Secrets
ABAP
Apex
C
C++
CloudFormation
COBOL
C#
CSS
Flex
Go
HTML
Java
JavaScript
Kotlin
Kubernetes
Objective C
PHP
PL/I
PL/SQL
Python
RPG
Ruby
Scala
Swift
Terraform
Text
TypeScript
T-SQL
VB.NET
VB6
XML

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

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

Macros should not be used as replacement to "typdef" and "using"

Analyze your code

Code Smell | Minor | bad-practice cert pitfall

C provides a way of defining or aliasing a type through `typedef`. On top of it, C++ adds `using` that can do the same and more.

Using a macro to define a type is inferior to the previous ways for two reasons:

- macros cannot be enclosed into scopes. Or at least, doing so is cumbersome and error-prone as in that case, the macro needs to be defined and undefined manually.
- macros are handled by the preprocessor and are not understood from the compiler. They can easily pollute the code in places where types are not expected. `typedef` and `using` are known to the compiler to define types and can be more strictly checked.

As a result, macros should not be used as a replacement to `typedef` or `using`.

Noncompliant Code Example

```
#define UINT unsigned int  // Noncompliant
#define INT int  // Noncompliant
UINT uabs( INT i );
```

Compliant Solution

```
typedef unsigned int UINT;
typedef int INT;
UINT uabs( INT i );
```

or

```
using UINT = unsigned int;
using INT = int;
UINT uabs( INT i );
```

See

- CERT, PRE03-C. - Prefer typedefs to defines for encoding non-pointer types

Available In:

sonarlint | sonarcloud | sonarqube Developer Edition

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