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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

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

Analyze your code

Bug | Blocker | symbolic-execution | unpredictable

Stack allocated memory, like memory allocated with the functions `alloca`, `_alloca`, `_malloca`, `__builtin_alloca`, is automatically released at the end of the function, and should not be released with `free`. Explicitly `free`-ing such memory results in undefined behavior.

This rule raises issues when trying to release pointers to memory which is not owned, like stack allocated memory and function pointers.

Noncompliant Code Example

```
void fun() {
  char *name = (char *) alloca(size);
  // ...
  free(name); // Noncompliant, memory allocated on the stack
  char *name2 = "name";
  // ...
  free(name2); // Noncompliant, memory allocated on the stack
}
```

Compliant Solution

```
void fun() {
  char *name = (char *) alloca(size);
  // ...
  char *name2 = "name";
  // ...
}
```

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sonarlint | sonarcloud | sonarqube Developer Edition

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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