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C++ static code analysis

Unique rules to find Bugs, Vulnerabilities, Security Hotspots, and Code Smells in your C++ code

All rules 578

 Vulnerability 13

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Tags

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"memset" should not be used to delete sensitive data

 Vulnerability

POSIX functions should not be called with arguments that trigger buffer overflows

 Vulnerability

XML parsers should not be vulnerable to XXE attacks

 Vulnerability

Function-like macros should not be invoked without all of their arguments

 Bug

The address of an automatic object should not be assigned to another object that may persist after the first object has ceased to exist

 Bug

Assigning to an optional should directly target the optional

 Bug

Result of the standard remove algorithms should not be ignored

 Bug

"std::scoped_lock" should be created with constructor arguments

 Bug

Objects should not be sliced

 Bug

Immediately dangling references should not be created

 Bug

"pthread_mutex_t" should be unlocked in the reverse order they were locked

 Bug




"pthread_mutex_t" should be properly initialized and destroyed

 Bug

"pthread_mutex_t" should not be consecutively locked or unlocked twice

Header guards should be followed by according "#define" macro

Analyze your code

 Code Smell  Critical  unpredictable

Include guards, wrapping around the entire content of a header file, are a best practice that ensure that no matter how many times the header is actually included in a translation unit, its content will only be seen once.

The include guard pattern is made up of four parts:

- `#ifndef` at the top of the file, with a unique macro name (usually the name relates to the name of the file, to ensure uniqueness).
- `#define` with the same macro name.
- The content of the file
- `#endif` at the end of the file

The rule raises an issue when the name in the second part differs from the name in the first (usually because of a typo or a copy/paste issue).

Noncompliant Code Example

```
#ifndef MYFILE_H
#define MY_FILE_H // Noncompliant
//...
#endif
```

Compliant Solution

```
#ifndef MYFILE_H
#define MYFILE_H
//...
#endif
```

Available In:

sonarlint

| sonarcloud

| sonarqube

Developer Edition

 Bug
"std::move" and "std::forward" should not be confused  Bug
A call to "wait()" on a "std::condition_variable" should have a condition  Bug
A pointer to a virtual base class shall only be cast to a pointer to a derived class by means of dynamic_cast  Bug
Functions with "noreturn" attribute should not return  Bug
RAII objects should not be temporary  Bug
"memcmp" should only be called with pointers to trivially copyable types with no padding  Bug
"memcpy", "memmove", and "memset" should only be called with pointers to trivially copyable types  Bug
"std::auto_ptr" should not be used  Bug
Destructors should be "noexcept"  Bug