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C static code analysis

Unique rules to find Bugs, Vulnerabilities, Security Hotspots, and Code Smells in your C code

All rules (311)   🔒 Vulnerability (13)   🐞 Bug (74)   Security Hotspot (18)   Code Smell (206)   Quick Fix (14)
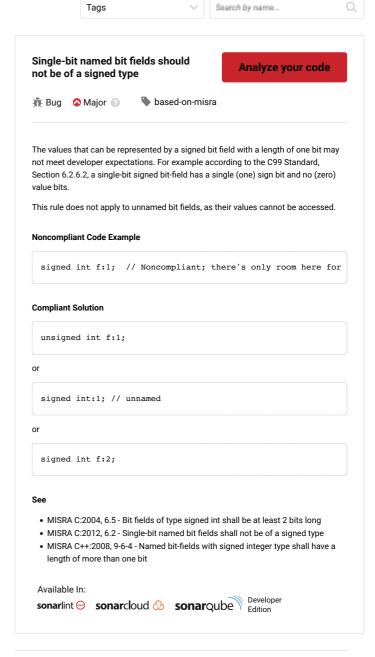
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"memset" should not be used to delete sensitive data
🔒 Vulnerability

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

Single-bit named bit fields should not be of a signed type

Analyze your code

🐞 Bug   🔺 Major ⊘   🏷 based-on-misra

The values that can be represented by a signed bit field with a length of one bit may not meet developer expectations. For example according to the C99 Standard, Section 6.2.6.2, a single-bit signed bit-field has a single (one) sign bit and no (zero) value bits.

This rule does not apply to unnamed bit fields, as their values cannot be accessed.

Noncompliant Code Example

```
signed int f:1;  // Noncompliant; there's only room here for
```

Compliant Solution

```
unsigned int f:1;
```

or

```
signed int:1; // unnamed
```

or

```
signed int f:2;
```

See

- MISRA C:2004, 6.5 - Bit fields of type signed int shall be at least 2 bits long
- MISRA C:2012, 6.2 - Single-bit named bit fields shall not be of a signed type
- MISRA C++:2008, 9-6-4 - Named bit-fields with signed integer type shall have a length of more than one bit

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