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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

Bug 111

Security Hotspot 18

Code Smell 436

Quick Fix 68

Tags

Search by name...

"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

Loops with at most one iteration should be refactored

Analyze your code

Bug Major ?

A loop with at most one iteration is equivalent to the use of an `if` statement to conditionally execute one piece of code. No developer expects to find such a use of a loop statement. If the initial intention of the author was really to conditionally execute one piece of code, an `if` statement should be used instead.

At worst that was not the initial intention of the author and so the body of the loop should be fixed to use the nested `return`, `break` or `throw` statements in a more appropriate way.

Noncompliant Code Example

```
for (int i = 0; i < 10; i++) { // noncompliant, loop only exe
    printf("i is %d", i);
    break;
}
...
for (int i = 0; i < 10; i++) { // noncompliant, loop only exe
    if (i == x) {
        break;
    } else {
        printf("i is %d", i);
        return;
    }
}
```

Compliant Solution

```
for (int i = 0; i < 10; i++) {
    printf("i is %d", i);
}
...
for (int i = 0; i < 10; i++) {
    if (i == x) {
        break;
    } else {
        printf("i is %d", i);
    }
}
```

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 |