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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

Conditional operators should not be nested

Analyze your code

 Code Smell  Major  confusing

Just because you *can* do something, doesn't mean you should, and that's the case with nested ternary operations. Nesting ternary operators results in the kind of code that may seem clear as day when you write it, but six months later will leave maintainers (or worse - future you) scratching their heads and cursing.

Instead, err on the side of clarity, and use another line to express the nested operation as a separate statement.

Noncompliant Code Example

```
int max(int p1, int p2, int p3) {
    return p1 > p2 ? (p1 > p3 ? p1 : p3) : (p2 > p3 ? p2 : p3);
}
```

Compliant Solution

```
int max(int p1, int p2, int p3) {
    if (p1 > p2) {
        return p1 > p3 ? p1 : p3;
    } else {
        return p2 > p3 ? p2 : p3;
    }
}
```

Exceptions

For C++11 mode only, the issue is not raised for ternary operators used inside `constexpr` functions. In C++11 such functions are limited to just a return statement, so the use of a ternary operator is required in them. This restriction is lifted in later standards, and thus issues are raised.

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