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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

Recursion should not be infinite

Analyze your code

Bug | Blocker | suspicious

Recursion happens when control enters a loop that has no exit. This can happen a method invokes itself, when a pair of methods invoke each other, or when `goto` statements are used to move between two segments of code. It can be a useful tool, but unless the method includes a provision to break out of the recursion and `return`, the recursion will continue until the stack overflows and the program crashes.

Noncompliant Code Example

```
int pow(int num, int exponent) {  // Noncompliant; no conditi
  num = num * pow(num, exponent-1);
  return num;  // this is never reached
}

void internalRecursion(int i) {
  start:
    goto end;
  end:
    goto start;  // Noncompliant; there's no way to break out
}
```

Compliant Solution

```
int pow(int num, int exponent) {
  if (exponent > 1) {  // recursion now conditional and stop-
    num = num * pow(num, exponent-1);
  }
  return num;
}
```

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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