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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

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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

"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

"switch" statements should have at least 3 "case" clauses

Analyze your code

Code Smell Minor based-on-misra bad-practice

switch statements are useful when there are many different cases depending on the value of the same expression. For just one or two cases however, the code will be more readable with if statements.

Moreover, if statements are obviously more suitable when the condition of the switch is boolean.

Here are the rules to count the cases:

- default is counted as a case.
- If there is no default clause, the case count is incremented by one (to account for the else branch of an equivalent if).
- All the cases falling through to default are not counted (they would all be the else branch of the equivalent if).

Noncompliant Code Example

```
switch (variable) {
  case 0:
    doSomething();
    break;
  default:
    doSomethingElse();
    break;
}
```

Compliant Solution

```
if (variable == 0) {
  doSomething();
} else {
  doSomethingElse();
}
```

See

- MISRA C:2012, 16.6 - Every switch statement shall have at least two switch-clauses

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