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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 initialized and destroyed
Bug

"pthread_mutex_t" should not be consecutively locked or unlocked twice

Increment (++) and decrement (--) operators should not be used in a method call or mixed with other operators in an expression

Analyze your code

Code Smell | Major | based-on-misra cert

The use of increment and decrement operators in method calls or in combination with other arithmetic operators is not recommended, because:

- It can significantly impair the readability of the code.
- It introduces additional side effects into a statement, with the potential for undefined behavior.
- It is safer to use these operators in isolation from any other arithmetic operators.

Noncompliant Code Example

```
u8a = ++u8b + u8c--;
foo = bar++ / 4;
```

Compliant Solution

The following sequence is clearer and therefore safer:

```
++u8b;
u8a = u8b + u8c;
u8c--;
foo = bar / 4;
bar++;
```

See

- MISRA C:2004, 12.1 - Limited dependence should be placed on the C operator precedence rules in expressions.
- MISRA C:2004, 12.13 - The increment (++) and decrement (--) operators should not be mixed with other operators in an expression.
- MISRA C++:2008, 5-2-10 - The increment (++) and decrement (--) operator should not be mixed with other operators in an expression.
- MISRA C:2012, 12.1 - The precedence of operators within expressions should be made explicit
- MISRA C:2012, 13.3 - A full expression containing an increment (++) or decrement (--) operator should have no other potential side effects other than that cause by the increment or decrement operator
- CERT, EXP30-C. - Do not depend on the order of evaluation for side effects
- CERT, EXP50-CPP. - Do not depend on the order of evaluation for side effects
- CERT, EXP05-J. - Do not follow a write by a subsequent write or read of the same object within an expression

Available In:

sonarlint | sonarcloud | sonarqube Developer Edition

Bug

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

Bug

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

Bug

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

Bug

Functions with "noreturn" attribute should not return

Bug

RAII objects should not be temporary

Bug

"memcmp" should only be called with pointers to trivially copyable types with no padding

Bug

"memcpy", "memmove", and "memset" should only be called with pointers to trivially copyable types

Bug

"std::auto_ptr" should not be used

Bug

Destructors should be "noexcept"

Bug