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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

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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

"final" classes should not have "virtual" functions

Analyze your code

 Code Smell  Minor  Quick Fix  confusing since-c++11

Since `final` classes can't be extended, indicating that functions in such a class are overrideable by adding the `virtual` specifier is possibly misguided, and definitely confusing.

### Noncompliant Code Example

```
class Base {
    virtual void f1();
};

class C final : Base {
    virtual void f1(); // Noncompliant
    virtual void f2(); // Noncompliant
};
```

### Compliant Solution

```
class Base {
    virtual void f1();
};

class C final : Base {
    void f1() override;
    void f2();
};
```

### See

- {rule:cpp:S3471} - "override" or "final" should be used instead of "virtual"

Available In:

sonarlint

| sonarcloud

| sonarqube

Developer Edition

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