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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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"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

The unary "&" operator should not be overloaded

Analyze your code

 Code Smell  Major  cppcoreguidelines misra-c++2008

Taking the address of an object of incomplete type, where the complete type contains a user declared operator & leads to undefined behavior.

### Noncompliant Code Example

```
// A.h
class A
{
public:
    A * operator & ( ); // Noncompliant
};

// f1.cc
class A;
void f ( A & a )
{
    &a; // uses built-in operator &
}

// f2.cc
#include "A.h"
void f2 ( A & a )
{
    &a; // use user-defined operator &
}
```

### See

- MISRA C++ 2008, 5-3-3 - The unary & operator shall not be overloaded.
- [C++ Core Guidelines C.166](#) - Overload unary & only as part of a system of smart pointers and references

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