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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

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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

Values of different "enum" types should not be compared

Analyze your code

 Bug  Major 

Just as comparing apples and oranges is seen as a classic folly, comparing values from different enumerations against each other or converting them into one another is nonsensical. True, at root enums are simply named numbers, and it's certainly valid to compare numbers. But an added layer of meaning is created by an enum, one that goes beyond simple numerical values.

Ignoring that extra layer of meaning is at best a trap for maintainers, who are likely to be hopelessly confused by the code. At worst, it is a bug, which will lead to unexpected results.

### Noncompliant Code Example

```
enum apple {BRAEBURN, FUJI, GRANNY_SMITH, RED_DELICIOUS};
enum orange {BLOOD, NAVEL, BITTER, BERGAMOT, MANDARIN};

void makeCider(apple v);

bool fun(apple v1, orange v2) {
    makeCider((apple)v2); // Noncompliant
    return v1 != v2;     // Noncompliant
}
```

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