sonar RULES

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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

GNU extensions should not be used

Analyze your code

Code Smell Minor lock-in obsolete gnu

Proprietary compiler extensions can be handy, but they commit you to always using that compiler. This rule raises an issue when GNU extensions are used, such as:

- Ternary operator with omitted second operand
- Case ranges in switch statements
- Expression statements, i.e. code blocks producing value
- Index range in array initializers
- A array initializer without =
- A structure member initializer with a colon
- Decimal floating points numbers `_Decimal32`, `_Decimal64`, and `_Decimal128`
- Structures and union without named data members

Noncompliant Code Example

```
struct S {
  int f;
};

struct S s[] = {
  [0] { // Noncompliant
    f : 0 // Noncompliant
  }
  [1 ... 3] = { // CHECK :8 :11 S3715:use of GNU array range
    .f = 2
  }
};

int fun(int p) {
  switch (p) {
    case 0 ... 1: // Noncompliant
      do_the_thing();
      break;
    case 2:
      //...
  }

  p = ({ // Noncompliant
    int a = 10, b = 20;
    (a * b) + 10;
  });

  return p ?: 0; // Noncompliant
}

_Decimal32 d32; // Noncomplaint

struct Empty {}; // Noncomplaint in C
```

Compliant Solution

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

```
struct S {
  int f;
};

struct S s[] = {
  [0] = {
    .f = 0
  },
  [1] = {
    .f = 2
  }
  [2] = {
    .f = 2
  },
  [3] = {
    .f = 2
  }

};

int fun(int p) {
  switch (p) {
    case 0:
    case 1:
      do_the_thing();
      break;
    case 2:
      //...
  }

  int a = 10, b = 20;
  p = (a * b) + 10;

  return p ? p: 0;
}
```

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