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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

Functions that throw exceptions should not be used as hash functions

Analyze your code

Code Smell | Critical | cppcoreguidelines unpredictable since-c++11

When you are using a standard library container based on a hash table (for instance, `std::unordered_map`), you can provide your own hash function. One of the requirements of the hash function is that it should not throw exceptions.

If you don't follow this requirement, and your hash function throws, you may end-up with corrupt data in your container.

Since this function is not supposed to throw, you should also declare it `noexcept`.

Noncompliant Code Example

```
struct MyHash{
  size_t operator() (Customer c) const // Noncompliant, copyi
  {
    if (c.name().empty()) {
      throw std::runtime_error("You should know the customer
    }
    return std::hash<std::string>()(c.name());
  }
};
std::unordered_set<Customer, MyHash> mySet;
```

Compliant Solution

```
struct MyHash{
  size_t operator() (Customer const &c) const noexcept
  {
    return std::hash<std::string>()(c.name());
  }
};
std::unordered_set<Customer, MyHash> mySet;
```

See

- C++ Core Guidelines C.89 - Make a hash noexcept

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