), 62
 nw::Creature::immortal (C++ member), 62
 nw::Creature::instantiate (C++ function), 60
 nw::Creature::instantiated_ (C++ member), 63
 nw::Creature::interruptable (C++ member), 62
 nw::Creature::inventory (C++ member), 61

```

nw::Creature::json_archive_version (C++ member), 63
nw::Creature::lawful_chaotic (C++ member), 62
nw::Creature::levels (C++ member), 61
nw::Creature::lootable (C++ member), 63
nw::Creature::name_first (C++ member), 61
nw::Creature::name_last (C++ member), 61
nw::Creature::object_type (C++ member), 63
nw::Creature::pc (C++ member), 63
nw::Creature::perception_range (C++ member), 63
nw::Creature::plot (C++ member), 63
nw::Creature::race (C++ member), 62
nw::Creature::restype (C++ member), 63
nw::Creature::scripts (C++ member), 61
nw::Creature::serialize (C++ function), 63
nw::Creature::set_handle (C++ function), 60
nw::Creature::size (C++ member), 62
nw::Creature::soundset (C++ member), 62
nw::Creature::starting_package (C++ member), 63
nw::Creature::stats (C++ member), 61
nw::Creature::subrace (C++ member), 61
nw::Creature::tag (C++ function), 60
nw::Creature::versus_me (C++ function), 60
nw::Creature::walkrate (C++ member), 62
nw::CreatureScripts (C++ struct), 63
nw::CreatureScripts::CreatureScripts (C++ function), 63
nw::CreatureScripts::deserialize (C++ function), 63
nw::CreatureScripts::from_json (C++ function), 63
nw::CreatureScripts::on_attacked (C++ member), 64
nw::CreatureScripts::on_blocked (C++ member), 64
nw::CreatureScripts::on_conversation (C++ member), 64
nw::CreatureScripts::on_damaged (C++ member), 64
nw::CreatureScripts::on_death (C++ member), 64
nw::CreatureScripts::on_disturbed (C++ member), 64
nw::CreatureScripts::on_endround (C++ member), 64
nw::CreatureScripts::on_heartbeat (C++ member), 64
nw::CreatureScripts::on_perceived (C++ member), 64
nw::CreatureScripts::on_rested (C++ member), 64
nw::CreatureScripts::on_spawn (C++ member), 64
nw::CreatureScripts::on_spell_cast_at (C++ member), 64
nw::CreatureScripts::on_user_defined (C++ member), 64
nw::CreatureScripts::serialize (C++ function), 63
nw::CreatureScripts::to_json (C++ function), 63
nw::CreatureStats (C++ struct), 64
nw::CreatureStats::add_feat (C++ function), 64
nw::CreatureStats::CreatureStats (C++ function), 64
nw::CreatureStats::deserialize (C++ function), 65
nw::CreatureStats::feats (C++ function), 64
nw::CreatureStats::from_json (C++ function), 64
nw::CreatureStats::get_ability_score (C++ function), 65
nw::CreatureStats::get_skill_rank (C++ function), 65
nw::CreatureStats::has_feat (C++ function), 65
nw::CreatureStats::save_bonus (C++ member), 65
nw::CreatureStats::serialize (C++ function), 65
nw::CreatureStats::set_ability_score (C++ function), 65
nw::CreatureStats::set_skill_rank (C++ function), 65
nw::CreatureStats::to_json (C++ function), 64
nw::DamageFlag (C++ type), 303
nw::DamageResult (C++ struct), 65
nw::DamageResult::amount (C++ member), 65
nw::DamageResult::immunity (C++ member), 65
nw::DamageResult::reduction (C++ member), 65
nw::DamageResult::reduction_remaining (C++ member), 65
nw::DamageResult::resist (C++ member), 65
nw::DamageResult::resist_remaining (C++ member), 66
nw::DamageResult::type (C++ member), 65
nw::DamageResult::unblocked (C++ member), 65
nw::DamageRoll (C++ struct), 66
nw::DamageRoll::flags (C++ member), 66
nw::DamageRoll::roll (C++ member), 66
nw::DamageRoll::type (C++ member), 66
nw::decode_plt_color (C++ function), 270
nw::decompress (C++ function), 270
nw::Dialog (C++ struct), 66
nw::Dialog::add (C++ function), 66
nw::Dialog::add_node_internal (C++ function), 66
nw::Dialog::add_ptr (C++ function), 66
nw::Dialog::add_string (C++ function), 66
nw::Dialog::create_node (C++ function), 67
nw::Dialog::create_ptr (C++ function), 67
nw::Dialog::delay_entry (C++ member), 67
nw::Dialog::delay_reply (C++ member), 68
nw::Dialog::delete_node (C++ function), 67

```


nw::Dialog::delete_ptr (C++ function), 67
 nw::Dialog::Dialog (C++ function), 66
 nw::Dialog::entries (C++ member), 67
 nw::Dialog::json_archive_version (C++ member), 68
 nw::Dialog::node_index (C++ function), 67
 nw::Dialog::operator= (C++ function), 66
 nw::Dialog::prevent_zoom (C++ member), 68
 nw::Dialog::remove_node_internal (C++ function), 67
 nw::Dialog::remove_ptr (C++ function), 67
 nw::Dialog::replies (C++ member), 67
 nw::Dialog::restype (C++ member), 68
 nw::Dialog::script_abort (C++ member), 67
 nw::Dialog::script_end (C++ member), 67
 nw::Dialog::starts (C++ member), 67
 nw::Dialog::valid (C++ function), 67
 nw::Dialog::word_count (C++ member), 68
 nw::DialogNode (C++ struct), 68
 nw::DialogNode::action_params (C++ member), 69
 nw::DialogNode::animation (C++ member), 69
 nw::DialogNode::animation_loop (C++ member), 69
 nw::DialogNode::comment (C++ member), 68
 nw::DialogNode::copy (C++ function), 68
 nw::DialogNode::delay (C++ member), 69
 nw::DialogNode::DialogNode (C++ function), 68
 nw::DialogNode::get_action_param (C++ function), 68
 nw::DialogNode::parent (C++ member), 68
 nw::DialogNode::pointers (C++ member), 69
 nw::DialogNode::quest (C++ member), 68
 nw::DialogNode::quest_entry (C++ member), 69
 nw::DialogNode::remove_action_param (C++ function), 68
 nw::DialogNode::script_action (C++ member), 69
 nw::DialogNode::set_action_param (C++ function), 68
 nw::DialogNode::sound (C++ member), 69
 nw::DialogNode::speaker (C++ member), 69
 nw::DialogNode::text (C++ member), 69
 nw::DialogNode::type (C++ member), 68
 nw::DialogNodeType (C++ enum), 254
 nw::DialogNodeType::entry (C++ enumerator), 254
 nw::DialogNodeType::reply (C++ enumerator), 254
 nw::DialogPtr (C++ struct), 69
 nw::DialogPtr::add (C++ function), 69
 nw::DialogPtr::add_ptr (C++ function), 69
 nw::DialogPtr::add_string (C++ function), 69
 nw::DialogPtr::comment (C++ member), 70
 nw::DialogPtr::condition_params (C++ member), 70
 nw::DialogPtr::copy (C++ function), 69
 nw::DialogPtr::get_all_subnodes (C++ function), 69
 nw::DialogPtr::get_condition_param (C++ function), 69
 nw::DialogPtr::index (C++ member), 70
 nw::DialogPtr::is_link (C++ member), 70
 nw::DialogPtr::is_start (C++ member), 70
 nw::DialogPtr::node (C++ member), 70
 nw::DialogPtr::parent (C++ member), 70
 nw::DialogPtr::remove_condition_param (C++ function), 70
 nw::DialogPtr::remove_ptr (C++ function), 70
 nw::DialogPtr::script_appears (C++ member), 70
 nw::DialogPtr::set_condition_param (C++ function), 70
 nw::DialogPtr::type (C++ member), 70
 nw::DiceRoll (C++ struct), 70
 nw::DiceRoll::bonus (C++ member), 71
 nw::DiceRoll::dice (C++ member), 71
 nw::DiceRoll::operator bool (C++ function), 71
 nw::DiceRoll::sides (C++ member), 71
 nw::Directory (C++ struct), 71
 nw::Directory::~Directory (C++ function), 71
 nw::Directory::all (C++ function), 71
 nw::Directory::contains (C++ function), 71
 nw::Directory::demand (C++ function), 71
 nw::Directory::Directory (C++ function), 71
 nw::Directory::extract (C++ function), 71
 nw::Directory::extract_by_glob (C++ function), 72
 nw::Directory::name (C++ function), 71
 nw::Directory::path (C++ function), 71
 nw::Directory::size (C++ function), 71
 nw::Directory::stat (C++ function), 71
 nw::Directory::valid (C++ function), 71
 nw::Directory::visit (C++ function), 72
 nw::Directory::working_directory (C++ function), 72
 nw::Disease (C++ struct), 72
 nw::Disease::idx (C++ function), 72
 nw::Disease::invalid (C++ function), 72
 nw::Disease::make (C++ function), 72
 nw::Disease::operator* (C++ function), 72
 nw::Disease::operator== (C++ function), 72
 nw::Disease::operator<=> (C++ function), 72
 nw::documents_path (C++ function), 271
 nw::Door (C++ struct), 72
 nw::Door::animation_state (C++ member), 74
 nw::Door::appearance (C++ member), 74
 nw::Door::as_area (C++ function), 73
 nw::Door::as_common (C++ function), 73
 nw::Door::as_creature (C++ function), 73
 nw::Door::as_door (C++ function), 73
 nw::Door::as_encounter (C++ function), 73

nw::Door::as_item (C++ function), 73
 nw::Door::as_module (C++ function), 73
 nw::Door::as_placeable (C++ function), 73
 nw::Door::as_player (C++ function), 73
 nw::Door::as_sound (C++ function), 73
 nw::Door::as_store (C++ function), 73
 nw::Door::as_trigger (C++ function), 74
 nw::Door::as_waypoint (C++ function), 74
 nw::Door::common (C++ member), 74
 nw::Door::conversation (C++ member), 74
 nw::Door::description (C++ member), 74
 nw::Door::deserialize (C++ function), 75
 nw::Door::Door (C++ function), 73
 nw::Door::effects (C++ function), 73
 nw::Door::faction (C++ member), 74
 nw::Door::generic_type (C++ member), 74
 nw::Door::handle (C++ function), 73
 nw::Door::hardness (C++ member), 74
 nw::Door::hp (C++ member), 74
 nw::Door::hp_current (C++ member), 74
 nw::Door::instantiate (C++ function), 73
 nw::Door::instantiated_ (C++ member), 75
 nw::Door::interruptable (C++ member), 75
 nw::Door::json_archive_version (C++ member), 75
 nw::Door::linked_to (C++ member), 74
 nw::Door::linked_to_flags (C++ member), 75
 nw::Door::loadscreen (C++ member), 74
 nw::Door::lock (C++ member), 74
 nw::Door::object_type (C++ member), 75
 nw::Door::plot (C++ member), 75
 nw::Door::portrait_id (C++ member), 74
 nw::Door::restype (C++ member), 75
 nw::Door::saves (C++ member), 74
 nw::Door::scripts (C++ member), 74
 nw::Door::serialize (C++ function), 75
 nw::Door::set_handle (C++ function), 73
 nw::Door::tag (C++ function), 73
 nw::Door::trap (C++ member), 74
 nw::Door::versus_me (C++ function), 73
 nw::DoorAnimationState (C++ enum), 255
 nw::DoorAnimationState::closed (C++ enumerator), 255
 nw::DoorAnimationState::opened1 (C++ enumerator), 255
 nw::DoorAnimationState::opened2 (C++ enumerator), 255
 nw::DoorScripts (C++ struct), 75
 nw::DoorScripts::from_json (C++ function), 75
 nw::DoorScripts::on_click (C++ member), 75
 nw::DoorScripts::on_closed (C++ member), 75
 nw::DoorScripts::on_damaged (C++ member), 75
 nw::DoorScripts::on_death (C++ member), 75
 nw::DoorScripts::on_disarm (C++ member), 76
 nw::DoorScripts::on_heartbeat (C++ member), 76
 nw::DoorScripts::on_lock (C++ member), 76
 nw::DoorScripts::on_melee_attacked (C++ member), 76
 nw::DoorScripts::on_open (C++ member), 76
 nw::DoorScripts::on_open_failure (C++ member), 76
 nw::DoorScripts::on_spell_cast_at (C++ member), 76
 nw::DoorScripts::on_trap_triggered (C++ member), 76
 nw::DoorScripts::on_unlock (C++ member), 76
 nw::DoorScripts::on_user_defined (C++ member), 76
 nw::DoorScripts::to_json (C++ function), 75
 nw::Effect (C++ struct), 76
 nw::Effect::category (C++ member), 77
 nw::Effect::clear (C++ function), 76
 nw::Effect::creator (C++ member), 77
 nw::Effect::duration (C++ member), 77
 nw::Effect::Effect (C++ function), 76
 nw::Effect::expire_day (C++ member), 77
 nw::Effect::expire_time (C++ member), 77
 nw::Effect::get_float (C++ function), 76
 nw::Effect::get_int (C++ function), 76
 nw::Effect::get_string (C++ function), 76
 nw::Effect::handle (C++ function), 76
 nw::Effect::id (C++ function), 76
 nw::Effect::set_float (C++ function), 77
 nw::Effect::set_id (C++ function), 77
 nw::Effect::set_int (C++ function), 77
 nw::Effect::set_string (C++ function), 77
 nw::Effect::set_versus (C++ function), 77
 nw::Effect::spell_id (C++ member), 77
 nw::Effect::subtype (C++ member), 77
 nw::Effect::type (C++ member), 77
 nw::Effect::versus (C++ function), 77
 nw::EffectArray (C++ struct), 77
 nw::EffectArray::add (C++ function), 78
 nw::EffectArray::begin (C++ function), 78
 nw::EffectArray::const_iterator (C++ type), 78
 nw::EffectArray::end (C++ function), 78
 nw::EffectArray::erase (C++ function), 78
 nw::EffectArray::iterator (C++ type), 78
 nw::EffectArray::remove (C++ function), 78
 nw::EffectArray::size (C++ function), 78
 nw::EffectArray::storage (C++ type), 78
 nw::EffectHandle (C++ struct), 78
 nw::EffectHandle::category (C++ member), 79
 nw::EffectHandle::creator (C++ member), 78
 nw::EffectHandle::effect (C++ member), 79
 nw::EffectHandle::operator== (C++ function), 78
 nw::EffectHandle::operator<=> (C++ function), 78
 nw::EffectHandle::spell_id (C++ member), 78

nw::EffectHandle::subtype (C++ member), 78
nw::EffectHandle::type (C++ member), 78
nw::Encounter (C++ struct), 79
nw::Encounter::active (C++ member), 81
nw::Encounter::as_area (C++ function), 79
nw::Encounter::as_common (C++ function), 79
nw::Encounter::as_creature (C++ function), 79
nw::Encounter::as_door (C++ function), 79
nw::Encounter::as_encounter (C++ function), 79
nw::Encounter::as_item (C++ function), 79
nw::Encounter::as_module (C++ function), 79
nw::Encounter::as_placeable (C++ function), 80
nw::Encounter::as_player (C++ function), 80
nw::Encounter::as_sound (C++ function), 80
nw::Encounter::as_store (C++ function), 80
nw::Encounter::as_trigger (C++ function), 80
nw::Encounter::as_waypoint (C++ function), 80
nw::Encounter::common (C++ member), 80
nw::Encounter::creatures (C++ member), 80
nw::Encounter::creatures_max (C++ member), 80
nw::Encounter::creatures_recommended (C++ member), 80
nw::Encounter::deserialize (C++ function), 81
nw::Encounter::difficulty (C++ member), 80
nw::Encounter::difficulty_index (C++ member), 80
nw::Encounter::effects (C++ function), 79
nw::Encounter::Encounter (C++ function), 79
nw::Encounter::faction (C++ member), 80
nw::Encounter::geometry (C++ member), 80
nw::Encounter::handle (C++ function), 79
nw::Encounter::instantiate (C++ function), 79
nw::Encounter::instantiated_ (C++ member), 81
nw::Encounter::json_archive_version (C++ member), 81
nw::Encounter::object_type (C++ member), 81
nw::Encounter::player_only (C++ member), 81
nw::Encounter::reset (C++ member), 81
nw::Encounter::reset_time (C++ member), 80
nw::Encounter::respawns (C++ member), 80
nw::Encounter::retype (C++ member), 81
nw::Encounter::scripts (C++ member), 80
nw::Encounter::serialize (C++ function), 81
nw::Encounter::set_handle (C++ function), 79
nw::Encounter::spawn_option (C++ member), 81
nw::Encounter::spawn_points (C++ member), 80
nw::Encounter::tag (C++ function), 79
nw::Encounter::versus_me (C++ function), 79
nw::EncounterScripts (C++ struct), 81
nw::EncounterScripts::from_json (C++ function), 81
nw::EncounterScripts::on_entered (C++ member), 82
nw::EncounterScripts::on_exhausted (C++ member), 82
nw::EncounterScripts::on_exit (C++ member), 82
nw::EncounterScripts::on_heartbeat (C++ member), 82
nw::EncounterScripts::on_user_defined (C++ member), 82
nw::EncounterScripts::to_json (C++ function), 81
nw::equip_index_to_string (C++ function), 271
nw::equip_slot_to_index (C++ function), 271
nw::EquipIndex (C++ enum), 255
nw::EquipIndex::arms (C++ enumerator), 255
nw::EquipIndex::arrows (C++ enumerator), 255
nw::EquipIndex::belt (C++ enumerator), 255
nw::EquipIndex::bolts (C++ enumerator), 255
nw::EquipIndex::boots (C++ enumerator), 255
nw::EquipIndex::bullets (C++ enumerator), 255
nw::EquipIndex::chest (C++ enumerator), 255
nw::EquipIndex::cloak (C++ enumerator), 255
nw::EquipIndex::creature_bite (C++ enumerator), 256
nw::EquipIndex::creature_left (C++ enumerator), 256
nw::EquipIndex::creature_right (C++ enumerator), 256
nw::EquipIndex::creature_skin (C++ enumerator), 256
nw::EquipIndex::head (C++ enumerator), 255
nw::EquipIndex::invalid (C++ enumerator), 256
nw::EquipIndex::lefthand (C++ enumerator), 255
nw::EquipIndex::leftring (C++ enumerator), 255
nw::EquipIndex::neck (C++ enumerator), 255
nw::EquipIndex::righthand (C++ enumerator), 255
nw::EquipIndex::rightring (C++ enumerator), 255
nw::EquipItem (C++ type), 303
nw::Equips (C++ struct), 82
nw::Equips::~~Equips (C++ function), 82
nw::Equips::Equips (C++ function), 82
nw::Equips::equips (C++ member), 82
nw::Equips::from_json (C++ function), 82
nw::Equips::instantiate (C++ function), 82
nw::Equips::operator= (C++ function), 82
nw::Equips::owner_ (C++ member), 82
nw::Equips::to_json (C++ function), 82
nw::EquipSlot (C++ enum), 256
nw::EquipSlot::arms (C++ enumerator), 256
nw::EquipSlot::arrows (C++ enumerator), 256
nw::EquipSlot::belt (C++ enumerator), 256
nw::EquipSlot::bolts (C++ enumerator), 257
nw::EquipSlot::boots (C++ enumerator), 256
nw::EquipSlot::bullets (C++ enumerator), 256
nw::EquipSlot::chest (C++ enumerator), 256
nw::EquipSlot::cloak (C++ enumerator), 256

```

nw::EquipSlot::creature_bite (C++ enumerator), 257
nw::EquipSlot::creature_left (C++ enumerator), 257
nw::EquipSlot::creature_right (C++ enumerator), 257
nw::EquipSlot::creature_skin (C++ enumerator), 257
nw::EquipSlot::head (C++ enumerator), 256
nw::EquipSlot::lefthand (C++ enumerator), 256
nw::EquipSlot::leftring (C++ enumerator), 256
nw::EquipSlot::neck (C++ enumerator), 256
nw::EquipSlot::righthand (C++ enumerator), 256
nw::EquipSlot::rightring (C++ enumerator), 256
nw::Erf (C++ struct), 83
nw::Erf::~~Erf (C++ function), 83
nw::Erf::add (C++ function), 83
nw::Erf::all (C++ function), 83
nw::Erf::contains (C++ function), 83
nw::Erf::demand (C++ function), 83
nw::Erf::description (C++ member), 84
nw::Erf::erase (C++ function), 83
nw::Erf::Erf (C++ function), 83
nw::Erf::extract (C++ function), 83
nw::Erf::extract_by_glob (C++ function), 84
nw::Erf::merge (C++ function), 83
nw::Erf::name (C++ function), 84
nw::Erf::operator= (C++ function), 84
nw::Erf::path (C++ function), 84
nw::Erf::reload (C++ function), 83
nw::Erf::save (C++ function), 83
nw::Erf::save_as (C++ function), 83
nw::Erf::size (C++ function), 84
nw::Erf::stat (C++ function), 84
nw::Erf::type (C++ member), 84
nw::Erf::valid (C++ function), 84
nw::Erf::version (C++ member), 84
nw::Erf::visit (C++ function), 84
nw::Erf::working_directory (C++ function), 84
nw::ErfType (C++ enum), 257
nw::ErfType::erf (C++ enumerator), 257
nw::ErfType::hak (C++ enumerator), 257
nw::ErfType::mod (C++ enumerator), 257
nw::ErfType::sav (C++ enumerator), 257
nw::ErfVersion (C++ enum), 257
nw::ErfVersion::v1_0 (C++ enumerator), 257
nw::ErfVersion::v1_1 (C++ enumerator), 257
nw::expand_path (C++ function), 271
nw::Faction (C++ struct), 84
nw::Faction::Faction (C++ function), 85
nw::Faction::factions (C++ member), 85
nw::Faction::json_archive_version (C++ member), 85
nw::Faction::reputations (C++ member), 85
nw::Faction::restype (C++ member), 85
nw::Faction::serialize (C++ function), 85
nw::Faction::to_json (C++ function), 85
nw::FactionInfo (C++ struct), 85
nw::FactionInfo::global (C++ member), 85
nw::FactionInfo::name (C++ member), 85
nw::FactionInfo::parent (C++ member), 85
nw::Feat (C++ struct), 85
nw::Feat::idx (C++ function), 86
nw::Feat::invalid (C++ function), 86
nw::Feat::make (C++ function), 86
nw::Feat::operator* (C++ function), 86
nw::Feat::operator== (C++ function), 86
nw::Feat::operator<=> (C++ function), 86
nw::FeatArray (C++ type), 303
nw::FeatInfo (C++ struct), 86
nw::FeatInfo::all_can_use (C++ member), 86
nw::FeatInfo::category (C++ member), 86
nw::FeatInfo::constant (C++ member), 87
nw::FeatInfo::cr_value (C++ member), 87
nw::FeatInfo::description (C++ member), 86
nw::FeatInfo::epic (C++ member), 87
nw::FeatInfo::FeatInfo (C++ function), 86
nw::FeatInfo::hostile (C++ member), 87
nw::FeatInfo::icon (C++ member), 86
nw::FeatInfo::master (C++ member), 87
nw::FeatInfo::max_cr (C++ member), 86
nw::FeatInfo::name (C++ member), 86
nw::FeatInfo::requirements (C++ member), 87
nw::FeatInfo::requires_action (C++ member), 87
nw::FeatInfo::spell (C++ member), 87
nw::FeatInfo::successor (C++ member), 87
nw::FeatInfo::target_self (C++ member), 87
nw::FeatInfo::tools_categories (C++ member), 87
nw::FeatInfo::uses (C++ member), 87
nw::FeatInfo::valid (C++ function), 86
nw::find_first_effect_of (C++ function), 271
nw::from_base64 (C++ function), 271
nw::from_json (C++ function), 272, 275
nw::from_utf8 (C++ function), 276
nw::from_utf8_by_global_lang (C++ function), 276
nw::from_utf8_by_langid (C++ function), 276
nw::GameProfile (C++ struct), 87
nw::GameProfile::~~GameProfile (C++ function), 87
nw::GameProfile::load_resources (C++ function), 87
nw::GameProfile::load_rules (C++ function), 87
nw::GameVersion (C++ enum), 258
nw::GameVersion::invalid (C++ enumerator), 258
nw::GameVersion::nwn2 (C++ enumerator), 258
nw::GameVersion::v1_69 (C++ enumerator), 258
nw::GameVersion::vEE (C++ enumerator), 258
nw::get_all_available_feats (C++ function), 276

```


nw::Gff (C++ struct), 88
 nw::Gff::field_indices_ (C++ member), 88
 nw::Gff::fields_ (C++ member), 88
 nw::Gff::Gff (C++ function), 88
 nw::Gff::head_ (C++ member), 88
 nw::Gff::labels_ (C++ member), 88
 nw::Gff::list_indices_ (C++ member), 88
 nw::Gff::structs_ (C++ member), 88
 nw::Gff::toplevel (C++ function), 88
 nw::Gff::type (C++ function), 88
 nw::Gff::valid (C++ function), 88
 nw::Gff::version (C++ function), 88
 nw::gff_to_gffjson (C++ function), 276
 nw::GffBuilder (C++ struct), 88
 nw::GffBuilder::add_label (C++ function), 89
 nw::GffBuilder::build (C++ function), 89
 nw::GffBuilder::data (C++ member), 89
 nw::GffBuilder::field_entries (C++ member), 89
 nw::GffBuilder::field_indices (C++ member), 89
 nw::GffBuilder::GffBuilder (C++ function), 89
 nw::GffBuilder::header (C++ member), 89
 nw::GffBuilder::labels (C++ member), 89
 nw::GffBuilder::list_indices (C++ member), 89
 nw::GffBuilder::struct_entries (C++ member), 89
 nw::GffBuilder::to_byte_array (C++ function), 89
 nw::GffBuilder::top (C++ member), 89
 nw::GffBuilder::write_to (C++ function), 89
 nw::GffBuilderField (C++ struct), 89
 nw::GffBuilderField::data_or_offset (C++ member), 90
 nw::GffBuilderField::GffBuilderField (C++ function), 89
 nw::GffBuilderField::index (C++ member), 90
 nw::GffBuilderField::label_index (C++ member), 90
 nw::GffBuilderField::parent (C++ member), 90
 nw::GffBuilderField::structures (C++ member), 90
 nw::GffBuilderField::type (C++ member), 90
 nw::GffBuilderList (C++ struct), 90
 nw::GffBuilderList::GffBuilderList (C++ function), 90
 nw::GffBuilderList::parent (C++ member), 90
 nw::GffBuilderList::push_back (C++ function), 90
 nw::GffBuilderList::size (C++ function), 90
 nw::GffBuilderList::structs (C++ member), 90
 nw::GffBuilderStruct (C++ struct), 90
 nw::GffBuilderStruct::add_field (C++ function), 91
 nw::GffBuilderStruct::add_list (C++ function), 91
 nw::GffBuilderStruct::add_struct (C++ function), 91
 nw::GffBuilderStruct::field_entries (C++ member), 91
 nw::GffBuilderStruct::GffBuilderStruct (C++ function), 91
 nw::GffBuilderStruct::id (C++ member), 91
 nw::GffBuilderStruct::index (C++ member), 91
 nw::GffBuilderStruct::parent (C++ member), 91
 nw::GffField (C++ struct), 91
 nw::GffField::get (C++ function), 91
 nw::GffField::get_to (C++ function), 91
 nw::GffField::name (C++ function), 91
 nw::GffField::operator[] (C++ function), 91
 nw::GffField::size (C++ function), 91
 nw::GffField::type (C++ function), 91
 nw::GffField::valid (C++ function), 91
 nw::GffLabel (C++ struct), 92
 nw::GffLabel::empty (C++ function), 92
 nw::GffLabel::GffLabel (C++ function), 92
 nw::GffLabel::length (C++ function), 92
 nw::GffLabel::max_size (C++ member), 92
 nw::GffLabel::operator= (C++ function), 92
 nw::GffLabel::size_type (C++ type), 92
 nw::GffLabel::Storage (C++ type), 92
 nw::GffLabel::string (C++ function), 92
 nw::GffLabel::value_type (C++ type), 92
 nw::GffLabel::view (C++ function), 92
 nw::GffStruct (C++ struct), 93
 nw::GffStruct::get (C++ function), 93
 nw::GffStruct::get_to (C++ function), 93
 nw::GffStruct::has_field (C++ function), 93
 nw::GffStruct::id (C++ function), 93
 nw::GffStruct::operator[] (C++ function), 93
 nw::GffStruct::size (C++ function), 93
 nw::GffStruct::valid (C++ function), 93
 nw::has_effect_applied (C++ function), 276
 nw::has_feat_successor (C++ function), 276
 nw::highest_feat_in_range (C++ function), 277
 nw::home_path (C++ function), 277
 nw::Image (C++ struct), 93
 nw::Image::~Image (C++ function), 94
 nw::Image::channels (C++ function), 94
 nw::Image::data (C++ function), 94
 nw::Image::height (C++ function), 94
 nw::Image::Image (C++ function), 94
 nw::Image::is_bio_dds (C++ function), 94
 nw::Image::operator= (C++ function), 94
 nw::Image::valid (C++ function), 94
 nw::Image::width (C++ function), 94
 nw::Image::write_to (C++ function), 94
 nw::Ini (C++ struct), 94
 nw::Ini::get (C++ function), 95
 nw::Ini::get_to (C++ function), 95
 nw::Ini::Ini (C++ function), 95
 nw::Ini::valid (C++ function), 95

```

nw::init_logger (C++ function), 277
nw::InstallInfo (C++ struct), 95
nw::InstallInfo::install (C++ member), 95
nw::InstallInfo::user (C++ member), 95
nw::InstallInfo::version (C++ member), 95
nw::InternedString (C++ struct), 96
nw::InternedString::InternedString (C++ function), 96
nw::InternedString::operator bool (C++ function), 96
nw::InternedString::operator== (C++ function), 96
nw::InternedString::operator<=> (C++ function), 96
nw::InternedString::view (C++ function), 96
nw::Inventory (C++ struct), 96
nw::Inventory::~~Inventory (C++ function), 96
nw::Inventory::from_json (C++ function), 96
nw::Inventory::instantiate (C++ function), 96
nw::Inventory::Inventory (C++ function), 96
nw::Inventory::items (C++ member), 97
nw::Inventory::operator= (C++ function), 96
nw::Inventory::owner (C++ member), 97
nw::Inventory::to_json (C++ function), 96
nw::InventoryItem (C++ struct), 97
nw::InventoryItem::infinite (C++ member), 97
nw::InventoryItem::item (C++ member), 97
nw::InventoryItem::pos_x (C++ member), 97
nw::InventoryItem::pos_y (C++ member), 97
nw::is_attack_type_hit (C++ function), 277
nw::is_attack_type_miss (C++ function), 277
nw::istream_read (C++ function), 277
nw::Item (C++ struct), 97
nw::Item::additional_cost (C++ member), 99
nw::Item::armor_id (C++ member), 99
nw::Item::as_area (C++ function), 98
nw::Item::as_common (C++ function), 97
nw::Item::as_creature (C++ function), 98
nw::Item::as_door (C++ function), 98
nw::Item::as_encounter (C++ function), 98
nw::Item::as_item (C++ function), 97
nw::Item::as_module (C++ function), 98
nw::Item::as_placeable (C++ function), 98
nw::Item::as_player (C++ function), 98
nw::Item::as_sound (C++ function), 98
nw::Item::as_store (C++ function), 98
nw::Item::as_trigger (C++ function), 98
nw::Item::as_waypoint (C++ function), 98
nw::Item::baseitem (C++ member), 99
nw::Item::charges (C++ member), 99
nw::Item::common (C++ member), 98
nw::Item::cost (C++ member), 99
nw::Item::cursed (C++ member), 99
nw::Item::description (C++ member), 98
nw::Item::description_id (C++ member), 98
nw::Item::deserialize (C++ function), 99
nw::Item::effects (C++ function), 97
nw::Item::handle (C++ function), 97
nw::Item::identified (C++ member), 99
nw::Item::instantiate (C++ function), 97
nw::Item::instantiated_ (C++ member), 99
nw::Item::inventory (C++ member), 98
nw::Item::Item (C++ function), 97
nw::Item::json_archive_version (C++ member), 100
nw::Item::model_colors (C++ member), 99
nw::Item::model_parts (C++ member), 99
nw::Item::model_type (C++ member), 99
nw::Item::object_type (C++ member), 100
nw::Item::plot (C++ member), 99
nw::Item::properties (C++ member), 99
nw::Item::restype (C++ member), 100
nw::Item::serialize (C++ function), 99
nw::Item::set_handle (C++ function), 97
nw::Item::stacksize (C++ member), 99
nw::Item::stolen (C++ member), 99
nw::Item::tag (C++ function), 97
nw::Item::versus_me (C++ function), 98
nw::ItemColors (C++ struct), 100
nw::ItemColors::type (C++ enum), 100
nw::ItemColors::type::cloth1 (C++ enumerator), 100
nw::ItemColors::type::cloth2 (C++ enumerator), 100
nw::ItemColors::type::leather1 (C++ enumerator), 100
nw::ItemColors::type::leather2 (C++ enumerator), 100
nw::ItemColors::type::metal1 (C++ enumerator), 100
nw::ItemColors::type::metal2 (C++ enumerator), 100
nw::ItemModelParts (C++ struct), 100
nw::ItemModelParts::type (C++ enum), 100
nw::ItemModelParts::type::armor_belt (C++ enumerator), 101
nw::ItemModelParts::type::armor_lbicep (C++ enumerator), 101
nw::ItemModelParts::type::armor_lfarm (C++ enumerator), 101
nw::ItemModelParts::type::armor_lfoot (C++ enumerator), 101
nw::ItemModelParts::type::armor_lhand (C++ enumerator), 101
nw::ItemModelParts::type::armor_lshin (C++ enumerator), 101
nw::ItemModelParts::type::armor_lshoul (C++ enumerator), 101

```

nw::ItemModelParts::type::armor_lthigh (C++ enumerator), 101
 nw::ItemModelParts::type::armor_neck (C++ enumerator), 101
 nw::ItemModelParts::type::armor_pelvis (C++ enumerator), 101
 nw::ItemModelParts::type::armor_rbicep (C++ enumerator), 101
 nw::ItemModelParts::type::armor_rfarm (C++ enumerator), 101
 nw::ItemModelParts::type::armor_rfoot (C++ enumerator), 101
 nw::ItemModelParts::type::armor_rhand (C++ enumerator), 101
 nw::ItemModelParts::type::armor_robe (C++ enumerator), 101
 nw::ItemModelParts::type::armor_rshin (C++ enumerator), 101
 nw::ItemModelParts::type::armor_rshoul (C++ enumerator), 101
 nw::ItemModelParts::type::armor_rthigh (C++ enumerator), 101
 nw::ItemModelParts::type::armor_torso (C++ enumerator), 101
 nw::ItemModelParts::type::model1 (C++ enumerator), 100
 nw::ItemModelParts::type::model2 (C++ enumerator), 100
 nw::ItemModelParts::type::model3 (C++ enumerator), 101
 nw::ItemModelType (C++ enum), 258
 nw::ItemModelType::armor (C++ enumerator), 258
 nw::ItemModelType::composite (C++ enumerator), 258
 nw::ItemModelType::layered (C++ enumerator), 258
 nw::ItemModelType::simple (C++ enumerator), 258
 nw::itemprop_to_string (C++ function), 277
 nw::ItemProperty (C++ struct), 102
 nw::ItemProperty::cost_table (C++ member), 102
 nw::ItemProperty::cost_value (C++ member), 102
 nw::ItemProperty::param_table (C++ member), 102
 nw::ItemProperty::param_value (C++ member), 102
 nw::ItemProperty::subtype (C++ member), 102
 nw::ItemProperty::type (C++ member), 102
 nw::Journal (C++ struct), 102
 nw::Journal::categories (C++ member), 102
 nw::Journal::Journal (C++ function), 102
 nw::Journal::json_archive_version (C++ member), 102
 nw::Journal::restype (C++ member), 102
 nw::JournalCategory (C++ struct), 103
 nw::JournalCategory::comment (C++ member), 103
 nw::JournalCategory::entries (C++ member), 103
 nw::JournalCategory::name (C++ member), 103
 nw::JournalCategory::picture (C++ member), 103
 nw::JournalCategory::priority (C++ member), 103
 nw::JournalCategory::tag (C++ member), 103
 nw::JournalCategory::xp (C++ member), 103
 nw::JournalEntry (C++ struct), 103
 nw::JournalEntry::end (C++ member), 103
 nw::JournalEntry::id (C++ member), 103
 nw::JournalEntry::text (C++ member), 103
 nw::kernel::config (C++ function), 277
 nw::kernel::Config (C++ struct), 171
 nw::kernel::Config::Config (C++ function), 172
 nw::kernel::Config::initialize (C++ function), 172
 nw::kernel::Config::install_path (C++ function), 172
 nw::kernel::Config::options (C++ function), 172
 nw::kernel::Config::set_paths (C++ function), 172
 nw::kernel::Config::set_version (C++ function), 172
 nw::kernel::Config::user_path (C++ function), 172
 nw::kernel::Config::version (C++ function), 172
 nw::kernel::EffectSystem (C++ struct), 172
 nw::kernel::EffectSystem::~~EffectSystem (C++ function), 172
 nw::kernel::EffectSystem::add (C++ function), 172
 nw::kernel::EffectSystem::apply (C++ function), 172
 nw::kernel::EffectSystem::clear (C++ function), 172
 nw::kernel::EffectSystem::create (C++ function), 172
 nw::kernel::EffectSystem::destroy (C++ function), 172
 nw::kernel::EffectSystem::effect_limits_ability (C++ function), 172
 nw::kernel::EffectSystem::effect_limits_armor_class (C++ function), 173
 nw::kernel::EffectSystem::effect_limits_attack (C++ function), 173
 nw::kernel::EffectSystem::effect_limits_skill (C++ function), 173
 nw::kernel::EffectSystem::generate (C++ function), 173
 nw::kernel::EffectSystem::initialize (C++ function), 173
 nw::kernel::EffectSystem::ip_cost_table (C++ function), 173

```

nw::kernel::EffectSystem::ip_definition      (C++ function), 173
nw::kernel::EffectSystem::ip_param_table     (C++ function), 173
nw::kernel::EffectSystem::remove (C++ function), 173
nw::kernel::EffectSystem::set_effect_limits_ability (C++ function), 173
nw::kernel::EffectSystem::set_effect_limits_armor (C++ function), 173
nw::kernel::EffectSystem::set_effect_limits_attack (C++ function), 173
nw::kernel::EffectSystem::set_effect_limits_skill (C++ function), 173
nw::kernel::EffectSystem::stats (C++ function), 173
nw::kernel::EventSystem (C++ struct), 173
nw::kernel::EventSystem::add (C++ function), 174
nw::kernel::EventSystem::clear (C++ function), 174
nw::kernel::EventSystem::initialize (C++ function), 174
nw::kernel::EventSystem::process (C++ function), 174
nw::kernel::EventSystem::queue_ (C++ member), 174
nw::kernel::EventSystem::storage (C++ type), 174
nw::kernel::load_module (C++ function), 278
nw::kernel::max_modifier (C++ function), 278
nw::kernel::objects (C++ function), 278
nw::kernel::ObjectSystem (C++ struct), 174
nw::kernel::ObjectSystem::~~ObjectSystem (C++ function), 174
nw::kernel::ObjectSystem::alloc (C++ function), 175
nw::kernel::ObjectSystem::clear (C++ function), 174
nw::kernel::ObjectSystem::destroy (C++ function), 174
nw::kernel::ObjectSystem::get (C++ function), 174
nw::kernel::ObjectSystem::get_by_tag (C++ function), 175
nw::kernel::ObjectSystem::get_object_base (C++ function), 175
nw::kernel::ObjectSystem::initialize (C++ function), 174
nw::kernel::ObjectSystem::load (C++ function), 175
nw::kernel::ObjectSystem::load_player (C++ function), 175
nw::kernel::ObjectSystem::make (C++ function), 175
nw::kernel::ObjectSystem::make_area (C++ function), 175
nw::kernel::ObjectSystem::make_module (C++ function), 175
nw::kernel::ObjectSystem::ObjectSystem (C++ function), 174
nw::kernel::ObjectSystem::operator= (C++ function), 174
nw::kernel::ObjectSystem::valid (C++ function), 175
nw::kernel::resman (C++ function), 279
nw::kernel::resolve_master_feat (C++ function), 279
nw::kernel::resolve_master_feats (C++ function), 279
nw::kernel::resolve_modifier (C++ function), 280
nw::kernel::Resources (C++ struct), 175
nw::kernel::Resources::~~Resources (C++ function), 176
nw::kernel::Resources::add_base_container (C++ function), 176
nw::kernel::Resources::add_custom_container (C++ function), 176
nw::kernel::Resources::add_override_container (C++ function), 176
nw::kernel::Resources::all (C++ function), 177
nw::kernel::Resources::clear (C++ function), 176
nw::kernel::Resources::clear_containers (C++ function), 176
nw::kernel::Resources::contains (C++ function), 177
nw::kernel::Resources::demand (C++ function), 177
nw::kernel::Resources::demand_any (C++ function), 176
nw::kernel::Resources::demand_in_order (C++ function), 177
nw::kernel::Resources::demand_server_vault (C++ function), 176
nw::kernel::Resources::extract (C++ function), 177
nw::kernel::Resources::extract_by_glob (C++ function), 177
nw::kernel::Resources::initialize (C++ function), 176
nw::kernel::Resources::load_module (C++ function), 176
nw::kernel::Resources::load_module_haks (C++ function), 176
nw::kernel::Resources::load_palette_textures (C++ function), 177
nw::kernel::Resources::name (C++ function), 177
nw::kernel::Resources::palette_texture (C++ function), 177

```


nw::kernel::Resources::path (C++ *function*), 177
 nw::kernel::Resources::Resources (C++ *function*), 176
 nw::kernel::Resources::SearchVector (C++ *type*), 176
 nw::kernel::Resources::size (C++ *function*), 177
 nw::kernel::Resources::stat (C++ *function*), 177
 nw::kernel::Resources::unload_module (C++ *function*), 176
 nw::kernel::Resources::valid (C++ *function*), 177
 nw::kernel::Resources::visit (C++ *function*), 177
 nw::kernel::Resources::working_directory (C++ *function*), 177
 nw::kernel::rules (C++ *function*), 281
 nw::kernel::Rules (C++ *struct*), 177
 nw::kernel::Rules::~~Rules (C++ *function*), 178
 nw::kernel::Rules::baseitems (C++ *member*), 178
 nw::kernel::Rules::classes (C++ *member*), 178
 nw::kernel::Rules::clear (C++ *function*), 178
 nw::kernel::Rules::feats (C++ *member*), 178
 nw::kernel::Rules::initialize (C++ *function*), 178
 nw::kernel::Rules::master_feats (C++ *member*), 178
 nw::kernel::Rules::match (C++ *function*), 178
 nw::kernel::Rules::meets_requirement (C++ *function*), 178
 nw::kernel::Rules::modifiers (C++ *member*), 179
 nw::kernel::Rules::qualifier_type (C++ *type*), 178
 nw::kernel::Rules::races (C++ *member*), 178
 nw::kernel::Rules::select (C++ *function*), 178
 nw::kernel::Rules::selector_type (C++ *type*), 178
 nw::kernel::Rules::set_qualifier (C++ *function*), 178
 nw::kernel::Rules::set_selector (C++ *function*), 178
 nw::kernel::Rules::skills (C++ *member*), 178
 nw::kernel::Rules::spells (C++ *member*), 178
 nw::kernel::Rules::spellschools (C++ *member*), 178
 nw::kernel::serial_id_to_obj_type (C++ *function*), 281
 nw::kernel::Service (C++ *struct*), 179
 nw::kernel::services (C++ *function*), 281
 nw::kernel::Services (C++ *struct*), 179
 nw::kernel::Services::add (C++ *function*), 179
 nw::kernel::Services::effects (C++ *member*), 180
 nw::kernel::Services::events (C++ *member*), 180
 nw::kernel::Services::get (C++ *function*), 179
 nw::kernel::Services::get_mut (C++ *function*), 179
 nw::kernel::Services::objects (C++ *member*), 180
 nw::kernel::Services::profile (C++ *function*), 179
 nw::kernel::Services::resources (C++ *member*), 180
 nw::kernel::Services::rules (C++ *member*), 180
 nw::kernel::Services::Services (C++ *function*), 179
 nw::kernel::Services::shutdown (C++ *function*), 179
 nw::kernel::Services::start (C++ *function*), 179
 nw::kernel::Services::strings (C++ *member*), 180
 nw::kernel::Services::twoda_cache (C++ *member*), 180
 nw::kernel::strings (C++ *function*), 281
 nw::kernel::Strings (C++ *struct*), 180
 nw::kernel::Strings::~~Strings (C++ *function*), 180
 nw::kernel::Strings::clear (C++ *function*), 180
 nw::kernel::Strings::get (C++ *function*), 180
 nw::kernel::Strings::get_interned (C++ *function*), 180
 nw::kernel::Strings::global_language (C++ *function*), 181
 nw::kernel::Strings::initialize (C++ *function*), 180
 nw::kernel::Strings::intern (C++ *function*), 180
 nw::kernel::Strings::load_custom_tlk (C++ *function*), 181
 nw::kernel::Strings::load_dialog_tlk (C++ *function*), 181
 nw::kernel::Strings::set_global_language (C++ *function*), 181
 nw::kernel::Strings::Strings (C++ *function*), 180
 nw::kernel::Strings::unload_custom_tlk (C++ *function*), 181
 nw::kernel::sum_master_feats (C++ *function*), 281
 nw::kernel::sum_modifier (C++ *function*), 281, 282
 nw::kernel::unload_module (C++ *function*), 282
 nw::Key (C++ *struct*), 103
 nw::Key::~~Key (C++ *function*), 104
 nw::Key::all (C++ *function*), 104
 nw::Key::contains (C++ *function*), 104
 nw::Key::demand (C++ *function*), 104
 nw::Key::extract (C++ *function*), 104
 nw::Key::extract_by_glob (C++ *function*), 104
 nw::Key::is_loaded (C++ *function*), 104
 nw::Key::Key (C++ *function*), 104
 nw::Key::name (C++ *function*), 104
 nw::Key::operator= (C++ *function*), 104
 nw::Key::path (C++ *function*), 104

nw::Key::size (C++ function), 104
 nw::Key::stat (C++ function), 104
 nw::Key::valid (C++ function), 104
 nw::Key::visit (C++ function), 104
 nw::Key::working_directory (C++ function), 104
 nw::knows_feat (C++ function), 282
 nw::Language (C++ struct), 105
 nw::Language::encoding (C++ function), 105
 nw::Language::from_string (C++ function), 105
 nw::Language::has_feminine (C++ function), 105
 nw::Language::Properties (C++ struct), 105
 nw::Language::Properties::encoding (C++ member), 105
 nw::Language::Properties::has_feminine (C++ member), 105
 nw::Language::Properties::id (C++ member), 105
 nw::Language::Properties::lang_long (C++ member), 105
 nw::Language::Properties::lang_short (C++ member), 105
 nw::Language::to_base_id (C++ function), 105
 nw::Language::to_runtime_id (C++ function), 105
 nw::Language::to_string (C++ function), 105
 nw::LanguageID (C++ enum), 258
 nw::LanguageID::chinese_simplified (C++ enumerator), 259
 nw::LanguageID::chinese_traditional (C++ enumerator), 259
 nw::LanguageID::english (C++ enumerator), 258
 nw::LanguageID::french (C++ enumerator), 258
 nw::LanguageID::german (C++ enumerator), 258
 nw::LanguageID::invalid (C++ enumerator), 258
 nw::LanguageID::italian (C++ enumerator), 258
 nw::LanguageID::japanese (C++ enumerator), 259
 nw::LanguageID::korean (C++ enumerator), 259
 nw::LanguageID::polish (C++ enumerator), 259
 nw::LanguageID::spanish (C++ enumerator), 258
 nw::LevelHistory (C++ struct), 106
 nw::LevelHistory::entries (C++ member), 106
 nw::LevelStats (C++ struct), 106
 nw::LevelStats::entries (C++ member), 106
 nw::LevelStats::from_json (C++ function), 106
 nw::LevelStats::level (C++ function), 106
 nw::LevelStats::level_by_class (C++ function), 106
 nw::LevelStats::LevelStats (C++ function), 106
 nw::LevelStats::max_classes (C++ member), 107
 nw::LevelStats::npos (C++ member), 107
 nw::LevelStats::position (C++ function), 106
 nw::LevelStats::to_json (C++ function), 106
 nw::LocalData (C++ struct), 108
 nw::LocalData::delete_float (C++ function), 108
 nw::LocalData::delete_int (C++ function), 108
 nw::LocalData::delete_location (C++ function), 108
 nw::LocalData::delete_object (C++ function), 108
 nw::LocalData::delete_string (C++ function), 108
 nw::LocalData::deserialize (C++ function), 109
 nw::LocalData::from_json (C++ function), 108
 nw::LocalData::get_float (C++ function), 108
 nw::LocalData::get_int (C++ function), 108
 nw::LocalData::get_location (C++ function), 108
 nw::LocalData::get_object (C++ function), 108
 nw::LocalData::get_string (C++ function), 108
 nw::LocalData::LocalData (C++ function), 108
 nw::LocalData::serialize (C++ function), 109
 nw::LocalData::set_float (C++ function), 108
 nw::LocalData::set_int (C++ function), 108
 nw::LocalData::set_location (C++ function), 108
 nw::LocalData::set_object (C++ function), 108
 nw::LocalData::set_string (C++ function), 108
 nw::LocalData::size (C++ function), 108
 nw::LocalData::to_json (C++ function), 108
 nw::LocalVar (C++ struct), 109
 nw::LocalVar::flags (C++ member), 109
 nw::LocalVar::float_ (C++ member), 109
 nw::LocalVar::integer (C++ member), 109
 nw::LocalVar::loc (C++ member), 109
 nw::LocalVar::object (C++ member), 109
 nw::LocalVar::string (C++ member), 109
 nw::LocalVarTable (C++ type), 304
 nw::LocalVarType (C++ struct), 109
 nw::LocalVarType::float_ (C++ member), 109
 nw::LocalVarType::integer (C++ member), 109
 nw::LocalVarType::location (C++ member), 109
 nw::LocalVarType::object (C++ member), 109
 nw::LocalVarType::string (C++ member), 109
 nw::Location (C++ struct), 110
 nw::Location::area (C++ member), 110
 nw::Location::Location (C++ function), 110
 nw::Location::operator bool (C++ function), 110
 nw::Location::operator== (C++ function), 110
 nw::Location::orientation (C++ member), 110
 nw::Location::position (C++ member), 110
 nw::Lock (C++ struct), 110
 nw::Lock::from_json (C++ function), 110
 nw::Lock::key_name (C++ member), 110
 nw::Lock::key_required (C++ member), 110
 nw::Lock::Lock (C++ function), 110
 nw::Lock::lock_dc (C++ member), 110
 nw::Lock::lockable (C++ member), 110
 nw::Lock::locked (C++ member), 110
 nw::Lock::remove_key (C++ member), 111
 nw::Lock::to_json (C++ function), 110
 nw::Lock::unlock_dc (C++ member), 111
 nw::LocString (C++ struct), 107
 nw::LocString::add (C++ function), 107

nw::LocString::begin (C++ function), 107, 108
 nw::LocString::const_iterator (C++ type), 107
 nw::LocString::contains (C++ function), 107
 nw::LocString::end (C++ function), 108
 nw::LocString::get (C++ function), 107
 nw::LocString::iterator (C++ type), 107
 nw::LocString::LocString (C++ function), 107
 nw::LocString::LocStringPair (C++ type), 107
 nw::LocString::operator= (C++ function), 108
 nw::LocString::operator== (C++ function), 108
 nw::LocString::remove (C++ function), 107
 nw::LocString::size (C++ function), 107
 nw::LocString::size_type (C++ type), 107
 nw::LocString::Storage (C++ type), 107
 nw::LocString::strref (C++ function), 107
 nw::MasterFeat (C++ struct), 111
 nw::MasterFeat::idx (C++ function), 111
 nw::MasterFeat::invalid (C++ function), 111
 nw::MasterFeat::make (C++ function), 111
 nw::MasterFeat::operator* (C++ function), 111
 nw::MasterFeat::operator== (C++ function), 111
 nw::MasterFeat::operator<=> (C++ function), 111
 nw::MasterFeatRegistry (C++ struct), 111
 nw::MasterFeatRegistry::add (C++ function), 111
 nw::MasterFeatRegistry::clear (C++ function), 111
 nw::MasterFeatRegistry::entries (C++ function), 111
 nw::MasterFeatRegistry::get_bonus (C++ function), 111
 nw::MasterFeatRegistry::remove (C++ function), 111
 nw::MasterFeatRegistry::set_bonus (C++ function), 112
 nw::max_effects_of (C++ function), 283
 nw::model::AABBEntry (C++ struct), 181
 nw::model::AABBEntry::bmax (C++ member), 181
 nw::model::AABBEntry::bmin (C++ member), 181
 nw::model::AABBEntry::leaf_face (C++ member), 181
 nw::model::AABBEntry::plane (C++ member), 181
 nw::model::AABBNode (C++ struct), 182
 nw::model::AABBNode::AABBNode (C++ function), 182
 nw::model::AABBNode::add_controller_data (C++ function), 182
 nw::model::AABBNode::ambient (C++ member), 182
 nw::model::AABBNode::beaming (C++ member), 182
 nw::model::AABBNode::bitmap (C++ member), 182
 nw::model::AABBNode::bmax (C++ member), 182
 nw::model::AABBNode::bmin (C++ member), 182
 nw::model::AABBNode::center (C++ member), 182
 nw::model::AABBNode::children (C++ member), 183
 nw::model::AABBNode::colors (C++ member), 183
 nw::model::AABBNode::controller_data (C++ member), 183
 nw::model::AABBNode::controller_keys (C++ member), 183
 nw::model::AABBNode::diffuse (C++ member), 182
 nw::model::AABBNode::displtype (C++ member), 183
 nw::model::AABBNode::entries (C++ member), 182
 nw::model::AABBNode::get_controller (C++ function), 182
 nw::model::AABBNode::indices (C++ member), 183
 nw::model::AABBNode::inheritcolor (C++ member), 183
 nw::model::AABBNode::lightmapped (C++ member), 183
 nw::model::AABBNode::materialname (C++ member), 182
 nw::model::AABBNode::multimaterial (C++ member), 183
 nw::model::AABBNode::name (C++ member), 183
 nw::model::AABBNode::parent (C++ member), 183
 nw::model::AABBNode::render (C++ member), 182
 nw::model::AABBNode::renderhint (C++ member), 182
 nw::model::AABBNode::rotatetexture (C++ member), 182
 nw::model::AABBNode::shadow (C++ member), 182
 nw::model::AABBNode::shininess (C++ member), 182
 nw::model::AABBNode::showdispl (C++ member), 183
 nw::model::AABBNode::specular (C++ member), 183
 nw::model::AABBNode::textures (C++ member), 183
 nw::model::AABBNode::tilefade (C++ member), 183
 nw::model::AABBNode::transparencyhint (C++ member), 183
 nw::model::AABBNode::type (C++ member), 183
 nw::model::AABBNode::vertices (C++ member), 183
 nw::model::Animation (C++ struct), 184
 nw::model::Animation::~Animation (C++ function), 184
 nw::model::Animation::anim_root (C++ member), 184
 nw::model::Animation::Animation (C++ function), 184
 nw::model::Animation::events (C++ member), 184
 nw::model::Animation::find (C++ function), 184
 nw::model::Animation::length (C++ member), 184
 nw::model::Animation::name (C++ member), 184

```

nw::model::Animation::nodes (C++ member), 184
nw::model::Animation::transition_time (C++ member), 184
nw::model::Animation::type (C++ member), 184
nw::model::AnimationEvent (C++ struct), 184
nw::model::AnimationEvent::name (C++ member), 184
nw::model::AnimationEvent::time (C++ member), 184
nw::model::AnimeshNode (C++ struct), 185
nw::model::AnimeshNode::add_controller_data (C++ function), 185
nw::model::AnimeshNode::ambient (C++ member), 185
nw::model::AnimeshNode::AnimeshNode (C++ function), 185
nw::model::AnimeshNode::animtverts (C++ member), 185
nw::model::AnimeshNode::animverts (C++ member), 185
nw::model::AnimeshNode::beaming (C++ member), 185
nw::model::AnimeshNode::bitmap (C++ member), 185
nw::model::AnimeshNode::bmax (C++ member), 185
nw::model::AnimeshNode::bmin (C++ member), 185
nw::model::AnimeshNode::center (C++ member), 185
nw::model::AnimeshNode::children (C++ member), 187
nw::model::AnimeshNode::cliph (C++ member), 185
nw::model::AnimeshNode::clipu (C++ member), 185
nw::model::AnimeshNode::clipv (C++ member), 185
nw::model::AnimeshNode::clipw (C++ member), 185
nw::model::AnimeshNode::colors (C++ member), 186
nw::model::AnimeshNode::controller_data (C++ member), 187
nw::model::AnimeshNode::controller_keys (C++ member), 187
nw::model::AnimeshNode::diffuse (C++ member), 185
nw::model::AnimeshNode::displtype (C++ member), 186
nw::model::AnimeshNode::get_controller (C++ function), 185
nw::model::AnimeshNode::indices (C++ member), 186
nw::model::AnimeshNode::inheritcolor (C++ member), 186
nw::model::AnimeshNode::lightmapped (C++ member), 186
nw::model::AnimeshNode::materialname (C++ member), 186
nw::model::AnimeshNode::multimaterial (C++ member), 186
nw::model::AnimeshNode::name (C++ member), 186
nw::model::AnimeshNode::parent (C++ member), 186
nw::model::AnimeshNode::render (C++ member), 186
nw::model::AnimeshNode::renderhint (C++ member), 186
nw::model::AnimeshNode::rotatetexture (C++ member), 186
nw::model::AnimeshNode::sampleperiod (C++ member), 185
nw::model::AnimeshNode::shadow (C++ member), 186
nw::model::AnimeshNode::shininess (C++ member), 186
nw::model::AnimeshNode::showdispl (C++ member), 186
nw::model::AnimeshNode::specular (C++ member), 186
nw::model::AnimeshNode::textures (C++ member), 186
nw::model::AnimeshNode::tilefade (C++ member), 186
nw::model::AnimeshNode::transparencyhint (C++ member), 186
nw::model::AnimeshNode::type (C++ member), 186
nw::model::AnimeshNode::vertices (C++ member), 186
nw::model::CameraNode (C++ struct), 187
nw::model::CameraNode::add_controller_data (C++ function), 187
nw::model::CameraNode::CameraNode (C++ function), 187
nw::model::CameraNode::children (C++ member), 187
nw::model::CameraNode::controller_data (C++ member), 187
nw::model::CameraNode::controller_keys (C++ member), 187
nw::model::CameraNode::get_controller (C++ function), 187
nw::model::CameraNode::inheritcolor (C++ member), 187
nw::model::CameraNode::name (C++ member), 187
nw::model::CameraNode::parent (C++ member), 187
nw::model::CameraNode::type (C++ member), 187
nw::model::ControllerKey (C++ struct), 188

```

nw::model::ControllerKey::columns (C++ member), 188	189	nw::model::ControllerType::inherit (C++ member), 191
nw::model::ControllerKey::ControllerKey (C++ function), 188		nw::model::ControllerType::inherit_local (C++ member), 191
nw::model::ControllerKey::data_offset (C++ member), 188		nw::model::ControllerType::LifeExp (C++ member), 190
nw::model::ControllerKey::is_key (C++ member), 188		nw::model::ControllerType::LightningDelay (C++ member), 190
nw::model::ControllerKey::key_offset (C++ member), 188		nw::model::ControllerType::LightningRadius (C++ member), 190
nw::model::ControllerKey::name (C++ member), 188		nw::model::ControllerType::LightningScale (C++ member), 190
nw::model::ControllerKey::rows (C++ member), 188		nw::model::ControllerType::LightningSubDiv (C++ member), 190
nw::model::ControllerKey::time_offset (C++ member), 188		nw::model::ControllerType::lock_axes (C++ member), 191
nw::model::ControllerKey::type (C++ member), 188		nw::model::ControllerType::lookup (C++ function), 188
nw::model::ControllerType (C++ struct), 188		nw::model::ControllerType::map (C++ member), 191
nw::model::ControllerType::Alpha (C++ member), 191		nw::model::ControllerType::Mass (C++ member), 190
nw::model::ControllerType::AlphaEnd (C++ member), 189		nw::model::ControllerType::Multiplier (C++ member), 189
nw::model::ControllerType::AlphaMid (C++ member), 191		nw::model::ControllerType::Orientation (C++ member), 189
nw::model::ControllerType::AlphaStart (C++ member), 189		nw::model::ControllerType::P2P_Bezier2 (C++ member), 190
nw::model::ControllerType::BirthRate (C++ member), 189		nw::model::ControllerType::P2P_Bezier3 (C++ member), 190
nw::model::ControllerType::BlurLength (C++ member), 190		nw::model::ControllerType::ParticleRot (C++ member), 190
nw::model::ControllerType::Bounce_Co (C++ member), 189		nw::model::ControllerType::PercentEnd (C++ member), 191
nw::model::ControllerType::Color (C++ member), 189		nw::model::ControllerType::PercentMid (C++ member), 191
nw::model::ControllerType::ColorEnd (C++ member), 189		nw::model::ControllerType::PercentStart (C++ member), 191
nw::model::ControllerType::ColorMid (C++ member), 191		nw::model::ControllerType::Position (C++ member), 189
nw::model::ControllerType::ColorStart (C++ member), 189		nw::model::ControllerType::Radius (C++ member), 189
nw::model::ControllerType::CombineTime (C++ member), 189		nw::model::ControllerType::random (C++ member), 191
nw::model::ControllerType::Detonate (C++ member), 190		nw::model::ControllerType::RandVel (C++ member), 190
nw::model::ControllerType::Drag (C++ member), 189		nw::model::ControllerType::Scale (C++ member), 189
nw::model::ControllerType::FPS (C++ member), 189		nw::model::ControllerType::SelfIllumColor (C++ member), 191
nw::model::ControllerType::FrameEnd (C++ member), 189		nw::model::ControllerType::ShadowRadius (C++ member), 189
nw::model::ControllerType::FrameStart (C++ member), 189		nw::model::ControllerType::SizeEnd (C++ member), 189
nw::model::ControllerType::Grav (C++ member), 189		


```

        ber), 190
nw::model::ControllerType::SizeEnd_Y    (C++
        member), 190
nw::model::ControllerType::SizeMid (C++ mem-
        ber), 191
nw::model::ControllerType::SizeMid_Y    (C++
        member), 191
nw::model::ControllerType::SizeStart    (C++
        member), 190
nw::model::ControllerType::SizeStart_Y (C++
        member), 190
nw::model::ControllerType::spawn_type  (C++
        member), 191
nw::model::ControllerType::Spread (C++ mem-
        ber), 190
nw::model::ControllerType::Threshold    (C++
        member), 190
nw::model::ControllerType::Velocity    (C++
        member), 190
nw::model::ControllerType::VerticalDisplacement
        (C++ member), 189
nw::model::ControllerType::Wirecolor    (C++
        member), 189
nw::model::ControllerType::XSize (C++ mem-
        ber), 190
nw::model::ControllerType::YSize (C++ mem-
        ber), 190
nw::model::DanglymeshNode (C++ struct), 191
nw::model::DanglymeshNode::add_controller_data
        (C++ function), 192
nw::model::DanglymeshNode::ambient (C++ mem-
        ber), 192
nw::model::DanglymeshNode::beaming (C++ mem-
        ber), 192
nw::model::DanglymeshNode::bitmap (C++ mem-
        ber), 192
nw::model::DanglymeshNode::bmax (C++ member),
        192
nw::model::DanglymeshNode::bmin (C++ member),
        192
nw::model::DanglymeshNode::center (C++ mem-
        ber), 192
nw::model::DanglymeshNode::children    (C++
        member), 193
nw::model::DanglymeshNode::colors (C++ mem-
        ber), 193
nw::model::DanglymeshNode::constraints (C++
        member), 192
nw::model::DanglymeshNode::controller_data
        (C++ member), 193
nw::model::DanglymeshNode::controller_keys
        (C++ member), 193
nw::model::DanglymeshNode::DanglymeshNode
        (C++ function), 192
nw::model::DanglymeshNode::diffuse (C++ mem-
        ber), 192
nw::model::DanglymeshNode::displacement
        (C++ member), 192
nw::model::DanglymeshNode::displtype    (C++
        member), 193
nw::model::DanglymeshNode::get_controller
        (C++ function), 192
nw::model::DanglymeshNode::indices (C++ mem-
        ber), 193
nw::model::DanglymeshNode::inheritcolor
        (C++ member), 193
nw::model::DanglymeshNode::lightmapped (C++
        member), 193
nw::model::DanglymeshNode::materialname
        (C++ member), 192
nw::model::DanglymeshNode::multimaterial
        (C++ member), 193
nw::model::DanglymeshNode::name (C++ member),
        193
nw::model::DanglymeshNode::parent (C++ mem-
        ber), 193
nw::model::DanglymeshNode::period (C++ mem-
        ber), 192
nw::model::DanglymeshNode::render (C++ mem-
        ber), 192
nw::model::DanglymeshNode::renderhint    (C++
        member), 192
nw::model::DanglymeshNode::rotatetexture
        (C++ member), 192
nw::model::DanglymeshNode::shadow (C++ mem-
        ber), 192
nw::model::DanglymeshNode::shininess    (C++
        member), 192
nw::model::DanglymeshNode::showdispl    (C++
        member), 193
nw::model::DanglymeshNode::specular    (C++
        member), 193
nw::model::DanglymeshNode::textures    (C++
        member), 193
nw::model::DanglymeshNode::tightness    (C++
        member), 192
nw::model::DanglymeshNode::tilefade    (C++
        member), 193
nw::model::DanglymeshNode::transparencyhint
        (C++ member), 193
nw::model::DanglymeshNode::type (C++ member),
        193
nw::model::DanglymeshNode::vertices    (C++
        member), 193
nw::model::DummyNode (C++ struct), 194
nw::model::DummyNode::add_controller_data
        (C++ function), 194
nw::model::DummyNode::children (C++ member),

```

194

`nw::model::DummyNode::controller_data` (C++ member), 194

`nw::model::DummyNode::controller_keys` (C++ member), 194

`nw::model::DummyNode::DummyNode` (C++ function), 194

`nw::model::DummyNode::get_controller` (C++ function), 194

`nw::model::DummyNode::inheritcolor` (C++ member), 194

`nw::model::DummyNode::name` (C++ member), 194

`nw::model::DummyNode::parent` (C++ member), 194

`nw::model::DummyNode::type` (C++ member), 194

`nw::model::EmitterFlag` (C++ struct), 194

`nw::model::EmitterFlag::AffectedByWind` (C++ member), 194

`nw::model::EmitterFlag::Bounce` (C++ member), 195

`nw::model::EmitterFlag::Inherit` (C++ member), 195

`nw::model::EmitterFlag::InheritLocal` (C++ member), 195

`nw::model::EmitterFlag::InheritPart` (C++ member), 195

`nw::model::EmitterFlag::InheritVel` (C++ member), 195

`nw::model::EmitterFlag::IsTinted` (C++ member), 194

`nw::model::EmitterFlag::P2P` (C++ member), 194

`nw::model::EmitterFlag::P2PSel` (C++ member), 194

`nw::model::EmitterFlag::Random` (C++ member), 195

`nw::model::EmitterFlag::Splat` (C++ member), 195

`nw::model::EmitterNode` (C++ struct), 195

`nw::model::EmitterNode::add_controller_data` (C++ function), 195

`nw::model::EmitterNode::blastlength` (C++ member), 195

`nw::model::EmitterNode::blastradius` (C++ member), 195

`nw::model::EmitterNode::blend` (C++ member), 195

`nw::model::EmitterNode::blend_sel` (C++ member), 196

`nw::model::EmitterNode::children` (C++ member), 196

`nw::model::EmitterNode::chunkname` (C++ member), 195

`nw::model::EmitterNode::controller_data` (C++ member), 197

`nw::model::EmitterNode::controller_keys` (C++ member), 197

`nw::model::EmitterNode::deadspace` (C++ member), 195

`nw::model::EmitterNode::EmitterNode` (C++ function), 195

`nw::model::EmitterNode::flags` (C++ member), 196

`nw::model::EmitterNode::get_controller` (C++ function), 195

`nw::model::EmitterNode::inheritcolor` (C++ member), 196

`nw::model::EmitterNode::loop` (C++ member), 195

`nw::model::EmitterNode::name` (C++ member), 196

`nw::model::EmitterNode::opacity` (C++ member), 196

`nw::model::EmitterNode::p2p_type` (C++ member), 196

`nw::model::EmitterNode::parent` (C++ member), 196

`nw::model::EmitterNode::render` (C++ member), 196

`nw::model::EmitterNode::render_sel` (C++ member), 196

`nw::model::EmitterNode::renderorder` (C++ member), 196

`nw::model::EmitterNode::spawntype` (C++ member), 196

`nw::model::EmitterNode::spawntype_sel` (C++ member), 196

`nw::model::EmitterNode::texture` (C++ member), 196

`nw::model::EmitterNode::tilefade` (C++ member), 196

`nw::model::EmitterNode::twosidedtex` (C++ member), 196

`nw::model::EmitterNode::type` (C++ member), 196

`nw::model::EmitterNode::update` (C++ member), 196

`nw::model::EmitterNode::update_sel` (C++ member), 196

`nw::model::EmitterNode::xgrid` (C++ member), 196

`nw::model::EmitterNode::ygrid` (C++ member), 196

`nw::model::Face` (C++ struct), 197

`nw::model::Face::material_idx` (C++ member), 197

`nw::model::Face::shader_group_idx` (C++ member), 197

`nw::model::Face::tvert_idx` (C++ member), 197

`nw::model::Face::vert_idx` (C++ member), 197

`nw::model::Geometry` (C++ struct), 197

`nw::model::Geometry::~~Geometry` (C++ function), 197

nw::model::Geometry::find (C++ function), 197
 nw::model::Geometry::Geometry (C++ function), 197
 nw::model::Geometry::name (C++ member), 198
 nw::model::Geometry::nodes (C++ member), 198
 nw::model::Geometry::operator= (C++ function), 197
 nw::model::Geometry::type (C++ member), 198
 nw::model::LightNode (C++ struct), 198
 nw::model::LightNode::~~LightNode (C++ function), 198
 nw::model::LightNode::add_controller_data (C++ function), 198
 nw::model::LightNode::affectdynamic (C++ member), 199
 nw::model::LightNode::ambientonly (C++ member), 199
 nw::model::LightNode::children (C++ member), 199
 nw::model::LightNode::color (C++ member), 198
 nw::model::LightNode::controller_data (C++ member), 199
 nw::model::LightNode::controller_keys (C++ member), 199
 nw::model::LightNode::dynamic (C++ member), 199
 nw::model::LightNode::fadinglight (C++ member), 199
 nw::model::LightNode::flarecolorshifts (C++ member), 199
 nw::model::LightNode::flarepositions (C++ member), 199
 nw::model::LightNode::flareradius (C++ member), 198
 nw::model::LightNode::flaresizes (C++ member), 199
 nw::model::LightNode::generateflare (C++ member), 199
 nw::model::LightNode::get_controller (C++ function), 198
 nw::model::LightNode::inheritcolor (C++ member), 199
 nw::model::LightNode::lensflares (C++ member), 198
 nw::model::LightNode::LightNode (C++ function), 198
 nw::model::LightNode::lightpriority (C++ member), 199
 nw::model::LightNode::multiplier (C++ member), 198
 nw::model::LightNode::name (C++ member), 199
 nw::model::LightNode::parent (C++ member), 199
 nw::model::LightNode::shadow (C++ member), 199
 nw::model::LightNode::textures (C++ member), 199
 nw::model::LightNode::type (C++ member), 199
 nw::model::Mdl (C++ class), 200
 nw::model::Mdl::make_node (C++ function), 200
 nw::model::Mdl::Mdl (C++ function), 200
 nw::model::Mdl::model (C++ member), 200
 nw::model::Mdl::valid (C++ function), 200
 nw::model::Model (C++ struct), 200
 nw::model::Model::~~Model (C++ function), 200
 nw::model::Model::animations (C++ member), 201
 nw::model::Model::animationscale (C++ member), 201
 nw::model::Model::bmax (C++ member), 201
 nw::model::Model::bmin (C++ member), 201
 nw::model::Model::classification (C++ member), 201
 nw::model::Model::file_dependency (C++ member), 201
 nw::model::Model::find (C++ function), 201
 nw::model::Model::find_animation (C++ function), 200, 201
 nw::model::Model::ignorefog (C++ member), 201
 nw::model::Model::Model (C++ function), 200
 nw::model::Model::name (C++ member), 201
 nw::model::Model::nodes (C++ member), 201
 nw::model::Model::operator= (C++ function), 200
 nw::model::Model::radius (C++ member), 201
 nw::model::Model::supermodel (C++ member), 201
 nw::model::Model::supermodel_name (C++ member), 201
 nw::model::Model::type (C++ member), 201
 nw::model::Node (C++ struct), 201
 nw::model::Node::~~Node (C++ function), 202
 nw::model::Node::add_controller_data (C++ function), 202
 nw::model::Node::children (C++ member), 202
 nw::model::Node::controller_data (C++ member), 202
 nw::model::Node::controller_keys (C++ member), 202
 nw::model::Node::get_controller (C++ function), 202
 nw::model::Node::inheritcolor (C++ member), 202
 nw::model::Node::name (C++ member), 202
 nw::model::Node::Node (C++ function), 202
 nw::model::Node::parent (C++ member), 202
 nw::model::Node::type (C++ member), 202
 nw::model::NodeFlags (C++ struct), 202
 nw::model::NodeFlags::aabb (C++ member), 203
 nw::model::NodeFlags::anim (C++ member), 203
 nw::model::NodeFlags::camera (C++ member), 203
 nw::model::NodeFlags::dangly (C++ member), 203

```

nw::model::NodeFlags::emitter (C++ member),
    203
nw::model::NodeFlags::header (C++ member), 203
nw::model::NodeFlags::light (C++ member), 203
nw::model::NodeFlags::mesh (C++ member), 203
nw::model::NodeFlags::patch (C++ member), 203
nw::model::NodeFlags::reference (C++ member),
    203
nw::model::NodeFlags::skin (C++ member), 203
nw::model::NodeType (C++ struct), 203
nw::model::NodeType::aabb (C++ member), 204
nw::model::NodeType::animmesh (C++ member),
    204
nw::model::NodeType::camera (C++ member), 203
nw::model::NodeType::danglymesh (C++ member),
    204
nw::model::NodeType::dummy (C++ member), 203
nw::model::NodeType::emitter (C++ member), 203
nw::model::NodeType::from_string (C++ function), 203
nw::model::NodeType::light (C++ member), 203
nw::model::NodeType::patch (C++ member), 204
nw::model::NodeType::reference (C++ member),
    204
nw::model::NodeType::skin (C++ member), 204
nw::model::NodeType::to_string (C++ function),
    203
nw::model::NodeType::trimesh (C++ member), 204
nw::model::PatchNode (C++ struct), 204
nw::model::PatchNode::add_controller_data
    (C++ function), 204
nw::model::PatchNode::children (C++ member),
    204
nw::model::PatchNode::controller_data (C++
    member), 205
nw::model::PatchNode::controller_keys (C++
    member), 204
nw::model::PatchNode::get_controller (C++
    function), 204
nw::model::PatchNode::inheritcolor (C++ mem-
    ber), 204
nw::model::PatchNode::name (C++ member), 204
nw::model::PatchNode::parent (C++ member), 204
nw::model::PatchNode::PatchNode (C++ function),
    204
nw::model::PatchNode::type (C++ member), 204
nw::model::ReferenceNode (C++ struct), 205
nw::model::ReferenceNode::add_controller_data
    (C++ function), 205
nw::model::ReferenceNode::children (C++ mem-
    ber), 205
nw::model::ReferenceNode::controller_data
    (C++ member), 205
nw::model::ReferenceNode::controller_keys
    (C++ member), 205
nw::model::ReferenceNode::get_controller
    (C++ function), 205
nw::model::ReferenceNode::inheritcolor (C++
    member), 205
nw::model::ReferenceNode::name (C++ member),
    205
nw::model::ReferenceNode::parent (C++ mem-
    ber), 205
nw::model::ReferenceNode::reattachable (C++
    member), 205
nw::model::ReferenceNode::ReferenceNode
    (C++ function), 205
nw::model::ReferenceNode::refmodel (C++ mem-
    ber), 205
nw::model::ReferenceNode::type (C++ member),
    205
nw::model::SkinNode (C++ struct), 206
nw::model::SkinNode::add_controller_data
    (C++ function), 206
nw::model::SkinNode::ambient (C++ member), 206
nw::model::SkinNode::beaming (C++ member), 206
nw::model::SkinNode::bitmap (C++ member), 206
nw::model::SkinNode::bmax (C++ member), 206
nw::model::SkinNode::bmin (C++ member), 206
nw::model::SkinNode::bone_nodes (C++ member),
    206
nw::model::SkinNode::center (C++ member), 206
nw::model::SkinNode::children (C++ member),
    207
nw::model::SkinNode::colors (C++ member), 207
nw::model::SkinNode::controller_data (C++
    member), 207
nw::model::SkinNode::controller_keys (C++
    member), 207
nw::model::SkinNode::diffuse (C++ member), 206
nw::model::SkinNode::displtype (C++ member),
    207
nw::model::SkinNode::get_controller (C++
    function), 206
nw::model::SkinNode::indices (C++ member), 207
nw::model::SkinNode::inheritcolor (C++ mem-
    ber), 207
nw::model::SkinNode::lightmapped (C++ mem-
    ber), 207
nw::model::SkinNode::materialname (C++ mem-
    ber), 206
nw::model::SkinNode::multimaterial (C++ mem-
    ber), 207
nw::model::SkinNode::name (C++ member), 207
nw::model::SkinNode::parent (C++ member), 207
nw::model::SkinNode::render (C++ member), 206
nw::model::SkinNode::renderhint (C++ member),
    206

```

nw::model::SkinNode::rotatetexture (C++ member), 206
 nw::model::SkinNode::shadow (C++ member), 206
 nw::model::SkinNode::shininess (C++ member), 207
 nw::model::SkinNode::showdispl (C++ member), 207
 nw::model::SkinNode::SkinNode (C++ function), 206
 nw::model::SkinNode::specular (C++ member), 207
 nw::model::SkinNode::textures (C++ member), 207
 nw::model::SkinNode::tilefade (C++ member), 207
 nw::model::SkinNode::transparencyhint (C++ member), 207
 nw::model::SkinNode::type (C++ member), 207
 nw::model::SkinNode::vertices (C++ member), 206
 nw::model::TextParser (C++ class), 200
 nw::model::TextParser::parse (C++ function), 200
 nw::model::TextParser::TextParser (C++ function), 200
 nw::model::TrimeshNode (C++ struct), 208
 nw::model::TrimeshNode::~~TrimeshNode (C++ function), 208
 nw::model::TrimeshNode::add_controller_data (C++ function), 208
 nw::model::TrimeshNode::ambient (C++ member), 208
 nw::model::TrimeshNode::beaming (C++ member), 208
 nw::model::TrimeshNode::bitmap (C++ member), 208
 nw::model::TrimeshNode::bmax (C++ member), 208
 nw::model::TrimeshNode::bmin (C++ member), 208
 nw::model::TrimeshNode::center (C++ member), 208
 nw::model::TrimeshNode::children (C++ member), 210
 nw::model::TrimeshNode::colors (C++ member), 209
 nw::model::TrimeshNode::controller_data (C++ member), 210
 nw::model::TrimeshNode::controller_keys (C++ member), 210
 nw::model::TrimeshNode::diffuse (C++ member), 208
 nw::model::TrimeshNode::displtype (C++ member), 209
 nw::model::TrimeshNode::get_controller (C++ function), 208
 nw::model::TrimeshNode::indices (C++ member), 209
 nw::model::TrimeshNode::inheritcolor (C++ member), 209
 nw::model::TrimeshNode::lightmapped (C++ member), 209
 nw::model::TrimeshNode::materialname (C++ member), 209
 nw::model::TrimeshNode::multimaterial (C++ member), 209
 nw::model::TrimeshNode::name (C++ member), 209
 nw::model::TrimeshNode::parent (C++ member), 209
 nw::model::TrimeshNode::render (C++ member), 209
 nw::model::TrimeshNode::renderhint (C++ member), 209
 nw::model::TrimeshNode::rotatetexture (C++ member), 209
 nw::model::TrimeshNode::shadow (C++ member), 209
 nw::model::TrimeshNode::shininess (C++ member), 209
 nw::model::TrimeshNode::showdispl (C++ member), 209
 nw::model::TrimeshNode::specular (C++ member), 209
 nw::model::TrimeshNode::textures (C++ member), 209
 nw::model::TrimeshNode::tilefade (C++ member), 209
 nw::model::TrimeshNode::transparencyhint (C++ member), 209
 nw::model::TrimeshNode::TrimeshNode (C++ function), 208
 nw::model::TrimeshNode::type (C++ member), 209
 nw::model::TrimeshNode::vertices (C++ member), 209
 nw::Modifier (C++ struct), 112
 nw::Modifier::input (C++ member), 112
 nw::Modifier::requirement (C++ member), 112
 nw::Modifier::source (C++ member), 112
 nw::Modifier::subtype (C++ member), 112
 nw::Modifier::tagged (C++ member), 112
 nw::Modifier::type (C++ member), 112
 nw::Modifier::versus (C++ member), 112
 nw::ModifierFunction (C++ type), 304
 nw::ModifierRegistry (C++ struct), 112
 nw::ModifierRegistry::add (C++ function), 113
 nw::ModifierRegistry::begin (C++ function), 113
 nw::ModifierRegistry::cbegin (C++ function), 113
 nw::ModifierRegistry::cend (C++ function), 113
 nw::ModifierRegistry::clear (C++ function), 113
 nw::ModifierRegistry::const_iterator (C++ type), 112

nw::ModifierRegistry::end (C++ function), 113
 nw::ModifierRegistry::iterator (C++ type), 112
 nw::ModifierRegistry::remove (C++ function), 113
 nw::ModifierRegistry::replace (C++ function), 113
 nw::ModifierRegistry::size (C++ function), 113
 nw::ModifierRegistry::Storage (C++ type), 112
 nw::ModifierResult (C++ type), 304
 nw::ModifierType (C++ struct), 114
 nw::ModifierType::idx (C++ function), 114
 nw::ModifierType::invalid (C++ function), 114
 nw::ModifierType::make (C++ function), 114
 nw::ModifierType::operator* (C++ function), 114
 nw::ModifierType::operator== (C++ function), 114
 nw::ModifierType::operator<=> (C++ function), 114
 nw::ModifierVariant (C++ type), 304
 nw::Module (C++ struct), 114
 nw::Module::area_count (C++ function), 114
 nw::Module::areas (C++ member), 116
 nw::Module::AreaVariant (C++ type), 114
 nw::Module::as_area (C++ function), 115
 nw::Module::as_common (C++ function), 115
 nw::Module::as_creature (C++ function), 115
 nw::Module::as_door (C++ function), 115
 nw::Module::as_encounter (C++ function), 115
 nw::Module::as_item (C++ function), 115
 nw::Module::as_module (C++ function), 114
 nw::Module::as_placeable (C++ function), 115
 nw::Module::as_player (C++ function), 115
 nw::Module::as_sound (C++ function), 115
 nw::Module::as_store (C++ function), 115
 nw::Module::as_trigger (C++ function), 115
 nw::Module::as_waypoint (C++ function), 115
 nw::Module::creator (C++ member), 116
 nw::Module::dawn_hour (C++ member), 116
 nw::Module::description (C++ member), 116
 nw::Module::deserialize (C++ function), 117
 nw::Module::dusk_hour (C++ member), 116
 nw::Module::effects (C++ function), 115
 nw::Module::entry_area (C++ member), 116
 nw::Module::entry_orientation (C++ member), 116
 nw::Module::entry_position (C++ member), 116
 nw::Module::expansion_pack (C++ member), 116
 nw::Module::get_area (C++ function), 114
 nw::Module::haks (C++ member), 116
 nw::Module::handle (C++ function), 114
 nw::Module::id (C++ member), 116
 nw::Module::instantiate (C++ function), 114
 nw::Module::instantiated_ (C++ member), 117
 nw::Module::is_save_game (C++ member), 117
 nw::Module::json_archive_version (C++ member), 117
 nw::Module::locals (C++ member), 116
 nw::Module::min_game_version (C++ member), 116
 nw::Module::minutes_per_hour (C++ member), 117
 nw::Module::name (C++ member), 116
 nw::Module::object_type (C++ member), 117
 nw::Module::restype (C++ member), 117
 nw::Module::scripts (C++ member), 116
 nw::Module::serialize (C++ function), 117
 nw::Module::set_handle (C++ function), 114
 nw::Module::start_day (C++ member), 117
 nw::Module::start_hour (C++ member), 117
 nw::Module::start_month (C++ member), 117
 nw::Module::start_movie (C++ member), 116
 nw::Module::start_year (C++ member), 116
 nw::Module::tag (C++ function), 115
 nw::Module::tag (C++ member), 116
 nw::Module::tlk (C++ member), 116
 nw::Module::uuid (C++ member), 116
 nw::Module::version (C++ member), 116
 nw::Module::versus_me (C++ function), 115
 nw::Module::xpscale (C++ member), 117
 nw::ModuleScripts (C++ struct), 117
 nw::ModuleScripts::from_json (C++ function), 117
 nw::ModuleScripts::ModuleScripts (C++ function), 117
 nw::ModuleScripts::on_client_enter (C++ member), 118
 nw::ModuleScripts::on_client_leave (C++ member), 118
 nw::ModuleScripts::on_cutsnabort (C++ member), 118
 nw::ModuleScripts::on_heartbeat (C++ member), 118
 nw::ModuleScripts::on_item_acquire (C++ member), 118
 nw::ModuleScripts::on_item_activate (C++ member), 118
 nw::ModuleScripts::on_item_unaquire (C++ member), 118
 nw::ModuleScripts::on_load (C++ member), 118
 nw::ModuleScripts::on_player_chat (C++ member), 118
 nw::ModuleScripts::on_player_death (C++ member), 118
 nw::ModuleScripts::on_player_dying (C++ member), 118
 nw::ModuleScripts::on_player_equip (C++ member), 118
 nw::ModuleScripts::on_player_level_up (C++ member), 118
 nw::ModuleScripts::on_player_rest (C++ member), 118
 nw::ModuleScripts::on_player_unequip (C++ member), 118

nw::ModuleScripts::on_spawnbtndn (C++ member), 118
 nw::ModuleScripts::on_start (C++ member), 118
 nw::ModuleScripts::on_user_defined (C++ member), 118
 nw::ModuleScripts::to_json (C++ function), 117
 nw::move_file_safely (C++ function), 283
 nw::needs_quote (C++ function), 283
 nw::Null (C++ struct), 120
 nw::NWSync (C++ struct), 119
 nw::NWSync::~~NWSync (C++ function), 119
 nw::NWSync::get (C++ function), 119
 nw::NWSync::is_loaded (C++ function), 119
 nw::NWSync::manifests (C++ function), 119
 nw::NWSync::meta (C++ function), 119
 nw::NWSync::NWSync (C++ function), 119
 nw::NWSync::operator= (C++ function), 119
 nw::NWSync::shard_count (C++ function), 119
 nw::NWSync::shards (C++ function), 119
 nw::NWSyncManifest (C++ struct), 119
 nw::NWSyncManifest::all (C++ function), 119
 nw::NWSyncManifest::contains (C++ function), 119
 nw::NWSyncManifest::demand (C++ function), 120
 nw::NWSyncManifest::extract (C++ function), 120
 nw::NWSyncManifest::extract_by_glob (C++ function), 120
 nw::NWSyncManifest::name (C++ function), 120
 nw::NWSyncManifest::NWSyncManifest (C++ function), 119
 nw::NWSyncManifest::path (C++ function), 120
 nw::NWSyncManifest::size (C++ function), 120
 nw::NWSyncManifest::stat (C++ function), 120
 nw::NWSyncManifest::valid (C++ function), 120
 nw::NWSyncManifest::visit (C++ function), 120
 nw::NWSyncManifest::working_directory (C++ function), 120
 nw::ObjectID (C++ enum), 259
 nw::ObjectType (C++ enum), 259
 nw::ObjectType::area (C++ enumerator), 259
 nw::ObjectType::areaofeffect (C++ enumerator), 260
 nw::ObjectType::creature (C++ enumerator), 259
 nw::ObjectType::door (C++ enumerator), 260
 nw::ObjectType::encounter (C++ enumerator), 260
 nw::ObjectType::gui (C++ enumerator), 259
 nw::ObjectType::invalid (C++ enumerator), 259
 nw::ObjectType::item (C++ enumerator), 259
 nw::ObjectType::module (C++ enumerator), 259
 nw::ObjectType::placeable (C++ enumerator), 260
 nw::ObjectType::player (C++ enumerator), 260
 nw::ObjectType::portal (C++ enumerator), 260
 nw::ObjectType::projectile (C++ enumerator), 260
 nw::ObjectType::sound (C++ enumerator), 260
 nw::ObjectType::store (C++ enumerator), 260
 nw::ObjectType::tile (C++ enumerator), 259
 nw::ObjectType::trigger (C++ enumerator), 259
 nw::ObjectType::waypoint (C++ enumerator), 260
 nw::operator== (C++ function), 283
 nw::operator< (C++ function), 285
 nw::operator<< (C++ function), 285
 nw::ostream_write (C++ function), 285
 nw::Palette (C++ struct), 120
 nw::Palette::~~Palette (C++ function), 120
 nw::Palette::is_skeleton (C++ member), 121
 nw::Palette::json_archive_version (C++ member), 121
 nw::Palette::max_id (C++ function), 120
 nw::Palette::Palette (C++ function), 120
 nw::Palette::resource_type (C++ member), 121
 nw::Palette::root (C++ member), 121
 nw::Palette::set_max_id (C++ function), 120
 nw::Palette::tileset (C++ member), 121
 nw::Palette::to_json (C++ function), 121
 nw::Palette::valid (C++ function), 120
 nw::PaletteNodeType (C++ enum), 260
 nw::PaletteNodeType::blueprint (C++ enumerator), 260
 nw::PaletteNodeType::branch (C++ enumerator), 260
 nw::PaletteNodeType::category (C++ enumerator), 260
 nw::PaletteTreeNode (C++ struct), 121
 nw::PaletteTreeNode::children (C++ member), 122
 nw::PaletteTreeNode::cr (C++ member), 121
 nw::PaletteTreeNode::display (C++ member), 121
 nw::PaletteTreeNode::faction (C++ member), 121
 nw::PaletteTreeNode::id (C++ member), 121
 nw::PaletteTreeNode::name (C++ member), 121
 nw::PaletteTreeNode::PaletteTreeNode (C++ function), 121
 nw::PaletteTreeNode::resref (C++ member), 121
 nw::PaletteTreeNode::strref (C++ member), 121
 nw::PaletteTreeNode::type (C++ member), 121
 nw::Placeable (C++ struct), 122
 nw::Placeable::animation_state (C++ member), 124
 nw::Placeable::appearance (C++ member), 123
 nw::Placeable::as_area (C++ function), 122
 nw::Placeable::as_common (C++ function), 122
 nw::Placeable::as_creature (C++ function), 122
 nw::Placeable::as_door (C++ function), 122
 nw::Placeable::as_encounter (C++ function), 122
 nw::Placeable::as_item (C++ function), 122
 nw::Placeable::as_module (C++ function), 122
 nw::Placeable::as_placeable (C++ function), 122
 nw::Placeable::as_player (C++ function), 123

nw::Placeable::as_sound (C++ function), 123
 nw::Placeable::as_store (C++ function), 123
 nw::Placeable::as_trigger (C++ function), 123
 nw::Placeable::as_waypoint (C++ function), 123
 nw::Placeable::bodybag (C++ member), 124
 nw::Placeable::common (C++ member), 123
 nw::Placeable::conversation (C++ member), 123
 nw::Placeable::description (C++ member), 123
 nw::Placeable::deserialize (C++ function), 124
 nw::Placeable::effects (C++ function), 122
 nw::Placeable::faction (C++ member), 123
 nw::Placeable::handle (C++ function), 122
 nw::Placeable::hardness (C++ member), 124
 nw::Placeable::has_inventory (C++ member), 124
 nw::Placeable::hp (C++ member), 123
 nw::Placeable::hp_current (C++ member), 123
 nw::Placeable::instantiate (C++ function), 122
 nw::Placeable::instantiated_ (C++ member), 124
 nw::Placeable::interruptable (C++ member), 124
 nw::Placeable::inventory (C++ member), 123
 nw::Placeable::json_archive_version (C++ member), 124
 nw::Placeable::lock (C++ member), 123
 nw::Placeable::object_type (C++ member), 124
 nw::Placeable::Placeable (C++ function), 122
 nw::Placeable::plot (C++ member), 124
 nw::Placeable::portrait_id (C++ member), 123
 nw::Placeable::restype (C++ member), 124
 nw::Placeable::saves (C++ member), 123
 nw::Placeable::scripts (C++ member), 123
 nw::Placeable::serialize (C++ function), 124
 nw::Placeable::set_handle (C++ function), 122
 nw::Placeable::static_ (C++ member), 124
 nw::Placeable::tag (C++ function), 122
 nw::Placeable::trap (C++ member), 123
 nw::Placeable::useable (C++ member), 124
 nw::Placeable::versus_me (C++ function), 122
 nw::PlaceableAnimationState (C++ enum), 260
 nw::PlaceableAnimationState::activated (C++ enumerator), 261
 nw::PlaceableAnimationState::closed (C++ enumerator), 260
 nw::PlaceableAnimationState::deactivated (C++ enumerator), 261
 nw::PlaceableAnimationState::destroyed (C++ enumerator), 261
 nw::PlaceableAnimationState::none (C++ enumerator), 260
 nw::PlaceableAnimationState::open (C++ enumerator), 260
 nw::PlaceableScripts (C++ struct), 124
 nw::PlaceableScripts::from_json (C++ function), 125
 nw::PlaceableScripts::on_click (C++ member), 125
 nw::PlaceableScripts::on_closed (C++ member), 125
 nw::PlaceableScripts::on_damaged (C++ member), 125
 nw::PlaceableScripts::on_death (C++ member), 125
 nw::PlaceableScripts::on_disarm (C++ member), 125
 nw::PlaceableScripts::on_heartbeat (C++ member), 125
 nw::PlaceableScripts::on_inventory_disturbed (C++ member), 125
 nw::PlaceableScripts::on_lock (C++ member), 125
 nw::PlaceableScripts::on_melee_attacked (C++ member), 125
 nw::PlaceableScripts::on_open (C++ member), 125
 nw::PlaceableScripts::on_spell_cast_at (C++ member), 125
 nw::PlaceableScripts::on_trap_triggered (C++ member), 125
 nw::PlaceableScripts::on_unlock (C++ member), 125
 nw::PlaceableScripts::on_used (C++ member), 125
 nw::PlaceableScripts::on_user_defined (C++ member), 125
 nw::PlaceableScripts::to_json (C++ function), 125
 nw::Player (C++ struct), 126
 nw::Player::appearance (C++ member), 127
 nw::Player::as_area (C++ function), 126
 nw::Player::as_common (C++ function), 126
 nw::Player::as_creature (C++ function), 126
 nw::Player::as_door (C++ function), 126
 nw::Player::as_encounter (C++ function), 126
 nw::Player::as_item (C++ function), 126
 nw::Player::as_module (C++ function), 126
 nw::Player::as_placeable (C++ function), 126
 nw::Player::as_player (C++ function), 126
 nw::Player::as_sound (C++ function), 126
 nw::Player::as_store (C++ function), 127
 nw::Player::as_trigger (C++ function), 127
 nw::Player::as_waypoint (C++ function), 127
 nw::Player::bodybag (C++ member), 128
 nw::Player::chunk_death (C++ member), 128
 nw::Player::combat_info (C++ member), 127
 nw::Player::common (C++ member), 127
 nw::Player::conversation (C++ member), 127
 nw::Player::cr (C++ member), 127
 nw::Player::cr_adjust (C++ member), 128

nw::Player::decay_time (C++ member), 128
 nw::Player::deity (C++ member), 127
 nw::Player::description (C++ member), 127
 nw::Player::deserialize (C++ function), 129
 nw::Player::disarmable (C++ member), 128
 nw::Player::effects (C++ function), 126
 nw::Player::equipment (C++ member), 127
 nw::Player::faction_id (C++ member), 128
 nw::Player::gender (C++ member), 128
 nw::Player::good_evil (C++ member), 128
 nw::Player::handle (C++ function), 126
 nw::Player::hasted (C++ member), 128
 nw::Player::history (C++ member), 127
 nw::Player::hp (C++ member), 128
 nw::Player::hp_current (C++ member), 128
 nw::Player::hp_max (C++ member), 128
 nw::Player::hp_temp (C++ member), 128
 nw::Player::immortal (C++ member), 128
 nw::Player::instantiate (C++ function), 126
 nw::Player::instantiated_ (C++ member), 129
 nw::Player::interruptable (C++ member), 128
 nw::Player::inventory (C++ member), 127
 nw::Player::json_archive_version (C++ member), 129
 nw::Player::lawful_chaotic (C++ member), 128
 nw::Player::levels (C++ member), 127
 nw::Player::lootable (C++ member), 128
 nw::Player::name_first (C++ member), 127
 nw::Player::name_last (C++ member), 127
 nw::Player::object_type (C++ member), 129
 nw::Player::pc (C++ member), 129
 nw::Player::perception_range (C++ member), 129
 nw::Player::plot (C++ member), 129
 nw::Player::race (C++ member), 128
 nw::Player::retype (C++ member), 129
 nw::Player::scripts (C++ member), 127
 nw::Player::serialize (C++ function), 129
 nw::Player::set_handle (C++ function), 126
 nw::Player::size (C++ member), 128
 nw::Player::soundset (C++ member), 128
 nw::Player::starting_package (C++ member), 129
 nw::Player::stats (C++ member), 127
 nw::Player::subrace (C++ member), 127
 nw::Player::tag (C++ function), 126
 nw::Player::versus_me (C++ function), 126
 nw::Player::walkrate (C++ member), 128
 nw::Plt (C++ struct), 129
 nw::Plt::height (C++ function), 129
 nw::Plt::pixels (C++ function), 129
 nw::Plt::Plt (C++ function), 129
 nw::Plt::valid (C++ function), 129
 nw::Plt::width (C++ function), 130
 nw::PltColors (C++ struct), 130
 nw::PltColors::data (C++ member), 130
 nw::PltLayer (C++ enum), 261
 nw::PltLayer::plt_layer_cloth1 (C++ enumerator), 261
 nw::PltLayer::plt_layer_cloth2 (C++ enumerator), 261
 nw::PltLayer::plt_layer_hair (C++ enumerator), 261
 nw::PltLayer::plt_layer_leather1 (C++ enumerator), 261
 nw::PltLayer::plt_layer_leather2 (C++ enumerator), 261
 nw::PltLayer::plt_layer_metal1 (C++ enumerator), 261
 nw::PltLayer::plt_layer_metal2 (C++ enumerator), 261
 nw::PltLayer::plt_layer_size (C++ enumerator), 261
 nw::PltLayer::plt_layer_skin (C++ enumerator), 261
 nw::PltLayer::plt_layer_tattoo1 (C++ enumerator), 261
 nw::PltLayer::plt_layer_tattoo2 (C++ enumerator), 261
 nw::PltPixel (C++ struct), 130
 nw::PltPixel::color (C++ member), 130
 nw::PltPixel::layer (C++ member), 130
 nw::probe_nwn_install (C++ function), 286
 nw::Qualifier (C++ struct), 130
 nw::Qualifier::params (C++ member), 130
 nw::Qualifier::selector (C++ member), 130
 nw::Race (C++ struct), 131
 nw::Race::idx (C++ function), 131
 nw::Race::invalid (C++ function), 131
 nw::Race::make (C++ function), 131
 nw::Race::operator* (C++ function), 131
 nw::Race::operator== (C++ function), 131
 nw::Race::operator<=> (C++ function), 131
 nw::RaceArray (C++ type), 304
 nw::RaceInfo (C++ struct), 131
 nw::RaceInfo::ability_modifiers (C++ member), 132
 nw::RaceInfo::ability_point_buy_number (C++ member), 132
 nw::RaceInfo::age (C++ member), 132
 nw::RaceInfo::appearance (C++ member), 132
 nw::RaceInfo::biography (C++ member), 132
 nw::RaceInfo::constant (C++ member), 132
 nw::RaceInfo::cr_modifier (C++ member), 132
 nw::RaceInfo::description (C++ member), 132
 nw::RaceInfo::favored_class (C++ member), 132
 nw::RaceInfo::feats_extra_1st_level (C++ member), 132
 nw::RaceInfo::feats_normal_amount (C++ member), 132

nw::RaceInfo::feats_normal_level (C++ member), 132
 nw::RaceInfo::feats_table (C++ member), 132
 nw::RaceInfo::icon (C++ member), 132
 nw::RaceInfo::name (C++ member), 131
 nw::RaceInfo::name_conversation (C++ member), 131
 nw::RaceInfo::name_conversation_lower (C++ member), 131
 nw::RaceInfo::name_plural (C++ member), 131
 nw::RaceInfo::player_race (C++ member), 132
 nw::RaceInfo::RaceInfo (C++ function), 131
 nw::RaceInfo::skillpoints_1st_level_multipliernw::RaceInfo::skillpoints_1st_level_multipliernw (C++ member), 132
 nw::RaceInfo::skillpoints_ability (C++ member), 132
 nw::RaceInfo::skillpoints_extra_per_level (C++ member), 132
 nw::RaceInfo::toolset_class (C++ member), 132
 nw::RaceInfo::valid (C++ function), 131
 nw::Reputation (C++ struct), 133
 nw::Reputation::faction_1 (C++ member), 133
 nw::Reputation::faction_2 (C++ member), 133
 nw::Reputation::reputation (C++ member), 133
 nw::Requirement (C++ struct), 133
 nw::Requirement::add (C++ function), 133
 nw::Requirement::conjunction (C++ member), 133
 nw::Requirement::qualifiers (C++ member), 133
 nw::Requirement::Requirement (C++ function), 133
 nw::Requirement::size (C++ function), 133
 nw::resolve_effects_of (C++ function), 286
 nw::Resource (C++ struct), 133
 nw::Resource::filename (C++ function), 134
 nw::Resource::from_filename (C++ function), 134
 nw::Resource::from_path (C++ function), 134
 nw::Resource::operator= (C++ function), 134
 nw::Resource::Resource (C++ function), 134
 nw::Resource::resref (C++ member), 134
 nw::Resource::type (C++ member), 134
 nw::Resource::valid (C++ function), 134
 nw::ResourceDescriptor (C++ struct), 134
 nw::ResourceDescriptor::mtime (C++ member), 135
 nw::ResourceDescriptor::name (C++ member), 135
 nw::ResourceDescriptor::operator bool (C++ function), 134
 nw::ResourceDescriptor::parent (C++ member), 135
 nw::ResourceDescriptor::size (C++ member), 135
 nw::ResourceType (C++ struct), 135
 nw::ResourceType::check_category (C++ function), 140
 nw::ResourceType::from_extension (C++ function), 140
 nw::ResourceType::to_string (C++ function), 140
 nw::ResourceType::type (C++ enum), 135
 nw::ResourceType::type::are (C++ enumerator), 136
 nw::ResourceType::type::bak (C++ enumerator), 139
 nw::ResourceType::type::bic (C++ enumerator), 136
 nw::ResourceType::type::bif (C++ enumerator), 140
 nw::ResourceType::type::bik (C++ enumerator), 139
 nw::ResourceType::type::bmp (C++ enumerator), 135
 nw::ResourceType::type::bmu (C++ enumerator), 136
 nw::ResourceType::type::btc (C++ enumerator), 137
 nw::ResourceType::type::btd (C++ enumerator), 137
 nw::ResourceType::type::bte (C++ enumerator), 137
 nw::ResourceType::type::btg (C++ enumerator), 138
 nw::ResourceType::type::bti (C++ enumerator), 137
 nw::ResourceType::type::btm (C++ enumerator), 138
 nw::ResourceType::type::btp (C++ enumerator), 138
 nw::ResourceType::type::bts (C++ enumerator), 137
 nw::ResourceType::type::btt (C++ enumerator), 137
 nw::ResourceType::type::caf (C++ enumerator), 139
 nw::ResourceType::type::ccs (C++ enumerator), 138
 nw::ResourceType::type::container (C++ enumerator), 135
 nw::ResourceType::type::css (C++ enumerator), 138
 nw::ResourceType::type::dat (C++ enumerator), 139
 nw::ResourceType::type::dds (C++ enumerator), 137
 nw::ResourceType::type::dft (C++ enumerator), 138
 nw::ResourceType::type::dlg (C++ enumerator), 137
 nw::ResourceType::type::dwk (C++ enumerator), 138
 nw::ResourceType::type::erf (C++ enumerator), 140

<code>nw::ResourceType::type::fac</code> (C++ <i>enumerator</i>), 137	<code>nw::ResourceType::type::mtr</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::fnt</code> (C++ <i>enumerator</i>), 136	<code>nw::ResourceType::type::mve</code> (C++ <i>enumerator</i>), 135
<code>nw::ResourceType::type::fourpc</code> (C++ <i>enumerator</i>), 138	<code>nw::ResourceType::type::ncs</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::gff</code> (C++ <i>enumerator</i>), 137	<code>nw::ResourceType::type::ndb</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::gff_archive</code> (C++ <i>enumerator</i>), 135	<code>nw::ResourceType::type::nss</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::gic</code> (C++ <i>enumerator</i>), 138	<code>nw::ResourceType::type::nwm</code> (C++ <i>enumerator</i>), 138
<code>nw::ResourceType::type::gif</code> (C++ <i>enumerator</i>), 139	<code>nw::ResourceType::type::player</code> (C++ <i>enumerator</i>), 135
<code>nw::ResourceType::type::git</code> (C++ <i>enumerator</i>), 137	<code>nw::ResourceType::type::plh</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::gui</code> (C++ <i>enumerator</i>), 138	<code>nw::ResourceType::type::plt</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::hak</code> (C++ <i>enumerator</i>), 138	<code>nw::ResourceType::type::png</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::ids</code> (C++ <i>enumerator</i>), 139	<code>nw::ResourceType::type::ptm</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::ifo</code> (C++ <i>enumerator</i>), 136	<code>nw::ResourceType::type::ptt</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::ini</code> (C++ <i>enumerator</i>), 136	<code>nw::ResourceType::type::pwk</code> (C++ <i>enumerator</i>), 138
<code>nw::ResourceType::type::invalid</code> (C++ <i>enumerator</i>), 135	<code>nw::ResourceType::type::sav</code> (C++ <i>enumerator</i>), 138
<code>nw::ResourceType::type::itp</code> (C++ <i>enumerator</i>), 137	<code>nw::ResourceType::type::set</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::jpg</code> (C++ <i>enumerator</i>), 139	<code>nw::ResourceType::type::shd</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::jrl</code> (C++ <i>enumerator</i>), 138	<code>nw::ResourceType::type::slt</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::json</code> (C++ <i>enumerator</i>), 135	<code>nw::ResourceType::type::sound</code> (C++ <i>enumerator</i>), 135
<code>nw::ResourceType::type::key</code> (C++ <i>enumerator</i>), 140	<code>nw::ResourceType::type::sq3</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::ktx</code> (C++ <i>enumerator</i>), 139	<code>nw::ResourceType::type::sql</code> (C++ <i>enumerator</i>), 139
<code>nw::ResourceType::type::lod</code> (C++ <i>enumerator</i>), 139	<code>nw::ResourceType::type::ssf</code> (C++ <i>enumerator</i>), 138
<code>nw::ResourceType::type::ltr</code> (C++ <i>enumerator</i>), 137	<code>nw::ResourceType::type::tex</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::lua</code> (C++ <i>enumerator</i>), 136	<code>nw::ResourceType::type::texture</code> (C++ <i>enumerator</i>), 135
<code>nw::ResourceType::type::mdl</code> (C++ <i>enumerator</i>), 136	<code>nw::ResourceType::type::tga</code> (C++ <i>enumerator</i>), 135
<code>nw::ResourceType::type::mod</code> (C++ <i>enumerator</i>), 136	<code>nw::ResourceType::type::thg</code> (C++ <i>enumerator</i>), 136
<code>nw::ResourceType::type::movie</code> (C++ <i>enumerator</i>), 135	<code>nw::ResourceType::type::tlk</code> (C++ <i>enumerator</i>), 137
<code>nw::ResourceType::type::mpg</code> (C++ <i>enumerator</i>), 136	<code>nw::ResourceType::type::tml</code> (C++ <i>enumerator</i>), 139

nw::ResourceType::type::ttf (C++ *enumerator*), 139
 nw::ResourceType::type::twoda (C++ *enumerator*), 137
 nw::ResourceType::type::txi (C++ *enumerator*), 137
 nw::ResourceType::type::txt (C++ *enumerator*), 136
 nw::ResourceType::type::utc (C++ *enumerator*), 137
 nw::ResourceType::type::utd (C++ *enumerator*), 138
 nw::ResourceType::type::ute (C++ *enumerator*), 137
 nw::ResourceType::type::utg (C++ *enumerator*), 138
 nw::ResourceType::type::uti (C++ *enumerator*), 137
 nw::ResourceType::type::utm (C++ *enumerator*), 138
 nw::ResourceType::type::utp (C++ *enumerator*), 138
 nw::ResourceType::type::uts (C++ *enumerator*), 137
 nw::ResourceType::type::utt (C++ *enumerator*), 137
 nw::ResourceType::type::utw (C++ *enumerator*), 138
 nw::ResourceType::type::wav (C++ *enumerator*), 136
 nw::ResourceType::type::wbm (C++ *enumerator*), 139
 nw::ResourceType::type::wok (C++ *enumerator*), 136
 nw::ResourceType::type::xbc (C++ *enumerator*), 139
 nw::Resref (C++ *struct*), 140
 nw::Resref::data (C++ *function*), 141
 nw::Resref::empty (C++ *function*), 141
 nw::Resref::length (C++ *function*), 141
 nw::Resref::max_size (C++ *member*), 141
 nw::Resref::operator= (C++ *function*), 141
 nw::Resref::Resref (C++ *function*), 141
 nw::Resref::size_type (C++ *type*), 140
 nw::Resref::Storage (C++ *type*), 140
 nw::Resref::string (C++ *function*), 141
 nw::Resref::value_type (C++ *type*), 140
 nw::Resref::view (C++ *function*), 141
 nw::reverse (C++ *function*), 287
 nw::roll_dice (C++ *function*), 287
 nw::roll_dice_explode (C++ *function*), 287
 nw::RuleFlag (C++ *struct*), 141
 nw::RuleFlag::Base (C++ *type*), 141
 nw::RuleFlag::flip (C++ *function*), 142
 nw::RuleFlag::operator[] (C++ *function*), 142
 nw::RuleFlag::reset (C++ *function*), 142
 nw::RuleFlag::RuleFlag (C++ *function*), 142
 nw::RuleFlag::set (C++ *function*), 142
 nw::RuleFlag::test (C++ *function*), 142
 nw::RuleTypeArray (C++ *struct*), 142
 nw::RuleTypeArray::constant_to_index (C++ *member*), 143
 nw::RuleTypeArray::entries (C++ *member*), 143
 nw::RuleTypeArray::from_constant (C++ *function*), 142
 nw::RuleTypeArray::get (C++ *function*), 142
 nw::RuleTypeArray::is_valid (C++ *function*), 142
 nw::RuleTypeArray::map_type (C++ *type*), 142
 nw::RuleValue (C++ *type*), 305
 nw::Save (C++ *struct*), 143
 nw::Save::idx (C++ *function*), 143
 nw::Save::invalid (C++ *function*), 143
 nw::Save::make (C++ *function*), 143
 nw::Save::operator* (C++ *function*), 143
 nw::Save::operator== (C++ *function*), 143
 nw::Save::operator<=> (C++ *function*), 143
 nw::Save::val (C++ *member*), 143
 nw::Saves (C++ *struct*), 143
 nw::Saves::fort (C++ *member*), 144
 nw::Saves::reflex (C++ *member*), 144
 nw::Saves::will (C++ *member*), 144
 nw::script::AssignExpression (C++ *struct*), 210
 nw::script::AssignExpression::accept (C++ *function*), 210
 nw::script::AssignExpression::AssignExpression (C++ *function*), 210
 nw::script::AssignExpression::complete (C++ *function*), 210
 nw::script::AssignExpression::env_ (C++ *member*), 210
 nw::script::AssignExpression::is_const_ (C++ *member*), 210
 nw::script::AssignExpression::lhs (C++ *member*), 210
 nw::script::AssignExpression::op (C++ *member*), 210
 nw::script::AssignExpression::range_ (C++ *member*), 210
 nw::script::AssignExpression::rhs (C++ *member*), 210
 nw::script::AssignExpression::type_id_ (C++ *member*), 210
 nw::script::Ast (C++ *struct*), 211
 nw::script::Ast::accept (C++ *function*), 211
 nw::script::Ast::Ast (C++ *function*), 211
 nw::script::Ast::comments (C++ *member*), 211
 nw::script::Ast::create_node (C++ *function*), 211
 nw::script::Ast::decls (C++ *member*), 211

nw::script::Ast::defines (C++ member), 211
 nw::script::Ast::find_comment (C++ function), 211
 nw::script::Ast::includes (C++ member), 211
 nw::script::Ast::line_map (C++ member), 211
 nw::script::Ast::nodes_ (C++ member), 211
 nw::script::Ast::operator= (C++ function), 211
 nw::script::AstLocator (C++ struct), 211
 nw::script::AstLocator::active_param (C++ member), 213
 nw::script::AstLocator::AstLocator (C++ function), 212
 nw::script::AstLocator::call (C++ member), 213
 nw::script::AstLocator::dot (C++ member), 213
 nw::script::AstLocator::found_ (C++ member), 213
 nw::script::AstLocator::in_func_decl_ (C++ member), 213
 nw::script::AstLocator::in_struct_decl_ (C++ member), 213
 nw::script::AstLocator::last_seen_decl (C++ member), 213
 nw::script::AstLocator::locate_in_dependencies (C++ function), 212
 nw::script::AstLocator::parent_ (C++ member), 213
 nw::script::AstLocator::pos_ (C++ member), 213
 nw::script::AstLocator::result_ (C++ member), 213
 nw::script::AstLocator::symbol_ (C++ member), 213
 nw::script::AstLocator::visit (C++ function), 212, 213
 nw::script::AstNode (C++ struct), 213
 nw::script::AstNode::~~AstNode (C++ function), 213
 nw::script::AstNode::accept (C++ function), 213
 nw::script::AstNode::complete (C++ function), 213
 nw::script::AstNode::env_ (C++ member), 214
 nw::script::AstNode::is_const_ (C++ member), 214
 nw::script::AstNode::range_ (C++ member), 214
 nw::script::AstNode::type_id_ (C++ member), 214
 nw::script::AstPrinter (C++ struct), 214
 nw::script::AstPrinter::~~AstPrinter (C++ function), 214
 nw::script::AstPrinter::depth (C++ member), 215
 nw::script::AstPrinter::ss (C++ member), 215
 nw::script::AstPrinter::visit (C++ function), 214, 215
 nw::script::AstResolver (C++ struct), 215
 nw::script::AstResolver::~~AstResolver (C++ function), 216
 nw::script::AstResolver::all_control_flow_paths_return (C++ function), 216
 nw::script::AstResolver::AstResolver (C++ function), 216
 nw::script::AstResolver::begin_scope (C++ function), 216
 nw::script::AstResolver::ctx_ (C++ member), 217
 nw::script::AstResolver::declare (C++ function), 216
 nw::script::AstResolver::define (C++ function), 216
 nw::script::AstResolver::end_scope (C++ function), 216
 nw::script::AstResolver::env_stack_ (C++ member), 217
 nw::script::AstResolver::EnvStack (C++ type), 215
 nw::script::AstResolver::func_def_stack_ (C++ member), 217
 nw::script::AstResolver::is_command_script_ (C++ member), 217
 nw::script::AstResolver::loop_stack_ (C++ member), 217
 nw::script::AstResolver::match_function_decls (C++ function), 216
 nw::script::AstResolver::parent_ (C++ member), 217
 nw::script::AstResolver::resolve (C++ function), 216
 nw::script::AstResolver::scope_stack_ (C++ member), 217
 nw::script::AstResolver::ScopeMap (C++ type), 215
 nw::script::AstResolver::ScopeStack (C++ type), 215
 nw::script::AstResolver::switch_stack_ (C++ member), 217
 nw::script::AstResolver::symbol_table (C++ function), 216
 nw::script::AstResolver::visit (C++ function), 216, 217
 nw::script::BaseVisitor (C++ struct), 217
 nw::script::BaseVisitor::~~BaseVisitor (C++ function), 218
 nw::script::BaseVisitor::visit (C++ function), 218
 nw::script::BinaryExpression (C++ struct), 219
 nw::script::BinaryExpression::accept (C++ function), 219
 nw::script::BinaryExpression::BinaryExpression (C++ function), 219

```

nw::script::BinaryExpression::complete (C++ function), 219
nw::script::BinaryExpression::env_ (C++ member), 219
nw::script::BinaryExpression::is_const_ (C++ member), 219
nw::script::BinaryExpression::lhs (C++ member), 219
nw::script::BinaryExpression::op (C++ member), 219
nw::script::BinaryExpression::range_ (C++ member), 219
nw::script::BinaryExpression::rhs (C++ member), 219
nw::script::BinaryExpression::type_id_ (C++ member), 219
nw::script::BlockStatement (C++ struct), 219
nw::script::BlockStatement::accept (C++ function), 220
nw::script::BlockStatement::BlockStatement (C++ function), 220
nw::script::BlockStatement::complete (C++ function), 220
nw::script::BlockStatement::env_ (C++ member), 220
nw::script::BlockStatement::is_const_ (C++ member), 220
nw::script::BlockStatement::nodes (C++ member), 220
nw::script::BlockStatement::operator= (C++ function), 220
nw::script::BlockStatement::range_ (C++ member), 220
nw::script::BlockStatement::type_id_ (C++ member), 220
nw::script::CallExpression (C++ struct), 220
nw::script::CallExpression::accept (C++ function), 220
nw::script::CallExpression::arg_range (C++ member), 221
nw::script::CallExpression::args (C++ member), 221
nw::script::CallExpression::CallExpression (C++ function), 220
nw::script::CallExpression::comma_ranges (C++ member), 221
nw::script::CallExpression::complete (C++ function), 220
nw::script::CallExpression::env_ (C++ member), 221
nw::script::CallExpression::expr (C++ member), 221
nw::script::CallExpression::is_const_ (C++ member), 221
nw::script::CallExpression::range_ (C++ member), 221
nw::script::CallExpression::type_id_ (C++ member), 221
nw::script::Comment (C++ struct), 221
nw::script::Comment::append (C++ function), 221
nw::script::Comment::comment_ (C++ member), 221
nw::script::Comment::range_ (C++ member), 221
nw::script::ConditionalExpression (C++ struct), 221
nw::script::ConditionalExpression::accept (C++ function), 222
nw::script::ConditionalExpression::complete (C++ function), 222
nw::script::ConditionalExpression::ConditionalExpression (C++ function), 222
nw::script::ConditionalExpression::env_ (C++ member), 222
nw::script::ConditionalExpression::false_branch (C++ member), 222
nw::script::ConditionalExpression::is_const_ (C++ member), 222
nw::script::ConditionalExpression::range_ (C++ member), 222
nw::script::ConditionalExpression::test (C++ member), 222
nw::script::ConditionalExpression::true_branch (C++ member), 222
nw::script::ConditionalExpression::type_id_ (C++ member), 222
nw::script::Context (C++ struct), 222
nw::script::Context::~~Context (C++ function), 222
nw::script::Context::add_include_path (C++ function), 222
nw::script::Context::command_script (C++ function), 222
nw::script::Context::command_script_ (C++ member), 223
nw::script::Context::command_script_name_ (C++ member), 223
nw::script::Context::Context (C++ function), 222
nw::script::Context::dependencies_ (C++ member), 223
nw::script::Context::get (C++ function), 222
nw::script::Context::include_paths_ (C++ member), 223
nw::script::Context::include_stack_ (C++ member), 223
nw::script::Context::is_type_convertible (C++ function), 223
nw::script::Context::lexical_diagnostic (C++ function), 223

```

nw::script::Context::parse_diagnostic (C++ function), 223
 nw::script::Context::preprocessed_ (C++ member), 223
 nw::script::Context::register_default_types (C++ function), 222
 nw::script::Context::register_engine_types (C++ function), 223
 nw::script::Context::resman_ (C++ member), 223
 nw::script::Context::semantic_diagnostic (C++ function), 223
 nw::script::Context::struct_stack_ (C++ member), 223
 nw::script::Context::type_array_ (C++ member), 223
 nw::script::Context::type_check_binary_op (C++ function), 223
 nw::script::Context::type_id (C++ function), 223
 nw::script::Context::type_map_ (C++ member), 223
 nw::script::Context::type_name (C++ function), 223
 nw::script::Declaration (C++ struct), 224
 nw::script::Declaration::accept (C++ function), 224
 nw::script::Declaration::complete (C++ function), 224
 nw::script::Declaration::env_ (C++ member), 224
 nw::script::Declaration::identifier (C++ function), 224
 nw::script::Declaration::is_const_ (C++ member), 224
 nw::script::Declaration::range (C++ function), 224
 nw::script::Declaration::range_ (C++ member), 224
 nw::script::Declaration::range_selection_ (C++ member), 224
 nw::script::Declaration::selection_range (C++ function), 224
 nw::script::Declaration::type (C++ member), 224
 nw::script::Declaration::type_id_ (C++ member), 224
 nw::script::Declaration::view (C++ member), 224
 nw::script::Diagnostic (C++ struct), 225
 nw::script::Diagnostic::location (C++ member), 225
 nw::script::Diagnostic::message (C++ member), 225
 nw::script::Diagnostic::script (C++ member), 225
 nw::script::Diagnostic::severity (C++ member), 225
 nw::script::Diagnostic::type (C++ member), 225
 nw::script::DiagnosticType (C++ enum), 265
 nw::script::DiagnosticType::lexical (C++ enumerator), 265
 nw::script::DiagnosticType::parse (C++ enumerator), 265
 nw::script::DiagnosticType::semantic (C++ enumerator), 265
 nw::script::DoStatement (C++ struct), 225
 nw::script::DoStatement::accept (C++ function), 225
 nw::script::DoStatement::block (C++ member), 225
 nw::script::DoStatement::complete (C++ function), 225
 nw::script::DoStatement::env_ (C++ member), 225
 nw::script::DoStatement::expr (C++ member), 225
 nw::script::DoStatement::is_const_ (C++ member), 225
 nw::script::DoStatement::range_ (C++ member), 225
 nw::script::DoStatement::type_id_ (C++ member), 225
 nw::script::DotExpression (C++ struct), 226
 nw::script::DotExpression::accept (C++ function), 226
 nw::script::DotExpression::complete (C++ function), 226
 nw::script::DotExpression::dot (C++ member), 226
 nw::script::DotExpression::DotExpression (C++ function), 226
 nw::script::DotExpression::env_ (C++ member), 226
 nw::script::DotExpression::is_const_ (C++ member), 226
 nw::script::DotExpression::lhs (C++ member), 226
 nw::script::DotExpression::range_ (C++ member), 226
 nw::script::DotExpression::rhs (C++ member), 226
 nw::script::DotExpression::type_id_ (C++ member), 226
 nw::script::Expression (C++ struct), 227
 nw::script::Expression::~Expression (C++ function), 227
 nw::script::Expression::accept (C++ function), 227
 nw::script::Expression::complete (C++ func-

tion), 227
 nw::script::Expression::env_ (C++ member), 228
 nw::script::Expression::is_const_ (C++ member), 228
 nw::script::Expression::range_ (C++ member), 228
 nw::script::Expression::type_id_ (C++ member), 228
 nw::script::ExprStatement (C++ struct), 226
 nw::script::ExprStatement::accept (C++ function), 227
 nw::script::ExprStatement::complete (C++ function), 227
 nw::script::ExprStatement::env_ (C++ member), 227
 nw::script::ExprStatement::expr (C++ member), 227
 nw::script::ExprStatement::is_const_ (C++ member), 227
 nw::script::ExprStatement::range_ (C++ member), 227
 nw::script::ExprStatement::type_id_ (C++ member), 227
 nw::script::ForStatement (C++ struct), 228
 nw::script::ForStatement::accept (C++ function), 228
 nw::script::ForStatement::block (C++ member), 228
 nw::script::ForStatement::check (C++ member), 228
 nw::script::ForStatement::complete (C++ function), 228
 nw::script::ForStatement::env_ (C++ member), 228
 nw::script::ForStatement::inc (C++ member), 228
 nw::script::ForStatement::init (C++ member), 228
 nw::script::ForStatement::is_const_ (C++ member), 228
 nw::script::ForStatement::range_ (C++ member), 228
 nw::script::ForStatement::type_id_ (C++ member), 228
 nw::script::FunctionDecl (C++ struct), 229
 nw::script::FunctionDecl::accept (C++ function), 229
 nw::script::FunctionDecl::complete (C++ function), 229
 nw::script::FunctionDecl::env_ (C++ member), 229
 nw::script::FunctionDecl::FunctionDecl (C++ function), 229
 nw::script::FunctionDecl::identifier (C++ function), 229
 nw::script::FunctionDecl::identifier_ (C++ member), 229
 nw::script::FunctionDecl::is_const_ (C++ member), 229
 nw::script::FunctionDecl::operator= (C++ function), 229
 nw::script::FunctionDecl::params (C++ member), 229
 nw::script::FunctionDecl::range (C++ function), 229
 nw::script::FunctionDecl::range_ (C++ member), 229
 nw::script::FunctionDecl::range_selection_ (C++ member), 229
 nw::script::FunctionDecl::selection_range (C++ function), 229
 nw::script::FunctionDecl::type (C++ member), 229
 nw::script::FunctionDecl::type_id_ (C++ member), 229
 nw::script::FunctionDecl::view (C++ member), 229
 nw::script::FunctionDefinition (C++ struct), 230
 nw::script::FunctionDefinition::accept (C++ function), 230
 nw::script::FunctionDefinition::block (C++ member), 230
 nw::script::FunctionDefinition::complete (C++ function), 230
 nw::script::FunctionDefinition::decl_external (C++ member), 230
 nw::script::FunctionDefinition::decl_inline (C++ member), 230
 nw::script::FunctionDefinition::env_ (C++ member), 230
 nw::script::FunctionDefinition::identifier (C++ function), 230
 nw::script::FunctionDefinition::is_const_ (C++ member), 230
 nw::script::FunctionDefinition::range (C++ function), 230
 nw::script::FunctionDefinition::range_ (C++ member), 230
 nw::script::FunctionDefinition::range_selection_ (C++ member), 230
 nw::script::FunctionDefinition::selection_range (C++ function), 230
 nw::script::FunctionDefinition::type (C++ member), 230
 nw::script::FunctionDefinition::type_id_ (C++ member), 230
 nw::script::FunctionDefinition::view (C++


```

        member), 230
nw::script::GroupingExpression (C++ struct),
    231
nw::script::GroupingExpression::accept (C++
    function), 231
nw::script::GroupingExpression::complete
    (C++ function), 231
nw::script::GroupingExpression::env_ (C++
    member), 231
nw::script::GroupingExpression::expr (C++
    member), 231
nw::script::GroupingExpression::GroupingExpression
    member), 233
    (C++ function), 231
nw::script::GroupingExpression::is_const_
    (C++ member), 231
nw::script::GroupingExpression::range_ (C++
    member), 231
nw::script::GroupingExpression::type_id_
    (C++ member), 231
nw::script::IfStatement (C++ struct), 231
nw::script::IfStatement::accept (C++ function),
    231
nw::script::IfStatement::complete (C++ func-
    tion), 231
nw::script::IfStatement::else_branch (C++
    member), 232
nw::script::IfStatement::env_ (C++ member),
    232
nw::script::IfStatement::expr (C++ member),
    232
nw::script::IfStatement::if_branch (C++ mem-
    ber), 232
nw::script::IfStatement::is_const_ (C++ mem-
    ber), 232
nw::script::IfStatement::range_ (C++ member),
    232
nw::script::IfStatement::type_id_ (C++ mem-
    ber), 232
nw::script::Include (C++ struct), 232
nw::script::Include::location (C++ member),
    232
nw::script::Include::resref (C++ member), 232
nw::script::Include::script (C++ member), 232
nw::script::Include::used (C++ member), 232
nw::script::InlayHint (C++ struct), 233
nw::script::InlayHint::message (C++ member),
    233
nw::script::InlayHint::position (C++ member),
    233
nw::script::JumpStatement (C++ struct), 233
nw::script::JumpStatement::accept (C++ func-
    tion), 233
nw::script::JumpStatement::complete (C++
    function), 233
nw::script::JumpStatement::env_ (C++ member),
    233
nw::script::JumpStatement::expr (C++ member),
    233
nw::script::JumpStatement::is_const_ (C++
    member), 233
nw::script::JumpStatement::op (C++ member),
    233
nw::script::JumpStatement::range_ (C++ mem-
    ber), 233
nw::script::JumpStatement::type_id_ (C++
    member), 233
nw::script::LabelStatement (C++ struct), 234
nw::script::LabelStatement::accept (C++ func-
    tion), 234
nw::script::LabelStatement::complete (C++
    function), 234
nw::script::LabelStatement::env_ (C++ mem-
    ber), 234
nw::script::LabelStatement::expr (C++ mem-
    ber), 234
nw::script::LabelStatement::is_const_ (C++
    member), 234
nw::script::LabelStatement::range_ (C++ mem-
    ber), 234
nw::script::LabelStatement::type (C++ mem-
    ber), 234
nw::script::LabelStatement::type_id_ (C++
    member), 234
nw::script::LiteralExpression (C++ struct), 234
nw::script::LiteralExpression::accept (C++
    function), 234
nw::script::LiteralExpression::complete
    (C++ function), 234
nw::script::LiteralExpression::data (C++
    member), 235
nw::script::LiteralExpression::env_ (C++
    member), 235
nw::script::LiteralExpression::is_const_
    (C++ member), 235
nw::script::LiteralExpression::literal (C++
    member), 235
nw::script::LiteralExpression::LiteralExpression
    (C++ function), 234
nw::script::LiteralExpression::range_ (C++
    member), 235
nw::script::LiteralExpression::type_id_
    (C++ member), 235
nw::script::LiteralVectorExpression (C++
    struct), 235
nw::script::LiteralVectorExpression::accept
    (C++ function), 235
nw::script::LiteralVectorExpression::complete
    (C++ function), 235

```

nw::script::LiteralVectorExpression::data (C++ member), 235
 nw::script::LiteralVectorExpression::env_ (C++ member), 236
 nw::script::LiteralVectorExpression::is_const_ (C++ member), 235
 nw::script::LiteralVectorExpression::LiteralVectorExpression (C++ function), 235
 nw::script::LiteralVectorExpression::range_ (C++ member), 236
 nw::script::LiteralVectorExpression::type_id_ (C++ member), 235
 nw::script::LiteralVectorExpression::x (C++ member), 235
 nw::script::LiteralVectorExpression::y (C++ member), 235
 nw::script::LiteralVectorExpression::z (C++ member), 235
 nw::script::LogicalExpression (C++ struct), 236
 nw::script::LogicalExpression::accept (C++ function), 236
 nw::script::LogicalExpression::complete (C++ function), 236
 nw::script::LogicalExpression::env_ (C++ member), 236
 nw::script::LogicalExpression::is_const_ (C++ member), 236
 nw::script::LogicalExpression::lhs (C++ member), 236
 nw::script::LogicalExpression::LogicalExpression (C++ function), 236
 nw::script::LogicalExpression::op (C++ member), 236
 nw::script::LogicalExpression::range_ (C++ member), 236
 nw::script::LogicalExpression::rhs (C++ member), 236
 nw::script::LogicalExpression::type_id_ (C++ member), 236
 nw::script::Nss (C++ struct), 237
 nw::script::Nss::add_diagnostic (C++ function), 237
 nw::script::Nss::ast (C++ function), 237
 nw::script::Nss::complete (C++ function), 237
 nw::script::Nss::complete_at (C++ function), 237
 nw::script::Nss::complete_dot (C++ function), 237
 nw::script::Nss::ctx (C++ function), 237
 nw::script::Nss::declaration_to_symbol (C++ function), 237
 nw::script::Nss::dependencies (C++ function), 237
 nw::script::Nss::diagnostics (C++ function), 237
 nw::script::Nss::errors (C++ function), 237
 nw::script::Nss::export_count (C++ function), 237
 nw::script::Nss::exports (C++ function), 237
 nw::script::Nss::increment_errors (C++ function), 238
 nw::script::Nss::increment_warnings (C++ function), 238
 nw::script::Nss::inlay_hints (C++ function), 238
 nw::script::Nss::is_command_script (C++ function), 238
 nw::script::Nss::locate_export (C++ function), 238
 nw::script::Nss::locate_symbol (C++ function), 238
 nw::script::Nss::name (C++ function), 238
 nw::script::Nss::Nss (C++ function), 237
 nw::script::Nss::parse (C++ function), 238
 nw::script::Nss::process_includes (C++ function), 238
 nw::script::Nss::resolve (C++ function), 238
 nw::script::Nss::set_name (C++ function), 238
 nw::script::Nss::signature_help (C++ function), 238
 nw::script::Nss::text (C++ function), 238
 nw::script::Nss::view_from_range (C++ function), 238
 nw::script::Nss::warnings (C++ function), 238
 nw::script::NssLexer (C++ struct), 238
 nw::script::NssLexer::current (C++ function), 239
 nw::script::NssLexer::data (C++ function), 239
 nw::script::NssLexer::line_map (C++ member), 239
 nw::script::NssLexer::next (C++ function), 239
 nw::script::NssLexer::NssLexer (C++ function), 239
 nw::script::NssParser (C++ struct), 239
 nw::script::NssParser::advance (C++ function), 239
 nw::script::NssParser::ast_ (C++ member), 242
 nw::script::NssParser::check (C++ function), 239
 nw::script::NssParser::check_is_type (C++ function), 239
 nw::script::NssParser::consume (C++ function), 239
 nw::script::NssParser::ctx_ (C++ member), 242
 nw::script::NssParser::current_ (C++ member), 242
 nw::script::NssParser::diagnostic (C++ function), 240
 nw::script::NssParser::is_end (C++ function), 240
 nw::script::NssParser::lex (C++ function), 240
 nw::script::NssParser::lookahead (C++ function), 240

tion), 240
 nw::script::NssParser::match (C++ function), 240
 nw::script::NssParser::NssParser (C++ function), 239
 nw::script::NssParser::parent_ (C++ member), 242
 nw::script::NssParser::parse_decl (C++ function), 241
 nw::script::NssParser::parse_decl_function (C++ function), 241
 nw::script::NssParser::parse_decl_function_defnw::script::NssParser::parse_stmt_switch (C++ function), 241
 nw::script::NssParser::parse_decl_param (C++ function), 241
 nw::script::NssParser::parse_decl_struct (C++ function), 241
 nw::script::NssParser::parse_expr (C++ function), 240
 nw::script::NssParser::parse_expr_additive (C++ function), 241
 nw::script::NssParser::parse_expr_and (C++ function), 240
 nw::script::NssParser::parse_expr_assign (C++ function), 240
 nw::script::NssParser::parse_expr_bitwise (C++ function), 241
 nw::script::NssParser::parse_expr_conditional (C++ function), 240
 nw::script::NssParser::parse_expr_equality (C++ function), 241
 nw::script::NssParser::parse_expr_group (C++ function), 241
 nw::script::NssParser::parse_expr_multiplicative (C++ function), 241
 nw::script::NssParser::parse_expr_or (C++ function), 240
 nw::script::NssParser::parse_expr_postfix (C++ function), 241
 nw::script::NssParser::parse_expr_primary (C++ function), 241
 nw::script::NssParser::parse_expr_relational (C++ function), 241
 nw::script::NssParser::parse_expr_shift (C++ function), 241
 nw::script::NssParser::parse_expr_unary (C++ function), 241
 nw::script::NssParser::parse_program (C++ function), 241
 nw::script::NssParser::parse_stmt (C++ function), 241
 nw::script::NssParser::parse_stmt_block (C++ function), 241
 nw::script::NssParser::parse_stmt_do (C++ function), 241
 nw::script::NssParser::parse_stmt_expr (C++ function), 241
 nw::script::NssParser::parse_stmt_for (C++ function), 241
 nw::script::NssParser::parse_stmt_if (C++ function), 241
 nw::script::NssParser::parse_stmt_jump (C++ function), 241
 nw::script::NssParser::parse_stmt_label (C++ function), 241
 nw::script::NssParser::parse_stmt_switch (C++ function), 241
 nw::script::NssParser::parse_stmt_while (C++ function), 241
 nw::script::NssParser::parse_type (C++ function), 241
 nw::script::NssParser::peek (C++ function), 240
 nw::script::NssParser::previous (C++ function), 240
 nw::script::NssParser::synchronize (C++ function), 240
 nw::script::NssParser::tokens (C++ member), 242
 nw::script::NssParser::view_ (C++ member), 242
 nw::script::NssToken (C++ struct), 242
 nw::script::NssToken::loc (C++ member), 242
 nw::script::NssToken::NssToken (C++ function), 242
 nw::script::NssToken::type (C++ member), 242
 nw::script::NssTokenType (C++ enum), 265
 nw::script::NssTokenType::ACTION (C++ enumerator), 268
 nw::script::NssTokenType::AND (C++ enumerator), 266
 nw::script::NssTokenType::ANDAND (C++ enumerator), 266
 nw::script::NssTokenType::ANDEQ (C++ enumerator), 266
 nw::script::NssTokenType::BREAK (C++ enumerator), 268
 nw::script::NssTokenType::CASE (C++ enumerator), 268
 nw::script::NssTokenType::CASSOWARY (C++ enumerator), 268
 nw::script::NssTokenType::COLON (C++ enumerator), 266
 nw::script::NssTokenType::COMMA (C++ enumerator), 265
 nw::script::NssTokenType::COMMENT (C++ enumerator), 265
 nw::script::NssTokenType::CONST_ (C++ enumerator), 268
 nw::script::NssTokenType::CONTINUE (C++ enumerator), 268

nw::script::NssTokenType::DEFAULT (C++ enumerator), 268
 nw::script::NssTokenType::DIV (C++ enumerator), 266
 nw::script::NssTokenType::DIVEQ (C++ enumerator), 266
 nw::script::NssTokenType::DO (C++ enumerator), 268
 nw::script::NssTokenType::DOT (C++ enumerator), 266
 nw::script::NssTokenType::EFFECT (C++ enumerator), 268
 nw::script::NssTokenType::ELSE (C++ enumerator), 268
 nw::script::NssTokenType::END (C++ enumerator), 265
 nw::script::NssTokenType::EQ (C++ enumerator), 266
 nw::script::NssTokenType::EQEQ (C++ enumerator), 266
 nw::script::NssTokenType::EVENT (C++ enumerator), 268
 nw::script::NssTokenType::FLOAT (C++ enumerator), 268
 nw::script::NssTokenType::FLOAT_CONST (C++ enumerator), 267
 nw::script::NssTokenType::FOR (C++ enumerator), 268
 nw::script::NssTokenType::GT (C++ enumerator), 266
 nw::script::NssTokenType::GTEQ (C++ enumerator), 266
 nw::script::NssTokenType::IDENTIFIER (C++ enumerator), 265
 nw::script::NssTokenType::IF (C++ enumerator), 268
 nw::script::NssTokenType::INT (C++ enumerator), 268
 nw::script::NssTokenType::INTEGER_CONST (C++ enumerator), 267
 nw::script::NssTokenType::INVALID (C++ enumerator), 265
 nw::script::NssTokenType::ITEMPROPERTY (C++ enumerator), 269
 nw::script::NssTokenType::JSON (C++ enumerator), 269
 nw::script::NssTokenType::JSON_CONST (C++ enumerator), 268
 nw::script::NssTokenType::LBRACE (C++ enumerator), 265
 nw::script::NssTokenType::LBRACKET (C++ enumerator), 265
 nw::script::NssTokenType::LOCATION (C++ enumerator), 269
 nw::script::NssTokenType::LOCATION_INVALID (C++ enumerator), 268
 nw::script::NssTokenType::LPAREN (C++ enumerator), 265
 nw::script::NssTokenType::LT (C++ enumerator), 266
 nw::script::NssTokenType::LTEQ (C++ enumerator), 266
 nw::script::NssTokenType::MINUS (C++ enumerator), 266
 nw::script::NssTokenType::MINUSEQ (C++ enumerator), 266
 nw::script::NssTokenType::MINUSMINUS (C++ enumerator), 266
 nw::script::NssTokenType::MOD (C++ enumerator), 266
 nw::script::NssTokenType::MODEQ (C++ enumerator), 266
 nw::script::NssTokenType::NOT (C++ enumerator), 267
 nw::script::NssTokenType::NOTEQ (C++ enumerator), 267
 nw::script::NssTokenType::OBJECT (C++ enumerator), 269
 nw::script::NssTokenType::OBJECT_INVALID_CONST (C++ enumerator), 268
 nw::script::NssTokenType::OBJECT_SELF_CONST (C++ enumerator), 268
 nw::script::NssTokenType::OR (C++ enumerator), 267
 nw::script::NssTokenType::OREQ (C++ enumerator), 267
 nw::script::NssTokenType::OROR (C++ enumerator), 267
 nw::script::NssTokenType::PLUS (C++ enumerator), 267
 nw::script::NssTokenType::PLUSEQ (C++ enumerator), 267
 nw::script::NssTokenType::PLUSPLUS (C++ enumerator), 267
 nw::script::NssTokenType::POUND (C++ enumerator), 266
 nw::script::NssTokenType::QUESTION (C++ enumerator), 266
 nw::script::NssTokenType::RBRACE (C++ enumerator), 265
 nw::script::NssTokenType::RBRACKET (C++ enumerator), 265
 nw::script::NssTokenType::RETURN (C++ enumerator), 269
 nw::script::NssTokenType::RPAREN (C++ enumerator), 265
 nw::script::NssTokenType::SEMICOLON (C++ enumerator), 266

nw::script::NssTokenType::SL (C++ *enumerator*), 267
 nw::script::NssTokenType::SLEQ (C++ *enumerator*), 267
 nw::script::NssTokenType::SQLQUERY (C++ *enumerator*), 269
 nw::script::NssTokenType::SR (C++ *enumerator*), 267
 nw::script::NssTokenType::SREQ (C++ *enumerator*), 267
 nw::script::NssTokenType::STRING (C++ *enumerator*), 269
 nw::script::NssTokenType::STRING_CONST (C++ *enumerator*), 268
 nw::script::NssTokenType::STRING_RAW_CONST (C++ *enumerator*), 268
 nw::script::NssTokenType::STRUCT (C++ *enumerator*), 269
 nw::script::NssTokenType::SWITCH (C++ *enumerator*), 269
 nw::script::NssTokenType::TALENT (C++ *enumerator*), 269
 nw::script::NssTokenType::TILDE (C++ *enumerator*), 267
 nw::script::NssTokenType::TIMES (C++ *enumerator*), 267
 nw::script::NssTokenType::TIMESEQ (C++ *enumerator*), 267
 nw::script::NssTokenType::USR (C++ *enumerator*), 267
 nw::script::NssTokenType::USREQ (C++ *enumerator*), 267
 nw::script::NssTokenType::VECTOR (C++ *enumerator*), 269
 nw::script::NssTokenType::VOID_ (C++ *enumerator*), 269
 nw::script::NssTokenType::WHILE (C++ *enumerator*), 269
 nw::script::NssTokenType::XOR (C++ *enumerator*), 267
 nw::script::NssTokenType::XOREQ (C++ *enumerator*), 267
 nw::script::PostfixExpression (C++ *struct*), 242
 nw::script::PostfixExpression::accept (C++ *function*), 243
 nw::script::PostfixExpression::complete (C++ *function*), 243
 nw::script::PostfixExpression::env_ (C++ *member*), 243
 nw::script::PostfixExpression::is_const_ (C++ *member*), 243
 nw::script::PostfixExpression::lhs (C++ *member*), 243
 nw::script::PostfixExpression::op (C++ *member*), 243
 nw::script::PostfixExpression::PostfixExpression (C++ *function*), 243
 nw::script::PostfixExpression::range_ (C++ *member*), 243
 nw::script::PostfixExpression::type_id_ (C++ *member*), 243
 nw::script::SourceLocation (C++ *struct*), 243
 nw::script::SourceLocation::end (C++ *member*), 244
 nw::script::SourceLocation::length (C++ *function*), 243
 nw::script::SourceLocation::range (C++ *member*), 244
 nw::script::SourceLocation::start (C++ *member*), 244
 nw::script::SourceLocation::view (C++ *function*), 243
 nw::script::SourcePosition (C++ *struct*), 244
 nw::script::SourcePosition::column (C++ *member*), 244
 nw::script::SourcePosition::line (C++ *member*), 244
 nw::script::SourcePosition::operator== (C++ *function*), 244
 nw::script::SourcePosition::operator<=> (C++ *function*), 244
 nw::script::SourceRange (C++ *struct*), 244
 nw::script::SourceRange::end (C++ *member*), 244
 nw::script::SourceRange::start (C++ *member*), 244
 nw::script::Statement (C++ *struct*), 245
 nw::script::Statement::~~Statement (C++ *function*), 245
 nw::script::Statement::accept (C++ *function*), 245
 nw::script::Statement::complete (C++ *function*), 245
 nw::script::Statement::env_ (C++ *member*), 245
 nw::script::Statement::is_const_ (C++ *member*), 245
 nw::script::Statement::range_ (C++ *member*), 245
 nw::script::Statement::type_id_ (C++ *member*), 245
 nw::script::StructDecl (C++ *struct*), 245
 nw::script::StructDecl::accept (C++ *function*), 245
 nw::script::StructDecl::complete (C++ *function*), 245
 nw::script::StructDecl::decls (C++ *member*), 246
 nw::script::StructDecl::env_ (C++ *member*), 246
 nw::script::StructDecl::identifier (C++ *func-*

tion), 245
 nw::script::StructDecl::is_const_ (C++ member), 246
 nw::script::StructDecl::locate_member_decl (C++ function), 245
 nw::script::StructDecl::range (C++ function), 245
 nw::script::StructDecl::range_ (C++ member), 246
 nw::script::StructDecl::range_selection_ (C++ member), 246
 nw::script::StructDecl::selection_range (C++ function), 245
 nw::script::StructDecl::type (C++ member), 246
 nw::script::StructDecl::type_id_ (C++ member), 246
 nw::script::StructDecl::view (C++ member), 246
 nw::script::SwitchStatement (C++ struct), 246
 nw::script::SwitchStatement::accept (C++ function), 246
 nw::script::SwitchStatement::block (C++ member), 247
 nw::script::SwitchStatement::complete (C++ function), 246
 nw::script::SwitchStatement::env_ (C++ member), 247
 nw::script::SwitchStatement::is_const_ (C++ member), 247
 nw::script::SwitchStatement::range_ (C++ member), 247
 nw::script::SwitchStatement::target (C++ member), 247
 nw::script::SwitchStatement::type_id_ (C++ member), 247
 nw::script::Symbol (C++ struct), 247
 nw::script::Symbol::comment (C++ member), 247
 nw::script::Symbol::decl (C++ member), 247
 nw::script::Symbol::kind (C++ member), 247
 nw::script::Symbol::node (C++ member), 247
 nw::script::Symbol::provider (C++ member), 247
 nw::script::Symbol::type (C++ member), 247
 nw::script::Symbol::view (C++ member), 247
 nw::script::SymbolKind (C++ enum), 269
 nw::script::SymbolKind::field (C++ enumerator), 269
 nw::script::SymbolKind::function (C++ enumerator), 269
 nw::script::SymbolKind::param (C++ enumerator), 269
 nw::script::SymbolKind::type (C++ enumerator), 269
 nw::script::SymbolKind::variable (C++ enumerator), 269
 nw::script::Type (C++ struct), 248
 nw::script::Type::range_start (C++ function), 248
 nw::script::Type::struct_id (C++ member), 248
 nw::script::Type::type_qualifier (C++ member), 248
 nw::script::Type::type_specifier (C++ member), 248
 nw::script::UnaryExpression (C++ struct), 248
 nw::script::UnaryExpression::accept (C++ function), 248
 nw::script::UnaryExpression::complete (C++ function), 248
 nw::script::UnaryExpression::env_ (C++ member), 249
 nw::script::UnaryExpression::is_const_ (C++ member), 248
 nw::script::UnaryExpression::op (C++ member), 248
 nw::script::UnaryExpression::range_ (C++ member), 249
 nw::script::UnaryExpression::rhs (C++ member), 248
 nw::script::UnaryExpression::type_id_ (C++ member), 248
 nw::script::UnaryExpression::UnaryExpression (C++ function), 248
 nw::script::VarDecl (C++ struct), 249
 nw::script::VarDecl::accept (C++ function), 249
 nw::script::VarDecl::complete (C++ function), 249
 nw::script::VarDecl::env_ (C++ member), 249
 nw::script::VarDecl::identifier (C++ function), 249
 nw::script::VarDecl::identifier_ (C++ member), 249
 nw::script::VarDecl::init (C++ member), 249
 nw::script::VarDecl::is_const_ (C++ member), 249
 nw::script::VarDecl::range (C++ function), 249
 nw::script::VarDecl::range_ (C++ member), 249
 nw::script::VarDecl::range_selection_ (C++ member), 249
 nw::script::VarDecl::selection_range (C++ function), 249
 nw::script::VarDecl::type (C++ member), 249
 nw::script::VarDecl::type_id_ (C++ member), 249
 nw::script::VarDecl::view (C++ member), 249
 nw::script::VariableExpression (C++ struct), 250
 nw::script::VariableExpression::accept (C++ function), 250
 nw::script::VariableExpression::complete (C++ function), 250

nw::script::VariableExpression::env_ (C++ member), 250
 nw::script::VariableExpression::is_const_ (C++ member), 250
 nw::script::VariableExpression::range_ (C++ member), 250
 nw::script::VariableExpression::type_id_ (C++ member), 250
 nw::script::VariableExpression::var (C++ member), 250
 nw::script::VariableExpression::VariableExpression (C++ function), 250
 nw::script::WhileStatement (C++ struct), 250
 nw::script::WhileStatement::accept (C++ function), 251
 nw::script::WhileStatement::block (C++ member), 251
 nw::script::WhileStatement::check (C++ member), 251
 nw::script::WhileStatement::complete (C++ function), 251
 nw::script::WhileStatement::env_ (C++ member), 251
 nw::script::WhileStatement::is_const_ (C++ member), 251
 nw::script::WhileStatement::range_ (C++ member), 251
 nw::script::WhileStatement::type_id_ (C++ member), 251
 nw::Selector (C++ struct), 144
 nw::Selector::subtype (C++ member), 144
 nw::Selector::type (C++ member), 144
 nw::SelectorType (C++ enum), 262
 nw::SelectorType::ability (C++ enumerator), 262
 nw::SelectorType::ac (C++ enumerator), 262
 nw::SelectorType::alignment (C++ enumerator), 262
 nw::SelectorType::arcane_level (C++ enumerator), 262
 nw::SelectorType::bab (C++ enumerator), 262
 nw::SelectorType::caster_level (C++ enumerator), 262
 nw::SelectorType::class_level (C++ enumerator), 262
 nw::SelectorType::feat (C++ enumerator), 262
 nw::SelectorType::hitpoints_max (C++ enumerator), 262
 nw::SelectorType::level (C++ enumerator), 262
 nw::SelectorType::local_var_int (C++ enumerator), 262
 nw::SelectorType::local_var_str (C++ enumerator), 262
 nw::SelectorType::race (C++ enumerator), 262
 nw::SelectorType::skill (C++ enumerator), 262
 nw::SelectorType::spell_level (C++ enumerator), 263
 nw::SerializationProfile (C++ enum), 263
 nw::SerializationProfile::any (C++ enumerator), 263
 nw::SerializationProfile::blueprint (C++ enumerator), 263
 nw::SerializationProfile::instance (C++ enumerator), 263
 nw::SerializationProfile::savegame (C++ enumerator), 263
 nw::SerializationType (C++ struct), 144
 nw::SerializationType::id (C++ function), 145
 nw::SerializationType::to_string (C++ function), 145
 nw::SerializationType::type (C++ enum), 144
 nw::SerializationType::type::double_ (C++ enumerator), 145
 nw::SerializationType::type::float_ (C++ enumerator), 145
 nw::SerializationType::type::int16 (C++ enumerator), 144
 nw::SerializationType::type::int32 (C++ enumerator), 144
 nw::SerializationType::type::int64 (C++ enumerator), 145
 nw::SerializationType::type::int8 (C++ enumerator), 144
 nw::SerializationType::type::invalid (C++ enumerator), 144
 nw::SerializationType::type::list (C++ enumerator), 145
 nw::SerializationType::type::locstring (C++ enumerator), 145
 nw::SerializationType::type::resref (C++ enumerator), 145
 nw::SerializationType::type::string (C++ enumerator), 145
 nw::SerializationType::type::struct_ (C++ enumerator), 145
 nw::SerializationType::type::uint16 (C++ enumerator), 144
 nw::SerializationType::type::uint32 (C++ enumerator), 144
 nw::SerializationType::type::uint64 (C++ enumerator), 145
 nw::SerializationType::type::uint8 (C++ enumerator), 144
 nw::SerializationType::type::void_ (C++ enumerator), 145
 nw::Situation (C++ struct), 145
 nw::Situation::idx (C++ function), 145
 nw::Situation::invalid (C++ function), 146
 nw::Situation::make (C++ function), 146

nw::Situation::operator* (C++ function), 145
 nw::Situation::operator== (C++ function), 145
 nw::Situation::operator<=> (C++ function), 145
 nw::Situation::val (C++ member), 146
 nw::Skill (C++ struct), 146
 nw::Skill::idx (C++ function), 146
 nw::Skill::invalid (C++ function), 146
 nw::Skill::make (C++ function), 146
 nw::Skill::operator* (C++ function), 146
 nw::Skill::operator== (C++ function), 146
 nw::Skill::operator<=> (C++ function), 146
 nw::SkillArray (C++ type), 305
 nw::SkillInfo (C++ struct), 147
 nw::SkillInfo::ability (C++ member), 147
 nw::SkillInfo::all_can_use (C++ member), 147
 nw::SkillInfo::armor_check_penalty (C++ member), 147
 nw::SkillInfo::constant (C++ member), 147
 nw::SkillInfo::description (C++ member), 147
 nw::SkillInfo::hostile (C++ member), 147
 nw::SkillInfo::icon (C++ member), 147
 nw::SkillInfo::name (C++ member), 147
 nw::SkillInfo::SkillInfo (C++ function), 147
 nw::SkillInfo::untrained (C++ member), 147
 nw::SkillInfo::valid (C++ function), 147
 nw::Sound (C++ struct), 147
 nw::Sound::active (C++ member), 149
 nw::Sound::as_area (C++ function), 148
 nw::Sound::as_common (C++ function), 148
 nw::Sound::as_creature (C++ function), 148
 nw::Sound::as_door (C++ function), 148
 nw::Sound::as_encounter (C++ function), 148
 nw::Sound::as_item (C++ function), 148
 nw::Sound::as_module (C++ function), 148
 nw::Sound::as_placeable (C++ function), 148
 nw::Sound::as_player (C++ function), 148
 nw::Sound::as_sound (C++ function), 148
 nw::Sound::as_store (C++ function), 148
 nw::Sound::as_trigger (C++ function), 149
 nw::Sound::as_waypoint (C++ function), 149
 nw::Sound::common (C++ member), 149
 nw::Sound::continuous (C++ member), 149
 nw::Sound::deserialize (C++ function), 150
 nw::Sound::distance_max (C++ member), 149
 nw::Sound::distance_min (C++ member), 149
 nw::Sound::effects (C++ function), 148
 nw::Sound::elevation (C++ member), 149
 nw::Sound::generated_type (C++ member), 149
 nw::Sound::handle (C++ function), 148
 nw::Sound::hours (C++ member), 149
 nw::Sound::instantiate (C++ function), 148
 nw::Sound::instantiated_ (C++ member), 150
 nw::Sound::interval (C++ member), 149
 nw::Sound::interval_variation (C++ member), 149
 nw::Sound::json_archive_version (C++ member), 150
 nw::Sound::looping (C++ member), 149
 nw::Sound::object_type (C++ member), 150
 nw::Sound::pitch_variation (C++ member), 149
 nw::Sound::positional (C++ member), 149
 nw::Sound::priority (C++ member), 149
 nw::Sound::random (C++ member), 150
 nw::Sound::random_position (C++ member), 150
 nw::Sound::random_x (C++ member), 149
 nw::Sound::random_y (C++ member), 149
 nw::Sound::restype (C++ member), 150
 nw::Sound::serialize (C++ function), 150
 nw::Sound::set_handle (C++ function), 148
 nw::Sound::Sound (C++ function), 148
 nw::Sound::sounds (C++ member), 149
 nw::Sound::tag (C++ function), 148
 nw::Sound::times (C++ member), 150
 nw::Sound::versus_me (C++ function), 148
 nw::Sound::volume (C++ member), 150
 nw::Sound::volume_variation (C++ member), 150
 nw::SpawnCreature (C++ struct), 150
 nw::SpawnCreature::appearance (C++ member), 151
 nw::SpawnCreature::cr (C++ member), 151
 nw::SpawnCreature::from_json (C++ function), 150
 nw::SpawnCreature::resref (C++ member), 151
 nw::SpawnCreature::single_spawn (C++ member), 151
 nw::SpawnCreature::to_json (C++ function), 150
 nw::SpawnPoint (C++ struct), 151
 nw::SpawnPoint::from_json (C++ function), 151
 nw::SpawnPoint::orientation (C++ member), 151
 nw::SpawnPoint::position (C++ member), 151
 nw::SpawnPoint::to_json (C++ function), 151
 nw::SpecialAbility (C++ struct), 151
 nw::SpecialAbility::flags (C++ member), 151
 nw::SpecialAbility::level (C++ member), 151
 nw::SpecialAbility::spell (C++ member), 151
 nw::Spell (C++ struct), 152
 nw::Spell::idx (C++ function), 152
 nw::Spell::invalid (C++ function), 152
 nw::Spell::make (C++ function), 152
 nw::Spell::operator* (C++ function), 152
 nw::Spell::operator== (C++ function), 152
 nw::Spell::operator<=> (C++ function), 152
 nw::SpellArray (C++ type), 305
 nw::SpellBook (C++ struct), 152
 nw::SpellBook::add_known_spell (C++ function), 152
 nw::SpellBook::add_memorized_spell (C++ function), 152

`nw::SpellBook::from_json (C++ function)`, 152
`nw::SpellBook::get_known_spell (C++ function)`, 152
`nw::SpellBook::get_known_spell_count (C++ function)`, 152
`nw::SpellBook::get_memorized_spell (C++ function)`, 153
`nw::SpellBook::get_memorized_spell_count (C++ function)`, 152
`nw::SpellBook::known_ (C++ member)`, 153
`nw::SpellBook::memorized_ (C++ member)`, 153
`nw::SpellBook::remove_known_spell (C++ function)`, 153
`nw::SpellBook::remove_memorized_spell (C++ function)`, 153
`nw::SpellBook::SpellBook (C++ function)`, 152
`nw::SpellBook::to_json (C++ function)`, 152
`nw::SpellEntry (C++ struct)`, 153
`nw::SpellEntry::flags (C++ member)`, 153
`nw::SpellEntry::meta (C++ member)`, 153
`nw::SpellEntry::operator== (C++ function)`, 153
`nw::SpellEntry::operator<=> (C++ function)`, 153
`nw::SpellEntry::spell (C++ member)`, 153
`nw::SpellFlags (C++ enum)`, 263
`nw::SpellFlags::none (C++ enumerator)`, 263
`nw::SpellFlags::readied (C++ enumerator)`, 263
`nw::SpellFlags::spontaneous (C++ enumerator)`, 263
`nw::SpellFlags::unlimited (C++ enumerator)`, 263
`nw::SpellInfo (C++ struct)`, 153
`nw::SpellInfo::icon (C++ member)`, 154
`nw::SpellInfo::innate_level (C++ member)`, 154
`nw::SpellInfo::metamagic (C++ member)`, 154
`nw::SpellInfo::name (C++ member)`, 154
`nw::SpellInfo::school (C++ member)`, 154
`nw::SpellInfo::SpellInfo (C++ function)`, 154
`nw::SpellInfo::valid (C++ function)`, 154
`nw::SpellMetaMagic (C++ enum)`, 263
`nw::SpellMetaMagic::empower (C++ enumerator)`, 263
`nw::SpellMetaMagic::extend (C++ enumerator)`, 263
`nw::SpellMetaMagic::maximize (C++ enumerator)`, 264
`nw::SpellMetaMagic::none (C++ enumerator)`, 263
`nw::SpellMetaMagic::quicken (C++ enumerator)`, 264
`nw::SpellMetaMagic::silent (C++ enumerator)`, 264
`nw::SpellMetaMagic::still (C++ enumerator)`, 264
`nw::sqlite3_ptr (C++ type)`, 305
`nw::Store (C++ struct)`, 154
`nw::Store::as_area (C++ function)`, 154, 155
`nw::Store::as_common (C++ function)`, 154
`nw::Store::as_creature (C++ function)`, 155
`nw::Store::as_door (C++ function)`, 155
`nw::Store::as_encounter (C++ function)`, 155
`nw::Store::as_item (C++ function)`, 155
`nw::Store::as_module (C++ function)`, 155
`nw::Store::as_placeable (C++ function)`, 155
`nw::Store::as_player (C++ function)`, 155
`nw::Store::as_sound (C++ function)`, 155
`nw::Store::as_store (C++ function)`, 154
`nw::Store::as_trigger (C++ function)`, 155
`nw::Store::as_waypoint (C++ function)`, 155
`nw::Store::blackmarket (C++ member)`, 156
`nw::Store::blackmarket_markdown (C++ member)`, 155
`nw::Store::common (C++ member)`, 155
`nw::Store::deserialize (C++ function)`, 156
`nw::Store::effects (C++ function)`, 154
`nw::Store::gold (C++ member)`, 156
`nw::Store::handle (C++ function)`, 154
`nw::Store::identify_price (C++ member)`, 155
`nw::Store::instantiate (C++ function)`, 154
`nw::Store::instantiated_ (C++ member)`, 156
`nw::Store::inventory (C++ member)`, 155
`nw::Store::json_archive_version (C++ member)`, 156
`nw::Store::markdown (C++ member)`, 155
`nw::Store::markup (C++ member)`, 156
`nw::Store::max_price (C++ member)`, 156
`nw::Store::object_type (C++ member)`, 156
`nw::Store::restype (C++ member)`, 156
`nw::Store::scripts (C++ member)`, 155
`nw::Store::serialize (C++ function)`, 156
`nw::Store::set_handle (C++ function)`, 154
`nw::Store::Store (C++ function)`, 154
`nw::Store::tag (C++ function)`, 154
`nw::Store::versus_me (C++ function)`, 154
`nw::StoreInventory (C++ struct)`, 156
`nw::StoreInventory::armor (C++ member)`, 157
`nw::StoreInventory::miscellaneous (C++ member)`, 157
`nw::StoreInventory::potions (C++ member)`, 157
`nw::StoreInventory::rings (C++ member)`, 157
`nw::StoreInventory::set_owner (C++ function)`, 156
`nw::StoreInventory::StoreInventory (C++ function)`, 156
`nw::StoreInventory::weapons (C++ member)`, 157
`nw::StoreInventory::will_not_buy (C++ member)`, 157
`nw::StoreInventory::will_only_buy (C++ member)`, 157
`nw::StoreScripts (C++ struct)`, 157
`nw::StoreScripts::on_closed (C++ member)`, 157
`nw::StoreScripts::on_opened (C++ member)`, 157

nw::string::desanitize_colors (C++ function), 287
 nw::string::endswith (C++ function), 287
 nw::string::from (C++ function), 287
 nw::string::glob_to_regex (C++ function), 288
 nw::string::icmp (C++ function), 288
 nw::string::join (C++ function), 288
 nw::string::ltrim_in_place (C++ function), 288
 nw::string::rtrim_in_place (C++ function), 289
 nw::string::sanitize_colors (C++ function), 289
 nw::string::split (C++ function), 289
 nw::string::startswith (C++ function), 289
 nw::string::tolower (C++ function), 289
 nw::string::trim_in_place (C++ function), 289
 nw::sum_effects_of (C++ function), 290
 nw::TargetState (C++ enum), 264
 nw::TargetState::asleep (C++ enumerator), 264
 nw::TargetState::attacker_invis (C++ enumerator), 264
 nw::TargetState::attacker_unseen (C++ enumerator), 264
 nw::TargetState::blind (C++ enumerator), 264
 nw::TargetState::flanked (C++ enumerator), 264
 nw::TargetState::flatfooted (C++ enumerator), 264
 nw::TargetState::invis (C++ enumerator), 264
 nw::TargetState::moving (C++ enumerator), 264
 nw::TargetState::none (C++ enumerator), 264
 nw::TargetState::prone (C++ enumerator), 264
 nw::TargetState::stunned (C++ enumerator), 264
 nw::TargetState::unseen (C++ enumerator), 264
 nw::Tile (C++ struct), 157
 nw::Tile::animloop1 (C++ member), 158
 nw::Tile::animloop2 (C++ member), 158
 nw::Tile::animloop3 (C++ member), 158
 nw::Tile::from_json (C++ function), 157
 nw::Tile::height (C++ member), 158
 nw::Tile::id (C++ member), 158
 nw::Tile::mainlight1 (C++ member), 158
 nw::Tile::mainlight2 (C++ member), 158
 nw::Tile::orientation (C++ member), 158
 nw::Tile::srclight1 (C++ member), 158
 nw::Tile::srclight2 (C++ member), 158
 nw::Tile::Tile (C++ function), 157
 nw::Tile::to_json (C++ function), 157
 nw::Tlk (C++ struct), 158
 nw::Tlk::custom_flag (C++ member), 159
 nw::Tlk::get (C++ function), 158
 nw::Tlk::language_id (C++ function), 158
 nw::Tlk::modified (C++ function), 158
 nw::Tlk::operator= (C++ function), 159
 nw::Tlk::operator[] (C++ function), 159
 nw::Tlk::save (C++ function), 158
 nw::Tlk::save_as (C++ function), 158
 nw::Tlk::set (C++ function), 159
 nw::Tlk::size (C++ function), 159
 nw::Tlk::Tlk (C++ function), 158
 nw::Tlk::valid (C++ function), 159
 nw::TlkElement (C++ struct), 159
 nw::TlkElement::flags (C++ member), 159
 nw::TlkElement::offset (C++ member), 159
 nw::TlkElement::size (C++ member), 159
 nw::TlkElement::snd_duration (C++ member), 159
 nw::TlkElement::sound (C++ member), 159
 nw::TlkElement::TlkElement (C++ function), 159
 nw::TlkElement::unused (C++ member), 159
 nw::TlkFlags (C++ struct), 160
 nw::TlkFlags::empty (C++ member), 160
 nw::TlkFlags::sound (C++ member), 160
 nw::TlkFlags::sound_length (C++ member), 160
 nw::TlkFlags::text (C++ member), 160
 nw::TlkHeader (C++ struct), 160
 nw::TlkHeader::language_id (C++ member), 160
 nw::TlkHeader::str_count (C++ member), 160
 nw::TlkHeader::str_offset (C++ member), 160
 nw::TlkHeader::type (C++ member), 160
 nw::TlkHeader::version (C++ member), 160
 nw::to_base64 (C++ function), 290
 nw::to_json (C++ function), 291, 294
 nw::to_underlying (C++ function), 295
 nw::to_utf8 (C++ function), 295
 nw::to_utf8_by_global_lang (C++ function), 295
 nw::to_utf8_by_langid (C++ function), 295
 nw::Tokenizer (C++ struct), 160
 nw::Tokenizer::current (C++ function), 161
 nw::Tokenizer::is_newline (C++ function), 161
 nw::Tokenizer::line (C++ function), 161
 nw::Tokenizer::next (C++ function), 161
 nw::Tokenizer::put_back (C++ function), 161
 nw::Tokenizer::set_buffer (C++ function), 161
 nw::Tokenizer::Tokenizer (C++ function), 161
 nw::Trap (C++ struct), 161
 nw::Trap::detect_dc (C++ member), 161
 nw::Trap::detectable (C++ member), 161
 nw::Trap::disarm_dc (C++ member), 161
 nw::Trap::disarmable (C++ member), 161
 nw::Trap::from_json (C++ function), 161
 nw::Trap::is_trapped (C++ member), 161
 nw::Trap::one_shot (C++ member), 161
 nw::Trap::to_json (C++ function), 161
 nw::Trap::Trap (C++ function), 161
 nw::Trap::type (C++ member), 161
 nw::Trigger (C++ struct), 162
 nw::Trigger::as_area (C++ function), 162
 nw::Trigger::as_common (C++ function), 162
 nw::Trigger::as_creature (C++ function), 162
 nw::Trigger::as_door (C++ function), 162
 nw::Trigger::as_encounter (C++ function), 162

`nw::Trigger::as_item (C++ function), 162`
`nw::Trigger::as_module (C++ function), 162`
`nw::Trigger::as_placeable (C++ function), 162`
`nw::Trigger::as_player (C++ function), 162, 163`
`nw::Trigger::as_sound (C++ function), 163`
`nw::Trigger::as_store (C++ function), 163`
`nw::Trigger::as_trigger (C++ function), 162`
`nw::Trigger::as_waypoint (C++ function), 163`
`nw::Trigger::common (C++ member), 163`
`nw::Trigger::cursor (C++ member), 163`
`nw::Trigger::deserialize (C++ function), 164`
`nw::Trigger::effects (C++ function), 162`
`nw::Trigger::faction (C++ member), 163`
`nw::Trigger::geometry (C++ member), 163`
`nw::Trigger::handle (C++ function), 162`
`nw::Trigger::highlight_height (C++ member), 163`
`nw::Trigger::instantiate (C++ function), 162`
`nw::Trigger::instantiated_ (C++ member), 163`
`nw::Trigger::json_archive_version (C++ member), 164`
`nw::Trigger::linked_to (C++ member), 163`
`nw::Trigger::linked_to_flags (C++ member), 163`
`nw::Trigger::loadscreen (C++ member), 163`
`nw::Trigger::object_type (C++ member), 164`
`nw::Trigger::portrait (C++ member), 163`
`nw::Trigger::retype (C++ member), 164`
`nw::Trigger::scripts (C++ member), 163`
`nw::Trigger::serialize (C++ function), 164`
`nw::Trigger::set_handle (C++ function), 162`
`nw::Trigger::tag (C++ function), 162`
`nw::Trigger::trap (C++ member), 163`
`nw::Trigger::Trigger (C++ function), 162`
`nw::Trigger::type (C++ member), 163`
`nw::Trigger::versus_me (C++ function), 162`
`nw::TriggerScripts (C++ struct), 164`
`nw::TriggerScripts::from_json (C++ function), 164`
`nw::TriggerScripts::on_click (C++ member), 164`
`nw::TriggerScripts::on_disarm (C++ member), 164`
`nw::TriggerScripts::on_enter (C++ member), 164`
`nw::TriggerScripts::on_exit (C++ member), 164`
`nw::TriggerScripts::on_heartbeat (C++ member), 164`
`nw::TriggerScripts::on_trap_triggered (C++ member), 164`
`nw::TriggerScripts::on_user_defined (C++ member), 164`
`nw::TriggerScripts::to_json (C++ function), 164`
`nw::TwoDA (C++ struct), 165`
`nw::TwoDA::column_index (C++ function), 165`
`nw::TwoDA::columns (C++ function), 165`
`nw::TwoDA::get (C++ function), 165`
`nw::TwoDA::get_to (C++ function), 165`
`nw::TwoDA::is_valid (C++ function), 166`
`nw::TwoDA::npos (C++ member), 166`
`nw::TwoDA::operator= (C++ function), 165`
`nw::TwoDA::pad (C++ function), 165`
`nw::TwoDA::row (C++ function), 165`
`nw::TwoDA::rows (C++ function), 165`
`nw::TwoDA::set (C++ function), 165, 166`
`nw::TwoDA::TwoDA (C++ function), 165`
`nw::unique_container (C++ type), 305`
`nw::Variant (C++ struct), 166`
`nw::Variant::as (C++ function), 166`
`nw::Variant::empty (C++ function), 167`
`nw::Variant::get (C++ function), 167`
`nw::Variant::is (C++ function), 166`
`nw::Variant::operator= (C++ function), 166`
`nw::Variant::operator== (C++ function), 167`
`nw::Variant::operator< (C++ function), 167`
`nw::Variant::Variant (C++ function), 166`
`nw::Versus (C++ struct), 167`
`nw::Versus::align_flags (C++ member), 167`
`nw::Versus::match (C++ function), 167`
`nw::Versus::operator bool (C++ function), 167`
`nw::Versus::operator== (C++ function), 167`
`nw::Versus::operator<=> (C++ function), 167`
`nw::Versus::race (C++ member), 167`
`nw::Versus::trap (C++ member), 167`
`nw::Waypoint (C++ struct), 167`
`nw::Waypoint::appearance (C++ member), 169`
`nw::Waypoint::as_area (C++ function), 168`
`nw::Waypoint::as_common (C++ function), 168`
`nw::Waypoint::as_creature (C++ function), 168`
`nw::Waypoint::as_door (C++ function), 168`
`nw::Waypoint::as_encounter (C++ function), 168`
`nw::Waypoint::as_item (C++ function), 168`
`nw::Waypoint::as_module (C++ function), 168`
`nw::Waypoint::as_placeable (C++ function), 168`
`nw::Waypoint::as_player (C++ function), 168`
`nw::Waypoint::as_sound (C++ function), 168`
`nw::Waypoint::as_store (C++ function), 169`
`nw::Waypoint::as_trigger (C++ function), 169`
`nw::Waypoint::as_waypoint (C++ function), 168`
`nw::Waypoint::common (C++ member), 169`
`nw::Waypoint::description (C++ member), 169`
`nw::Waypoint::deserialize (C++ function), 169`
`nw::Waypoint::effects (C++ function), 168`
`nw::Waypoint::handle (C++ function), 168`
`nw::Waypoint::has_map_note (C++ member), 169`
`nw::Waypoint::instantiate (C++ function), 168`
`nw::Waypoint::instantiated_ (C++ member), 169`
`nw::Waypoint::json_archive_version (C++ member), 170`
`nw::Waypoint::linked_to (C++ member), 169`
`nw::Waypoint::map_note (C++ member), 169`

nw::Waypoint::map_note_enabled (C++ member), 169
 nw::Waypoint::object_type (C++ member), 170
 nw::Waypoint::restype (C++ member), 170
 nw::Waypoint::serialize (C++ function), 169
 nw::Waypoint::set_handle (C++ function), 168
 nw::Waypoint::tag (C++ function), 168
 nw::Waypoint::versus_me (C++ function), 168
 nw::Waypoint::Waypoint (C++ function), 168
 nw::Zip (C++ struct), 170
 nw::Zip::~~Zip (C++ function), 170
 nw::Zip::all (C++ function), 170
 nw::Zip::contains (C++ function), 170
 nw::Zip::demand (C++ function), 170
 nw::Zip::extract (C++ function), 170
 nw::Zip::extract_by_glob (C++ function), 170
 nw::Zip::name (C++ function), 170
 nw::Zip::path (C++ function), 170
 nw::Zip::size (C++ function), 170
 nw::Zip::stat (C++ function), 170
 nw::Zip::valid (C++ function), 170
 nw::Zip::visit (C++ function), 170
 nw::Zip::working_directory (C++ function), 170
 nw::Zip::Zip (C++ function), 170
 nw::ZipElement (C++ struct), 171
 nw::ZipElement::resref (C++ member), 171
 nw::ZipElement::size (C++ member), 171
 nw::ZlibHeader (C++ struct), 171
 nw::ZlibHeader::version (C++ member), 171
 nw::ZstdHeader (C++ struct), 171
 nw::ZstdHeader::dictionary (C++ member), 171
 nw::ZstdHeader::version (C++ member), 171
 nwm (rollnw.ResourceType attribute), 338
 nwn1::base_attack_bonus (C++ function), 295
 nwn1::effect_ability_modifier (C++ function), 295
 nwn1::effect_armor_class_modifier (C++ function), 295
 nwn1::effect_attack_modifier (C++ function), 296
 nwn1::effect_concealment (C++ function), 296
 nwn1::effect_haste (C++ function), 296
 nwn1::effect_miss_chance (C++ function), 296
 nwn1::effect_skill_modifier (C++ function), 296
 nwn1::get_ability_modifier (C++ function), 296
 nwn1::get_ability_score (C++ function), 296
 nwn1::get_caster_level (C++ function), 296
 nwn1::get_dex_modifier (C++ function), 297
 nwn1::get_max_hitpoints (C++ function), 297
 nwn1::get_skill_rank (C++ function), 297
 nwn1::get_spell_dc (C++ function), 297
 nwn1::get_weapon_by_attack_type (C++ function), 297
 nwn1::has_effect_type_applied (C++ function), 297
 nwn1::is_creature_weapon (C++ function), 297
 nwn1::is_ranged_weapon (C++ function), 297
 nwn1::is_shield (C++ function), 298
 nwn1::is_unarmed_weapon (C++ function), 298
 nwn1::Profile (C++ struct), 251
 nwn1::Profile::~~Profile (C++ function), 251
 nwn1::Profile::load_resources (C++ function), 251
 nwn1::Profile::load_rules (C++ function), 251
 nwn1::qual::ability (C++ function), 298
 nwn1::qual::alignment (C++ function), 298
 nwn1::qual::class_level (C++ function), 298
 nwn1::qual::feat (C++ function), 298
 nwn1::qual::level (C++ function), 298
 nwn1::qual::race (C++ function), 299
 nwn1::qual::skill (C++ function), 299
 nwn1::resolve_attack (C++ function), 299
 nwn1::resolve_attack_bonus (C++ function), 299
 nwn1::resolve_attack_roll (C++ function), 299
 nwn1::resolve_attack_type (C++ function), 300
 nwn1::resolve_concealment (C++ function), 300
 nwn1::resolve_creature_damage (C++ function), 300
 nwn1::resolve_critical_multiplier (C++ function), 300
 nwn1::resolve_critical_threat (C++ function), 300
 nwn1::resolve_damage_modifiers (C++ function), 300
 nwn1::resolve_dual_wield_penalty (C++ function), 300
 nwn1::resolve_iteration_penalty (C++ function), 301
 nwn1::resolve_number_of_attacks (C++ function), 301
 nwn1::resolve_saving_throw (C++ function), 301
 nwn1::resolve_skill_check (C++ function), 301
 nwn1::resolve_unarmed_damage (C++ function), 301
 nwn1::resolve_weapon_damage (C++ function), 301
 nwn1::resolve_weapon_damage_flags (C++ function), 301
 nwn1::saving_throw (C++ function), 302
 nwn1::sel::ability (C++ function), 302
 nwn1::sel::alignment (C++ function), 302
 nwn1::sel::class_level (C++ function), 302
 nwn1::sel::feat (C++ function), 302
 nwn1::sel::level (C++ function), 302
 nwn1::sel::race (C++ function), 302
 nwn1::sel::skill (C++ function), 302
 nwn1::selector (C++ function), 302
 nwn1::weapon_is_finessable (C++ function), 303
 nwn1::weapon_iteration (C++ function), 303
 nwn2 (rollnw.GameVersion attribute), 322
 NWSync (class in rollnw), 331

NWSyncManifest (class in rollnw), 331

O

OBJECT (rollnw.script.NssTokenType attribute), 371

OBJECT_INVALID_CONST (rollnw.script.NssTokenType attribute), 371

OBJECT_SELF_CONST (rollnw.script.NssTokenType attribute), 371

object_type (rollnw.Area attribute), 306

object_type (rollnw.Creature attribute), 312

object_type (rollnw.Door attribute), 317

object_type (rollnw.Placeable attribute), 333

object_type (rollnw.Sound attribute), 339

object_type (rollnw.Store attribute), 342

ObjectBase (class in rollnw), 331

ObjectHandle (class in rollnw), 331

Objects (class in rollnw.kernel), 347

objects() (in module rollnw.kernel), 348

on_attacked (rollnw.CreatureScripts attribute), 312

on_blocked (rollnw.CreatureScripts attribute), 312

on_click (rollnw.DoorScripts attribute), 317

on_click (rollnw.PlaceableScripts attribute), 333

on_click (rollnw.TriggerScripts attribute), 344

on_client_enter (rollnw.ModuleScripts attribute), 330

on_client_leave (rollnw.ModuleScripts attribute), 330

on_closed (rollnw.DoorScripts attribute), 317

on_closed (rollnw.PlaceableScripts attribute), 333

on_closed (rollnw.StoreScripts attribute), 342

on_conversation (rollnw.CreatureScripts attribute), 312

on_cutsnabort (rollnw.ModuleScripts attribute), 330

on_damaged (rollnw.CreatureScripts attribute), 312

on_damaged (rollnw.DoorScripts attribute), 317

on_damaged (rollnw.PlaceableScripts attribute), 333

on_death (rollnw.CreatureScripts attribute), 312

on_death (rollnw.DoorScripts attribute), 317

on_death (rollnw.PlaceableScripts attribute), 333

on_disarm (rollnw.DoorScripts attribute), 317

on_disarm (rollnw.PlaceableScripts attribute), 333

on_disarm (rollnw.TriggerScripts attribute), 344

on_disturbed (rollnw.CreatureScripts attribute), 312

on_endround (rollnw.CreatureScripts attribute), 312

on_enter (rollnw.AreaScripts attribute), 307

on_enter (rollnw.TriggerScripts attribute), 344

on_entered (rollnw.EncounterScripts attribute), 320

on_exhausted (rollnw.EncounterScripts attribute), 320

on_exit (rollnw.AreaScripts attribute), 307

on_exit (rollnw.EncounterScripts attribute), 320

on_exit (rollnw.TriggerScripts attribute), 344

on_heartbeat (rollnw.AreaScripts attribute), 307

on_heartbeat (rollnw.CreatureScripts attribute), 312

on_heartbeat (rollnw.DoorScripts attribute), 317

on_heartbeat (rollnw.EncounterScripts attribute), 320

on_heartbeat (rollnw.ModuleScripts attribute), 330

on_heartbeat (rollnw.PlaceableScripts attribute), 333

on_heartbeat (rollnw.TriggerScripts attribute), 344

on_inventory_disturbed (rollnw.PlaceableScripts attribute), 333

on_item_acquire (rollnw.ModuleScripts attribute), 330

on_item_activate (rollnw.ModuleScripts attribute), 330

on_item_unaquire (rollnw.ModuleScripts attribute), 330

on_load (rollnw.ModuleScripts attribute), 330

on_lock (rollnw.DoorScripts attribute), 317

on_lock (rollnw.PlaceableScripts attribute), 334

on_melee_attacked (rollnw.DoorScripts attribute), 318

on_melee_attacked (rollnw.PlaceableScripts attribute), 334

on_open (rollnw.DoorScripts attribute), 318

on_open (rollnw.PlaceableScripts attribute), 334

on_open_failure (rollnw.DoorScripts attribute), 318

on_opened (rollnw.StoreScripts attribute), 342

on_perceived (rollnw.CreatureScripts attribute), 312

on_player_chat (rollnw.ModuleScripts attribute), 330

on_player_death (rollnw.ModuleScripts attribute), 330

on_player_dying (rollnw.ModuleScripts attribute), 331

on_player_equip (rollnw.ModuleScripts attribute), 331

on_player_level_up (rollnw.ModuleScripts attribute), 331

on_player_rest (rollnw.ModuleScripts attribute), 331

on_player_unequip (rollnw.ModuleScripts attribute), 331

on_rested (rollnw.CreatureScripts attribute), 312

on_spawn (rollnw.CreatureScripts attribute), 312

on_spawnbtndn (rollnw.ModuleScripts attribute), 331

on_spell_cast_at (rollnw.CreatureScripts attribute), 313

on_spell_cast_at (rollnw.DoorScripts attribute), 318

on_spell_cast_at (rollnw.PlaceableScripts attribute), 334

on_start (rollnw.ModuleScripts attribute), 331

on_trap_triggered (rollnw.DoorScripts attribute), 318

on_trap_triggered (rollnw.PlaceableScripts attribute), 334

on_trap_triggered (rollnw.TriggerScripts attribute), 344

on_unlock (rollnw.DoorScripts attribute), 318

on_unlock (rollnw.PlaceableScripts attribute), 334

on_used (rollnw.PlaceableScripts attribute), 334

on_user_defined (rollnw.AreaScripts attribute), 307

on_user_defined (rollnw.CreatureScripts attribute), 313

on_user_defined (rollnw.DoorScripts attribute), 318

on_user_defined (rollnw.EncounterScripts attribute), 320

on_user_defined (rollnw.ModuleScripts attribute), 331

- on_user_defined (rollnw.PlaceableScripts attribute), 334
- on_user_defined (rollnw.TriggerScripts attribute), 344
- one_shot (rollnw.Trap attribute), 343
- opacity (rollnw.model.MdlEmitterNode attribute), 353
- open (rollnw.PlaceableAnimationState attribute), 333
- opened1 (rollnw.DoorAnimationState attribute), 317
- opened2 (rollnw.DoorAnimationState attribute), 317
- operator (rollnw.script.AssignExpression attribute), 361
- operator (rollnw.script.BinaryExpression attribute), 362
- operator (rollnw.script.ComparisonExpression attribute), 363
- operator (rollnw.script.JumpStatement attribute), 367
- operator (rollnw.script.LogicalExpression attribute), 368
- operator (rollnw.script.PostfixExpression attribute), 372
- operator (rollnw.script.UnaryExpression attribute), 374
- operator<< (C++ function), 285
- options() (rollnw.kernel.Config method), 346
- OR (rollnw.script.NssTokenType attribute), 370
- OREQ (rollnw.script.NssTokenType attribute), 370
- orientation (rollnw.Location attribute), 329
- orientation (rollnw.model.MdlControllerType attribute), 351
- orientation (rollnw.SpawnPoint attribute), 340
- orientation (rollnw.Tile attribute), 342
- OROR (rollnw.script.NssTokenType attribute), 370
- owner (rollnw.Inventory attribute), 323
- ## P
- p2p (rollnw.model.ModelEmitterFlag attribute), 358
- p2p_bezier2 (rollnw.model.MdlControllerType attribute), 351
- p2p_bezier3 (rollnw.model.MdlControllerType attribute), 351
- p2p_sel (rollnw.model.ModelEmitterFlag attribute), 358
- p2p_type (rollnw.model.MdlEmitterNode attribute), 353
- palette_id (rollnw.Common attribute), 310
- param (rollnw.script.SymbolKind attribute), 374
- param_table (rollnw.ItemProperty attribute), 326
- param_value (rollnw.ItemProperty attribute), 326
- parent (rollnw.DialogNode attribute), 315
- parent (rollnw.DialogPtr attribute), 316
- parent (rollnw.model.MdlNode attribute), 355
- parent (rollnw.ResourceDescriptor attribute), 336
- parse (rollnw.script.DiagnosticType attribute), 365
- parse() (rollnw.script.Nss method), 368
- particle_rot (rollnw.model.MdlControllerType attribute), 351
- patch (rollnw.model.MdlNodeFlags attribute), 356
- patch (rollnw.model.MdlNodeType attribute), 356
- path() (rollnw.Container method), 310
- pc (rollnw.Creature attribute), 312
- pelvis (rollnw.BodyParts attribute), 309
- percent_end (rollnw.model.MdlControllerType attribute), 352
- percent_mid (rollnw.model.MdlControllerType attribute), 352
- percent_start (rollnw.model.MdlControllerType attribute), 352
- perception_range (rollnw.Creature attribute), 312
- period (rollnw.model.MdlDanglymeshNode attribute), 352
- phenotype (rollnw.Appearance attribute), 305
- pitch_variation (rollnw.Sound attribute), 340
- pixels() (rollnw.Plr method), 334
- Placeable (class in rollnw), 332
- placeable (rollnw.ObjectType attribute), 332
- placeable() (rollnw.kernel.Objects method), 348
- placeables (rollnw.Area attribute), 306
- PlaceableScripts (class in rollnw), 333
- plane (rollnw.model.MdlAABBEEntry attribute), 349
- Player (class in rollnw), 334
- player (rollnw.ResourceType attribute), 336
- player_only (rollnw.Encounter attribute), 319
- plh (rollnw.ResourceType attribute), 336
- plot (rollnw.Creature attribute), 312
- plot (rollnw.Door attribute), 317
- plot (rollnw.Item attribute), 324
- plot (rollnw.Placeable attribute), 333
- Plt (class in rollnw), 334
- plt (rollnw.ResourceType attribute), 336
- plt_layer_cloth1 (rollnw.PlrLayer attribute), 335
- plt_layer_cloth2 (rollnw.PlrLayer attribute), 335
- plt_layer_hair (rollnw.PlrLayer attribute), 334
- plt_layer_leather1 (rollnw.PlrLayer attribute), 335
- plt_layer_leather2 (rollnw.PlrLayer attribute), 335
- plt_layer_metal1 (rollnw.PlrLayer attribute), 334
- plt_layer_metal2 (rollnw.PlrLayer attribute), 334
- plt_layer_skin (rollnw.PlrLayer attribute), 334
- plt_layer_tattoo1 (rollnw.PlrLayer attribute), 335
- plt_layer_tattoo2 (rollnw.PlrLayer attribute), 335
- PltColors (class in rollnw), 334
- PltPixel (class in rollnw), 335
- PLUS (rollnw.script.NssTokenType attribute), 370
- PLUSEQ (rollnw.script.NssTokenType attribute), 370
- PLUSPLUS (rollnw.script.NssTokenType attribute), 370
- png (rollnw.ResourceType attribute), 339
- pointers (rollnw.DialogNode attribute), 315
- polish (rollnw.LanguageID attribute), 326
- pool_size (rollnw.kernel.EffectSystemStats attribute), 347
- portal (rollnw.ObjectType attribute), 332
- portrait (rollnw.Trigger attribute), 344
- portrait_id (rollnw.Appearance attribute), 305
- portrait_id (rollnw.Door attribute), 317
- portrait_id (rollnw.Placeable attribute), 333

position (*rollnw.Location* attribute), 329
 position (*rollnw.model.MdlControllerType* attribute), 352
 position (*rollnw.model.SkinVertex* attribute), 358
 position (*rollnw.model.Vertex* attribute), 358
 position (*rollnw.script.InlayHint* attribute), 367
 position (*rollnw.SpawnPoint* attribute), 340
 positional (*rollnw.Sound* attribute), 340
 PostfixExpression (class in *rollnw.script*), 372
 potions (*rollnw.Store* attribute), 342
 POUND (*rollnw.script.NssTokenType* attribute), 369
 prevent_zoom (*rollnw.Dialog* attribute), 313
 priority (*rollnw.Sound* attribute), 340
 process_includes() (*rollnw.script.Nss* method), 368
 projectile (*rollnw.ObjectType* attribute), 332
 properties (*rollnw.Item* attribute), 324
 provider (*rollnw.script.Symbol* attribute), 373
 ptm (*rollnw.ResourceType* attribute), 338
 ptt (*rollnw.ResourceType* attribute), 338
 pvp (*rollnw.Area* attribute), 306
 pwk (*rollnw.ResourceType* attribute), 338

Q

quest (*rollnw.DialogNode* attribute), 315
 quest_entry (*rollnw.DialogNode* attribute), 315
 QUESTION (*rollnw.script.NssTokenType* attribute), 369
 queue_remove_effect_by() (in module *rollnw.nwn1*), 360
 quicken (*rollnw.SpellMetaMagic* attribute), 341

R

race (*rollnw.Creature* attribute), 312
 radius (*rollnw.model.MdlControllerType* attribute), 352
 radius (*rollnw.model.MdlModel* attribute), 355
 rand_vel (*rollnw.model.MdlControllerType* attribute), 352
 random (*rollnw.model.ModelEmitterFlag* attribute), 358
 random (*rollnw.Sound* attribute), 340
 random_position (*rollnw.Sound* attribute), 340
 random_x (*rollnw.Sound* attribute), 340
 random_y (*rollnw.Sound* attribute), 340
 range (*rollnw.script.BlockStatement* attribute), 362
 range (*rollnw.script.SourceLocation* attribute), 372
 RBRACE (*rollnw.script.NssTokenType* attribute), 369
 RBRACKET (*rollnw.script.NssTokenType* attribute), 369
 read (*rollnw.DialogAnimation* attribute), 314
 readied (*rollnw.SpellFlags* attribute), 341
 reattachable (*rollnw.model.MdlReferenceNode* attribute), 356
 reference (*rollnw.model.MdlNodeFlags* attribute), 356
 reference (*rollnw.model.MdlNodeType* attribute), 356
 reflex (*rollnw.Saves* attribute), 339
 refmodel (*rollnw.model.MdlReferenceNode* attribute), 356

reload() (*rollnw.Erf* method), 322
 remove() (*rollnw.kernel.EffectSystem* method), 347
 remove() (*rollnw.LocString* method), 328
 remove_action_param() (*rollnw.DialogNode* method), 315
 remove_condition_param() (*rollnw.DialogPtr* method), 316
 remove_key (*rollnw.Lock* attribute), 329
 remove_known_spell() (*rollnw.SpellBook* method), 341
 remove_memorized_spell() (*rollnw.SpellBook* method), 341
 remove_ptr() (*rollnw.Dialog* method), 313
 remove_ptr() (*rollnw.DialogPtr* method), 316
 render (*rollnw.model.MdlEmitterNode* attribute), 353
 render (*rollnw.model.MdlTrimeshNode* attribute), 357
 render_sel (*rollnw.model.MdlEmitterNode* attribute), 353
 renderhint (*rollnw.model.MdlTrimeshNode* attribute), 357
 renderorder (*rollnw.model.MdlEmitterNode* attribute), 353
 reply (*rollnw.DialogNodeType* attribute), 315
 reset (*rollnw.Encounter* attribute), 319
 reset_time (*rollnw.Encounter* attribute), 319
 resman() (in module *rollnw.kernel*), 348
 resmatch() (in module *rollnw*), 345
 resolve() (*rollnw.script.Nss* method), 368
 resolve_attack() (in module *rollnw.nwn1*), 360
 resolve_attack_bonus() (in module *rollnw.nwn1*), 360
 resolve_attack_damage() (in module *rollnw.nwn1*), 360
 resolve_concealment() (in module *rollnw.nwn1*), 360
 resolve_critical_multiplier() (in module *rollnw.nwn1*), 360
 resolve_critical_threat() (in module *rollnw.nwn1*), 360
 resolve_damage_immunity() (in module *rollnw.nwn1*), 360
 resolve_damage_modifiers() (in module *rollnw.nwn1*), 361
 resolve_damage_reduction() (in module *rollnw.nwn1*), 361
 resolve_damage_resistance() (in module *rollnw.nwn1*), 361
 resolve_dual_wield_penalty() (in module *rollnw.nwn1*), 361
 resolve_iteration_penalty() (in module *rollnw.nwn1*), 361
 resolve_number_of_attacks() (in module *rollnw.nwn1*), 361
 resolve_target_state() (in module *rollnw.nwn1*), 361

resolve_unarmed_damage() (in module rollnw.nwn1), 361
 resolve_weapon_damage() (in module rollnw.nwn1), 361
 resolve_weapon_power() (in module rollnw.nwn1), 361
 Resource (class in rollnw), 335
 ResourceDescriptor (class in rollnw), 335
 Resources (class in rollnw.kernel), 348
 respawns (rollnw.Encounter attribute), 319
 resref (rollnw.Common attribute), 310
 resref (rollnw.Resource attribute), 335
 resref (rollnw.script.Include attribute), 366
 resref (rollnw.SpawnCreature attribute), 340
 restype (rollnw.Dialog attribute), 313
 result (rollnw.AttackData attribute), 308
 RETURN (rollnw.script.NssTokenType attribute), 371
 rhs (rollnw.script.AssignExpression attribute), 362
 rhs (rollnw.script.BinaryExpression attribute), 362
 rhs (rollnw.script.ComparisonExpression attribute), 363
 rhs (rollnw.script.DotExpression attribute), 365
 rhs (rollnw.script.LogicalExpression attribute), 368
 rhs (rollnw.script.UnaryExpression attribute), 374
 righthand (rollnw.EquipIndex attribute), 320
 righthand (rollnw.EquipSlot attribute), 321
 rightring (rollnw.EquipIndex attribute), 320
 rightring (rollnw.EquipSlot attribute), 321
 rings (rollnw.Store attribute), 342
 rollnw
 module, 305
 rollnw.kernel
 module, 346
 rollnw.model
 module, 349
 rollnw.nwn1
 module, 359
 rollnw.script
 module, 361
 ROLLNW_STRINGIFY (C macro), 252
 ROLLNW_UNUSED (C macro), 252
 rotatetexture (rollnw.model.MdlTrimeshNode attribute), 357
 rows (rollnw.model.MdlControllerKey attribute), 350
 RPAREN (rollnw.script.NssTokenType attribute), 369
 Rules (class in rollnw.kernel), 348
 rules() (in module rollnw.kernel), 349
S
 salute (rollnw.DialogAnimation attribute), 314
 sampleperiod (rollnw.model.MdlAnimeshNode attribute), 350
 sav (rollnw.ResourceType attribute), 338
 save() (rollnw.Dialog method), 313
 save() (rollnw.Erf method), 322
 save() (rollnw.Tlk method), 343
 save_as() (rollnw.Erf method), 322
 save_as() (rollnw.Tlk method), 343
 Saves (class in rollnw), 339
 saves (rollnw.Door attribute), 317
 saves (rollnw.Placeable attribute), 333
 scale (rollnw.model.MdlControllerType attribute), 352
 SCOPE_EXIT (C macro), 252
 script (rollnw.script.Diagnostic attribute), 364
 script (rollnw.script.Include attribute), 366
 script_abort (rollnw.Dialog attribute), 314
 script_action (rollnw.DialogNode attribute), 315
 script_appears (rollnw.DialogPtr attribute), 316
 script_end (rollnw.Dialog attribute), 314
 scripts (rollnw.Area attribute), 306
 scripts (rollnw.Creature attribute), 312
 scripts (rollnw.Door attribute), 317
 scripts (rollnw.Encounter attribute), 320
 scripts (rollnw.Module attribute), 330
 scripts (rollnw.Placeable attribute), 333
 scripts (rollnw.Store attribute), 342
 scripts (rollnw.Trigger attribute), 344
 self_illum_color (rollnw.model.MdlControllerType attribute), 352
 semantic (rollnw.script.DiagnosticType attribute), 365
 SEMICOLON (rollnw.script.NssTokenType attribute), 369
 set (rollnw.ResourceType attribute), 337
 set() (rollnw.Tlk method), 343
 set() (rollnw.TwoDA method), 344
 set_ability_score() (rollnw.CreatureStats method), 313
 set_action_param() (rollnw.DialogNode method), 315
 set_condition_param() (rollnw.DialogPtr method), 316
 set_effect_limits_ability() (rollnw.kernel.EffectSystem method), 347
 set_effect_limits_armor_class() (rollnw.kernel.EffectSystem method), 347
 set_effect_limits_attack() (rollnw.kernel.EffectSystem method), 347
 set_effect_limits_skill() (rollnw.kernel.EffectSystem method), 347
 set_float() (rollnw.Effect method), 318
 set_float() (rollnw.LocalData method), 328
 set_int() (rollnw.Effect method), 318
 set_int() (rollnw.LocalData method), 328
 set_location() (rollnw.LocalData method), 328
 set_object() (rollnw.LocalData method), 329
 set_paths() (rollnw.kernel.Config method), 346
 set_skill_rank() (rollnw.CreatureStats method), 313
 set_string() (rollnw.Effect method), 318
 set_string() (rollnw.LocalData method), 329
 set_version() (rollnw.kernel.Config method), 346

- `set_versus()` (*rollnw.Effect* method), 318
- `severity` (*rollnw.script.Diagnostic* attribute), 364
- `shader_group_idx` (*rollnw.model.MdlFace* attribute), 353
- `shadow` (*rollnw.model.MdlLightNode* attribute), 354
- `shadow` (*rollnw.model.MdlTrimeshNode* attribute), 357
- `shadow_opacity` (*rollnw.Area* attribute), 306
- `shadow_radius` (*rollnw.model.MdlControllerType* attribute), 352
- `shard_count()` (*rollnw.NWSync* method), 331
- `shd` (*rollnw.ResourceType* attribute), 338
- `shin_left` (*rollnw.BodyParts* attribute), 309
- `shin_right` (*rollnw.BodyParts* attribute), 309
- `shininess` (*rollnw.model.MdlTrimeshNode* attribute), 357
- `shoulder_left` (*rollnw.BodyParts* attribute), 309
- `shoulder_right` (*rollnw.BodyParts* attribute), 309
- `showdispl` (*rollnw.model.MdlTrimeshNode* attribute), 357
- `sides` (*rollnw.DiceRoll* attribute), 316
- `signature_help()` (*rollnw.script.Nss* method), 368
- `SignatureHelp` (class in *rollnw.script*), 372
- `silent` (*rollnw.SpellMetaMagic* attribute), 341
- `simple` (*rollnw.ItemModelType* attribute), 325
- `single_spawn` (*rollnw.SpawnCreature* attribute), 340
- `size` (*rollnw.ResourceDescriptor* attribute), 335
- `size()` (*rollnw.Container* method), 310
- `size()` (*rollnw.LocalData* method), 329
- `size()` (*rollnw.LocString* method), 328
- `size()` (*rollnw.Tlk* method), 343
- `size_ab_modifier` (*rollnw.CombatInfo* attribute), 310
- `size_ac_modifier` (*rollnw.CombatInfo* attribute), 310
- `size_end` (*rollnw.model.MdlControllerType* attribute), 352
- `size_end_y` (*rollnw.model.MdlControllerType* attribute), 352
- `size_mid` (*rollnw.model.MdlControllerType* attribute), 352
- `size_mid_y` (*rollnw.model.MdlControllerType* attribute), 352
- `size_start` (*rollnw.model.MdlControllerType* attribute), 352
- `size_start_y` (*rollnw.model.MdlControllerType* attribute), 352
- `skillpoints` (*rollnw.LevelUp* attribute), 327
- `skills` (*rollnw.LevelUp* attribute), 327
- `skin` (*rollnw.Appearance* attribute), 305
- `skin` (*rollnw.model.MdlNodeFlags* attribute), 356
- `skin` (*rollnw.model.MdlNodeType* attribute), 356
- `SkinVertex` (class in *rollnw.model*), 358
- `skybox` (*rollnw.Area* attribute), 306
- `SL` (*rollnw.script.NssTokenType* attribute), 370
- `SLEQ` (*rollnw.script.NssTokenType* attribute), 370
- `slt` (*rollnw.ResourceType* attribute), 336
- `Sound` (class in *rollnw*), 339
- `sound` (*rollnw.DialogNode* attribute), 315
- `sound` (*rollnw.ObjectType* attribute), 332
- `sound` (*rollnw.ResourceType* attribute), 336
- `sounds` (*rollnw.Area* attribute), 306
- `sounds` (*rollnw.Sound* attribute), 340
- `soundset` (*rollnw.Creature* attribute), 312
- `SourceLocation` (class in *rollnw.script*), 372
- `SourcePosition` (class in *rollnw.script*), 372
- `SourceRange` (class in *rollnw.script*), 373
- `spanish` (*rollnw.LanguageID* attribute), 326
- `spawn_option` (*rollnw.Encounter* attribute), 320
- `spawn_points` (*rollnw.Encounter* attribute), 320
- `SpawnCreature` (class in *rollnw*), 340
- `SpawnPoint` (class in *rollnw*), 340
- `spawntype` (*rollnw.model.MdlEmitterNode* attribute), 353
- `spawntype_sel` (*rollnw.model.MdlEmitterNode* attribute), 353
- `speaker` (*rollnw.DialogNode* attribute), 315
- `SpecialAbility` (class in *rollnw*), 340
- `specular` (*rollnw.model.MdlTrimeshNode* attribute), 357
- `spell` (*rollnw.SpecialAbility* attribute), 340
- `spell` (*rollnw.SpellEntry* attribute), 341
- `spell_id` (*rollnw.EffectHandle* attribute), 319
- `SpellBook` (class in *rollnw*), 340
- `SpellEntry` (class in *rollnw*), 341
- `spells` (*rollnw.ClassEntry* attribute), 309
- `splat` (*rollnw.model.ModelEmitterFlag* attribute), 358
- `spontaneous` (*rollnw.SpellFlags* attribute), 341
- `spot_check_mod` (*rollnw.Area* attribute), 306
- `spread` (*rollnw.model.MdlControllerType* attribute), 352
- `sq3` (*rollnw.ResourceType* attribute), 338
- `sql` (*rollnw.ResourceType* attribute), 338
- `SQLQUERY` (*rollnw.script.NssTokenType* attribute), 372
- `SR` (*rollnw.script.NssTokenType* attribute), 370
- `srcLight1` (*rollnw.Tile* attribute), 342
- `srcLight2` (*rollnw.Tile* attribute), 342
- `SREQ` (*rollnw.script.NssTokenType* attribute), 370
- `ssf` (*rollnw.ResourceType* attribute), 338
- `stacksize` (*rollnw.Item* attribute), 324
- `start` (*rollnw.script.SourceRange* attribute), 373
- `start()` (in module *rollnw.kernel*), 349
- `start_day` (*rollnw.Module* attribute), 330
- `start_hour` (*rollnw.Module* attribute), 330
- `start_month` (*rollnw.Module* attribute), 330
- `start_movie` (*rollnw.Module* attribute), 330
- `start_year` (*rollnw.Module* attribute), 330
- `starting_package` (*rollnw.Creature* attribute), 312
- `stat()` (*rollnw.Container* method), 310
- `Statement` (class in *rollnw.script*), 373
- `static` (*rollnw.Placeable* attribute), 333
- `stats` (*rollnw.Creature* attribute), 312
- `stats()` (*rollnw.kernel.EffectSystem* method), 347

- steal (*rollnw.DialogAnimation* attribute), 314
 - still (*rollnw.SpellMetaMagic* attribute), 341
 - stolen (*rollnw.Item* attribute), 324
 - Store (class in *rollnw*), 341
 - store (*rollnw.ObjectType* attribute), 332
 - store() (*rollnw.kernel.Objects* method), 348
 - stores (*rollnw.Area* attribute), 306
 - StoreScripts (class in *rollnw*), 342
 - STRING (*rollnw.script.NssTokenType* attribute), 372
 - STRING_CONST (*rollnw.script.NssTokenType* attribute), 371
 - STRING_RAW_CONST (*rollnw.script.NssTokenType* attribute), 371
 - Strings (class in *rollnw.kernel*), 348
 - strings() (in module *rollnw.kernel*), 349
 - strref() (*rollnw.LocString* method), 328
 - STRUCT (*rollnw.script.NssTokenType* attribute), 372
 - StructDecl (class in *rollnw.script*), 373
 - subrace (*rollnw.Creature* attribute), 312
 - subtype (*rollnw.EffectHandle* attribute), 319
 - subtype (*rollnw.ItemProperty* attribute), 326
 - sun_shadows (*rollnw.AreaWeather* attribute), 308
 - supermodel (*rollnw.model.MdlModel* attribute), 355
 - supermodel_name (*rollnw.model.MdlModel* attribute), 355
 - supernatural (*rollnw.EffectCategory* attribute), 319
 - SWITCH (*rollnw.script.NssTokenType* attribute), 372
 - SwitchStatement (class in *rollnw.script*), 373
 - Symbol (class in *rollnw.script*), 373
- ## T
- tag (*rollnw.Common* attribute), 310
 - tag (*rollnw.Module* attribute), 330
 - tail (*rollnw.Appearance* attribute), 305
 - TALENT (*rollnw.script.NssTokenType* attribute), 372
 - talk_forceful (*rollnw.DialogAnimation* attribute), 314
 - talk_laugh (*rollnw.DialogAnimation* attribute), 314
 - talk_normal (*rollnw.DialogAnimation* attribute), 314
 - talk_pleading (*rollnw.DialogAnimation* attribute), 314
 - tangent (*rollnw.model.SkinVertex* attribute), 358
 - tangent (*rollnw.model.Vertex* attribute), 358
 - target (*rollnw.AttackData* attribute), 308
 - target (*rollnw.script.SwitchStatement* attribute), 373
 - target_is_creature (*rollnw.AttackData* attribute), 308
 - target_state (*rollnw.AttackData* attribute), 308
 - target_state (*rollnw.CombatInfo* attribute), 310
 - tattoo1 (*rollnw.Appearance* attribute), 306
 - tattoo2 (*rollnw.Appearance* attribute), 306
 - taunt (*rollnw.DialogAnimation* attribute), 314
 - test (*rollnw.script.ConditionalExpression* attribute), 363
 - test (*rollnw.script.DoStatement* attribute), 365
 - test (*rollnw.script.ForStatement* attribute), 366
 - test (*rollnw.script.IfStatement* attribute), 366
 - test (*rollnw.script.WhileStatement* attribute), 374
 - tex (*rollnw.ResourceType* attribute), 336
 - tex_coords (*rollnw.model.SkinVertex* attribute), 358
 - tex_coords (*rollnw.model.Vertex* attribute), 358
 - text (*rollnw.DialogNode* attribute), 315
 - texture (*rollnw.model.MdlEmitterNode* attribute), 353
 - texture (*rollnw.ResourceType* attribute), 336
 - textures (*rollnw.model.MdlLightNode* attribute), 354
 - textures (*rollnw.model.MdlTrimeshNode* attribute), 357
 - tga (*rollnw.ResourceType* attribute), 336
 - thg (*rollnw.ResourceType* attribute), 336
 - thigh_left (*rollnw.BodyParts* attribute), 309
 - thigh_right (*rollnw.BodyParts* attribute), 309
 - threat_range (*rollnw.AttackData* attribute), 308
 - threshold (*rollnw.model.MdlControllerType* attribute), 352
 - tightness (*rollnw.model.MdlDanglymeshNode* attribute), 352
 - TILDE (*rollnw.script.NssTokenType* attribute), 371
 - Tile (class in *rollnw*), 342
 - tile (*rollnw.model.MdlClassification* attribute), 350
 - tile (*rollnw.ObjectType* attribute), 332
 - tilefade (*rollnw.model.MdlTrimeshNode* attribute), 357
 - tiles (*rollnw.Area* attribute), 306
 - tileset (*rollnw.Area* attribute), 307
 - time (*rollnw.model.MdlAnimationEvent* attribute), 350
 - time_offset (*rollnw.model.MdlControllerKey* attribute), 350
 - TIMES (*rollnw.script.NssTokenType* attribute), 370
 - times (*rollnw.Sound* attribute), 340
 - TIMESEQ (*rollnw.script.NssTokenType* attribute), 370
 - Tlk (class in *rollnw*), 342
 - tlk (*rollnw.Module* attribute), 330
 - tlk (*rollnw.ResourceType* attribute), 337
 - tml (*rollnw.ResourceType* attribute), 338
 - to_base_id() (*rollnw.Language* static method), 326
 - to_bool (C++ function), 290
 - to_dict() (*rollnw.LocString* method), 328
 - to_runtime_id() (*rollnw.Language* static method), 326
 - to_string() (*rollnw.Language* static method), 326
 - transition_time (*rollnw.model.MdlAnimation* attribute), 350
 - transparencyhint (*rollnw.model.MdlTrimeshNode* attribute), 357
 - Trap (class in *rollnw*), 343
 - trap (*rollnw.Door* attribute), 317
 - trap (*rollnw.Placeable* attribute), 333
 - trap (*rollnw.Trigger* attribute), 344
 - triangle (*rollnw.model.MdlTriangleMode* attribute), 357
 - triangle_strip (*rollnw.model.MdlTriangleMode* attribute), 357
 - Trigger (class in *rollnw*), 343
 - trigger (*rollnw.ObjectType* attribute), 332

`trigger()` (*rollnw.kernel.Objects* method), 348
`triggers` (*rollnw.Area* attribute), 307
`TriggerScripts` (class in *rollnw*), 344
`trimesh` (*rollnw.model.MdlNodeType* attribute), 356
`true_branch` (*rollnw.script.ConditionalExpression* attribute), 363
`true_branch` (*rollnw.script.IfStatement* attribute), 366
`ttf` (*rollnw.ResourceType* attribute), 338
`tvert_idx` (*rollnw.model.MdlFace* attribute), 353
`TwoDA` (class in *rollnw*), 344
`twoda` (*rollnw.ResourceType* attribute), 337
`TwoDACache` (class in *rollnw.kernel*), 348
`twosidedtex` (*rollnw.model.MdlEmitterNode* attribute), 353
`txi` (*rollnw.ResourceType* attribute), 337
`txt` (*rollnw.ResourceType* attribute), 336
`type` (*rollnw.AttackData* attribute), 308
`type` (*rollnw.DialogNode* attribute), 315
`type` (*rollnw.DialogPtr* attribute), 316
`type` (*rollnw.EffectHandle* attribute), 319
`type` (*rollnw.ItemProperty* attribute), 326
`type` (*rollnw.model.MdlControllerKey* attribute), 350
`type` (*rollnw.model.MdlGeometry* attribute), 353
`type` (*rollnw.model.MdlNode* attribute), 355
`type` (*rollnw.ObjectHandle* attribute), 331
`type` (*rollnw.Resource* attribute), 335
`type` (*rollnw.script.Diagnostic* attribute), 364
`type` (*rollnw.script.NssToken* attribute), 369
`type` (*rollnw.script.Symbol* attribute), 373
`type` (*rollnw.script.SymbolKind* attribute), 374
`type` (*rollnw.Trap* attribute), 343
`type` (*rollnw.Trigger* attribute), 344

U

`UnaryExpression` (class in *rollnw.script*), 374
`underground` (*rollnw.AreaFlags* attribute), 307
`unequip_item()` (in module *rollnw.nwnI*), 361
`unlimited` (*rollnw.SpellFlags* attribute), 341
`unload_module()` (in module *rollnw.kernel*), 349
`unlock_dc` (*rollnw.Lock* attribute), 329
`update` (*rollnw.model.MdlEmitterNode* attribute), 353
`update_sel` (*rollnw.model.MdlEmitterNode* attribute), 353
`useable` (*rollnw.Placeable* attribute), 333
`used` (*rollnw.script.Include* attribute), 367
`user_path()` (*rollnw.kernel.Config* method), 346
`USR` (*rollnw.script.NssTokenType* attribute), 371
`USREQ` (*rollnw.script.NssTokenType* attribute), 371
`utc` (*rollnw.ResourceType* attribute), 337
`utd` (*rollnw.ResourceType* attribute), 337
`ute` (*rollnw.ResourceType* attribute), 337
`utg` (*rollnw.ResourceType* attribute), 338
`uti` (*rollnw.ResourceType* attribute), 337
`utm` (*rollnw.ResourceType* attribute), 338

`utp` (*rollnw.ResourceType* attribute), 337
`uts` (*rollnw.ResourceType* attribute), 337
`utt` (*rollnw.ResourceType* attribute), 337
`utw` (*rollnw.ResourceType* attribute), 338
`uuid` (*rollnw.Module* property), 330

V

`v1_69` (*rollnw.GameVersion* attribute), 322
`valid()` (*rollnw.Container* method), 310
`valid()` (*rollnw.Dialog* method), 314
`valid()` (*rollnw.Image* method), 323
`valid()` (*rollnw.Ini* method), 323
`valid()` (*rollnw.kernel.Objects* method), 348
`valid()` (*rollnw.model.Mdl* method), 349
`valid()` (*rollnw.ObjectHandle* method), 331
`valid()` (*rollnw.Plt* method), 334
`valid()` (*rollnw.Resource* method), 335
`valid()` (*rollnw.Tlk* method), 343
`var` (*rollnw.script.VariableExpression* attribute), 374
`VarDecl` (class in *rollnw.script*), 374
`variable` (*rollnw.script.SymbolKind* attribute), 374
`VariableExpression` (class in *rollnw.script*), 374
`VECTOR` (*rollnw.script.NssTokenType* attribute), 372
`Vector2` (class in *rollnw*), 345
`Vector3` (class in *rollnw*), 345
`Vector4` (class in *rollnw*), 345
`vEE` (*rollnw.GameVersion* attribute), 322
`velocity` (*rollnw.model.MdlControllerType* attribute), 352
`version` (*rollnw.Area* attribute), 307
`version` (*rollnw.EffectID* attribute), 319
`version` (*rollnw.Module* attribute), 330
`version` (*rollnw.ObjectHandle* attribute), 331
`versus()` (*rollnw.Effect* method), 318
`vert_idx` (*rollnw.model.MdlFace* attribute), 353
`Vertex` (class in *rollnw.model*), 358
`vertical_displacement`
 (*rollnw.model.MdlControllerType* attribute), 352
`vertices` (*rollnw.model.MdlSkinNode* attribute), 356
`vertices` (*rollnw.model.MdlTrimeshNode* attribute), 357
`victory_1` (*rollnw.DialogAnimation* attribute), 314
`victory_2` (*rollnw.DialogAnimation* attribute), 314
`victory_3` (*rollnw.DialogAnimation* attribute), 314
`view` (*rollnw.script.Symbol* attribute), 374
`view()` (*rollnw.script.SourceLocation* method), 372
`view_from_range()` (*rollnw.script.Nss* method), 368
`VOID` (*rollnw.script.NssTokenType* attribute), 372
`volume` (*rollnw.Sound* attribute), 340
`volume_variation` (*rollnw.Sound* attribute), 340

W

`w` (*rollnw.IVector4* attribute), 322
`W` (*rollnw.Vector4* attribute), 345

walkrate (*rollnw.Creature* attribute), 312
warning (*rollnw.script.DiagnosticSeverity* attribute), 365
warnings() (*rollnw.script.Nss* method), 369
wav (*rollnw.ResourceType* attribute), 336
Waypoint (*class in rollnw*), 345
waypoint (*rollnw.ObjectType* attribute), 332
waypoint() (*rollnw.kernel.Objects* method), 348
waypoints (*rollnw.Area* attribute), 307
wbm (*rollnw.ResourceType* attribute), 338
weapon_is_finessable() (*in module rollnw.nwnI*), 361
weapon_iteration() (*in module rollnw.nwnI*), 361
weapons (*rollnw.Store* attribute), 342
weather (*rollnw.Area* attribute), 307
weights (*rollnw.model.SkinVertex* attribute), 358
WHILE (*rollnw.script.NssTokenType* attribute), 372
WhileStatement (*class in rollnw.script*), 374
width (*rollnw.Area* attribute), 307
width() (*rollnw.Image* method), 323
width() (*rollnw.Plr* method), 334
will (*rollnw.Saves* attribute), 339
wind_power (*rollnw.AreaWeather* attribute), 308
wings (*rollnw.Appearance* attribute), 306
wirecolor (*rollnw.model.MdlControllerType* attribute), 352
wok (*rollnw.ResourceType* attribute), 337
word_count (*rollnw.Dialog* attribute), 314
working_directory() (*rollnw.Container* method), 311
worship (*rollnw.DialogAnimation* attribute), 314
write_to() (*rollnw.Image* method), 323

X

x (*rollnw.InventoryItem* attribute), 323
x (*rollnw.IVector4* attribute), 322
x (*rollnw.script.LiteralVectorExpression* attribute), 367
x (*rollnw.Vector2* attribute), 345
x (*rollnw.Vector3* attribute), 345
x (*rollnw.Vector4* attribute), 345
xbc (*rollnw.ResourceType* attribute), 338
xgrid (*rollnw.model.MdlEmitterNode* attribute), 353
XOR (*rollnw.script.NssTokenType* attribute), 371
XOREQ (*rollnw.script.NssTokenType* attribute), 371
xpscale (*rollnw.Module* attribute), 330
xsize (*rollnw.model.MdlControllerType* attribute), 352

Y

y (*rollnw.InventoryItem* attribute), 323
y (*rollnw.IVector4* attribute), 322
y (*rollnw.script.LiteralVectorExpression* attribute), 367
y (*rollnw.Vector2* attribute), 345
y (*rollnw.Vector3* attribute), 345
y (*rollnw.Vector4* attribute), 345
ygrid (*rollnw.model.MdlEmitterNode* attribute), 353
ysize (*rollnw.model.MdlControllerType* attribute), 352

Z

z (*rollnw.IVector4* attribute), 322
z (*rollnw.script.LiteralVectorExpression* attribute), 367
z (*rollnw.Vector3* attribute), 345
z (*rollnw.Vector4* attribute), 345
Zip (*class in rollnw*), 345