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C static code analysis

Unique rules to find Bugs, Vulnerabilities, Security Hotspots, and Code Smells in your C code

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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

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

Boolean expressions should not be gratuitous

Analyze your code

Code Smell | Major | cwe based-on-misra cert misra-c2004 suspicious redundant misra-c2012

If a boolean expression doesn't change the evaluation of the condition, then it is entirely unnecessary, and can be removed. If it is gratuitous because it does not match the programmer's intent, then it's a bug and the expression should be fixed.

Noncompliant Code Example

```
a = true;
if (a) { // Noncompliant
  doSomething();
}

if (b && a) { // Noncompliant; "a" is always "true"
  doSomething();
}

if (c || !a) { // Noncompliant; "!a" is always "false"
  doSomething();
}
```

Compliant Solution

```
a = true;
if (foo(a)) {
  doSomething();
}

if (b) {
  doSomething();
}

if (c) {
  doSomething();
}
```

See

- MISRA C:2004, 13.7 - Boolean operations whose results are invariant shall not be permitted.
- MISRA C:2012, 14.3 - Controlling expressions shall not be invariant
- MITRE, CWE-571 - Expression is Always True
- MITRE, CWE-570 - Expression is Always False
- CERT, MSC12-C. - Detect and remove code that has no effect or is never executed

Available In:

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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

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