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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

Assigning to an optional should directly target the optional

Analyze your code

Bug | Blocker | Quick Fix | since-c++17

The class `std::optional` stores an optional value: a `std::optional<T>` can either contain a value of type `T` or be empty. One way to access the value of a non-empty optional is the `operator*`, making an optional look like a pointer.

However, the similarity ends there. In particular, the preferred way to assign a value to an optional is to assign it directly (as opposed to assigning it to the dereferenced value or to the result of the function `value()`). In that case, the assignment works even if the optional does not have a prior value.

Noncompliant Code Example

```
void g(std::optional<int> &val, bool b) {
    if (b) {
      *val = 314; // Noncompliant, will throw if the optional
    } else {
      val.value() = 42; // Noncompliant, will throw if the op
    }
}
```

Compliant Solution

```
void g(std::optional<int> &val, bool b) {
    if (b) {
      val = 314; // Compliant
    } else {
      val = 42; // Compliant
    }
}
```

Available In:

sonarlint | sonarcloud | sonarqube Developer Edition

initialized and destroyed

Bug

"pthread_mutex_t" should not be consecutively locked or unlocked twice

Bug

"std::move" and "std::forward" should not be confused

Bug

A call to "wait()" on a "std::condition_variable" should have a