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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

A pointer to a virtual base class shall only be cast to a pointer to a derived class by means of dynamic_cast

Analyze your code

Bug | Blocker | misra-c++2008

Casting from a virtual base to a derived class, using any means other than dynamic_cast has undefined behaviour. The behaviour for dynamic_cast is defined.

Note: As of C++17, the program is considered as ill-formed and an error is reported.

Most compilers emit an error for previous versions of C++ as well.

Noncompliant Code Example

```
class B { ... };
class D: public virtual B { ... };
D d;
B *pB = &d;

D *pD1 = ( D * ) pB; // Noncompliant - undefined behaviour
D *pD2 = static_cast<D*>(pB); // Noncompliant - undefined beh
```

Compliant Solution

```
class B { ... };
class D: public virtual B { ... };
D d;
B *pB = &d;

D *pD1 = dynamic_cast<D*>(pB); // Compliant, but pD2 may be N
D & D2 = dynamic_cast<D&>(*pB); // Compliant, but may throw a
```

See

- MISRA C++:2008, 5-2-2 - A pointer to a virtual base class shall only be cast to a pointer to a derived class by means of dynamic_cast.

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