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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

Loops should not have more than one "break" or "goto" statement

Analyze your code

Code Smell | Major | based-on-misra confusing

Restricting the number of exits from a loop is done in the interests of good structured programming. One `break` or `goto` statement is acceptable in a loop since this allows, for example, for dual-outcome loops or optimal coding.

Noncompliant Code Example

With the default threshold of 1:

```
for (int i = 0; i < 10; i++) {
  if (...) {
    break;      //  Compliant
  }
  else if (...) {
    break;      //  Non-compliant - second jump from loop
  }
  else {
    ...
  }
}
while (...) {
  if (...) {
    break;      // Compliant
  }
  if (...) {
    break;      // Non-compliant - second jump from loop
  }
}
```

Compliant Solution

```
for (int i = 0; i < 10; i++) {
  if (...) {
    break;      //  Compliant
  }
}
while (...) {
  if (...) {
    break;    // Compliant
  }
}
```

See

- MISRA C:2004, 14.6 - For any iteration statement there shall be at most one break statement used for loop termination.
- MISRA C++:2008, 6-6-4 - For any iteration statement there shall be no more than one break or goto statement used for loop termination.
- MISRA C:2012, 15.4 - There should be no more than one break or goto statement used to terminate any iteration statement

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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