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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

Memory access should be explicitly bounded to prevent buffer overflows

Analyze your code

Bug | Blocker | cwe symbolic-execution cert

Array overruns and buffer overflows happen when memory access accidentally goes beyond the boundary of the allocated array or buffer. These overreaching accesses cause some of the most damaging, and hard to track defects.

Noncompliant Code Example

```
int array[10];
array[10] = 0; // Noncompliant: index should be between 0 & 9

char *buffer1 = (char *) malloc(100);
char *buffer2 = (char *) malloc(50);
memcpy(buffer2, buffer1, 100); // Noncompliant: buffer2 will
```

Compliant Solution

```
int array[10];
array[9] = 0;

char *buffer1 = (char *) malloc(100);
char *buffer2 = (char *) malloc(50);
memcpy(buffer2, buffer1, 50);
```

See

- MITRE, CWE-119 - Improper Restriction of Operations within the Bounds of a Memory Buffer
- MITRE, CWE-131 - Incorrect Calculation of Buffer Size
- MITRE, CWE-788 - Access of Memory Location After End of Buffer
- CERT, ARR30-C. - Do not form or use out-of-bounds pointers or array subscripts
- CERT, STR50-CPP. - Guarantee that storage for strings has sufficient space for character data and the null terminator

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