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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

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Tags

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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

Exceptions should not be ignored

Analyze your code

 Code Smell  Minor  cwe error-handling owasp suspicious

When exceptions occur, it is usually a bad idea to simply ignore them. Instead, it is better to handle them properly, or at least to log them.

Noncompliant Code Example

```
void save() {
    try {
        saveDocument();
    } catch (const std::exception& ex) {
    }
}
```

Compliant Solution

```
void save() {
    try {
        saveDocument();
    } catch (const std::exception& ex) {
        log << "Exception while saving the document: " << ex.what();
    }
}
```

See

- [OWASP Top 10 2021 Category A9](#) - Security Logging and Monitoring Failures
- [OWASP Top 10 2017 Category A10](#) - Insufficient Logging & Monitoring
- [MITRE, CWE-390](#) - Detection of Error Condition Without Action

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 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