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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

Appropriate char types should be used for character and integer values

Analyze your code

Code Smell | Minor | based-on-misra cert confusing

There are three distinct `char` types, (plain) `char`, `signed char` and `unsigned char`. `signed char` and `unsigned char` should only be used for numeric data, and plain `char` should only be used for character data. Since it is implementation-defined, the signedness of the plain `char` type should not be assumed.

Noncompliant Code Example

```
signed char a = 'a'; // Noncompliant, explicitly signed
unsigned char b = '\r'; // Noncompliant, explicitly unsigned
char c = 10; // Noncompliant

unsigned char d = c; // Noncompliant, d is explicitly signed
char e = a; // Noncompliant, a is explicitly signed while e i
```

Compliant Solution

```
char a = 'a';
char b = '\r';
unsigned char c = 10;
signed char c = 10;
```

Exceptions

- Since the integer value 0 is used as a sentinel for the end of a string, converting this value to char is ignored.

See

- MISRA C:2004, 6.1 - The plain char type shall be used only for the storage and use of character values
- MISRA C:2004, 6.2 - signed and unsigned char type shall be used only for the storage and use of number values
- MISRA C++:2008, 5-0-11 - The plain char type shall only be used for the storage and use of character values
- MISRA C++:2008, 5-0-12 - signed char and unsigned char type shall only be used for the storage and use of numeric values
- CERT, INT07-C. - Use only explicitly signed or unsigned char type for numeric values
- CERT, STR00-C. - Represent characters using an appropriate type
- CERT, STR04-C. - Use plain char for characters in the basic character set

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