

C

printf format check

```
extern int my_printf (void *my_object, const char *my_format, ...)
__attribute__((format (printf, 2, 3)));
```

volatile

- **volatile uint8_t *foo;** - tells the compiler the memory being pointed to is volatile
 - **uint8_t volatile * p_ledreg = 0x10000000;** - In the above code, the variable p_ledreg is a pointer to a volatile 8-bit unsigned register located at address 0x10000000.
- **uint8_t * volatile foo;** - mark the pointer itself as volatile

compile time asserts

- Can be used in local block without compiler warning:
- Cannot be used outside functions (i.e. header)

```
#define COMPILE_TIME_ASSERT(pred)    switch(0){case 0:case pred:;}    //
NOLINT
```

- can be used in headers
- compiler show warnings if used locally (typedef not used)

```
#ifndef CTASSERT
#define CTASSERT(x)                /* Allow lint to override */
#define CTASSERT(x)                _CTASSERT(x, __LINE__)
#define _CTASSERT(x, y)            _CTASSERT(x, y)
#define __CTASSERT(x, y)            typedef char __assert ## y[(x) ? 1 : -1]
#endif
```

MAX_VALUE

```
#define IS_TYPE_SIGNED(a) ((a-1) < 0)
#define MAX_VALUE_UNSIGNED(a) (((unsigned long long)1 << \
    (sizeof(a) * CHAR_BIT)) - 1)
#define MAX_VALUE_SIGNED(a) (MAX_VALUE_UNSIGNED(a) >> 1)
#define MAX_VALUE(a) (IS_TYPE_SIGNED(a) ? \
    MAX_VALUE_SIGNED(a) : MAX_VALUE_UNSIGNED(a))
```

sizeof

```
#define member_size(type, member) sizeof(((type *)0)->member)
```

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