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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

Bit fields should be declared with appropriate types

Analyze your code

Code Smell | Major | based-on-misra lock-in cert

Some types are not very well suited for use in a bit-field, because their behavior is implementation-defined. When defining a bit-field, you should stick to the following safe and portable types:

- In C: `signed short`, `unsigned short`, `signed char`, `unsigned char`, `signed int`, `unsigned int` or `_Bool`
- In C++ before C++14: all enumerated types, as well as `signed short`, `unsigned short`, `signed char`, `unsigned char`, `signed int`, `unsigned int`, `signed long`, `unsigned long`, `signed long long`, `unsigned long long` or `bool`
- In C++ starting at C++14: all enumerated and integral types

Noncompliant Code Example

```
// Assuming we are in C
int b:3; // Noncompliant - may have the range of values 0..7
```

Compliant Solution

```
unsigned int b:3;
```

See

- MISRA C:2004, 6.4 - Bit fields shall only be defined to be of type *unsigned int* or *signed int*.
- MISRA C++:2008, 9-6-2 - Bit-fields shall be either *bool* type or an explicitly *unsigned* or *signed* integral type.
- MISRA C:2012, 6.1 - Bit-fields shall only be declared with an appropriate type
- CERT, INT12-C. - Do not make assumptions about the type of a plain int bit-field when used in an expression

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