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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 **311**

Vulnerability **13**

Bug **74**

Security Hotspot **18**

Code Smell **206**

Quick Fix **14**

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

"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

Bug

Functions with "noreturn" attribute should not return

Bug

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

Bug

There shall be at most one occurrence of the # or ## operators in a single macro definition

Analyze your code

Code Smell

Major

preprocessor misra-c++2008 misra-c2004 misra-c2012

Because the evaluation order of # and ## are not specified, the results of using them both in the same macro could be unpredictable. Therefore macros should contain at most once instance of either # or ##.

Noncompliant Code Example

```
#define NonCompliant(a, b)  # a ## b
int main() {
    std::cout << NonCompliant(Hello, World);
}
```

The result of this code is unspecified. It will either print "HelloWorld" or trigger a compilation error. If ## is evaluated first this will print HelloWorld. If # is evaluated first this will cause a compilation error telling that "HelloWorld" is not a valid preprocessor token.

Compliant Solution

```
#define Stringfy(a) #a
#define Compliant(a, b) Stringfy(a##b)

int main(){
    std::cout << Compliant(Hello, World);
}
```

This example will always print "HelloWorld".

See

- MISRA C:2004, 19.12
- MISRA C++ 2008, 16-3-1
- Related: MISRA C:2012, 20.11

Available In:

sonarlint

sonarcloud

sonarqube

Developer Edition

Stack allocated memory and non-owned memory should not be freed

 Bug

Closed resources should not be accessed

 Bug

Dynamically allocated memory should be released

 Bug

Freed memory should not be used