

C Coding Guidelines

Variables

Local: *{name_of_var}*

Global: *g_{detailed_name_of_var}*

```
int i;
extern int g_alien_cnt;
```

Functions

Names

{libLabel}_{object}_{action_or_verb} or *{libLabel}_{action_or_verb}_{object}*

```
sfSyl_welcome_txt_print ();
sfSyl_print_welcome_txt ();
```

Definitions

[attributes]{type}
{function_name}({args})
{
/*...*/
}

```
noreturn void
usage( int status )
{
    /*...*/
    exit( status );
}
```

- Rationale: easier to `grep` ("^func_name")

Pointers

*{type} *{var}*

```
int *var1, *var2;    /* 2 pointers */
int *var1, var2;     /* 1 pointer, 1 int ! */
```

Typedefs

[libLabel_] {name}_t

```
superint_t i;
sfs_superint_t j;
```

Structures

{name_of_struct}_s, {name_of_struct_var}

```
datstruct_s this_is_a_struct;
```

Enums

```
{name_of_enum}_e, {ENUM_CONST}, {name_of_enum_var}  
  
enum mood_e { TAKE_IT, GIVE_IT, KEEP_IT } my_mood;
```

Gotos

```
[GT_]{ThisPart} or [GT_]{this_part}  
  
EmergencyClosure:  
GT_EmergencyClosure:  
GT_emergency_closure:
```

Define

```
[TYPE_]{NAME_OF_DEF}  
  
#define ALIENS_ON_PLANET_CNT    1234
```

Macros

```
[M_]{OBJECT}_{VERB} or [M_]{VERB}_{OBJECT}  
  
#define ALIENS_ON_PLANET_LOCATE ()  
#define M_ALIENS_ON_PLANET_LOCATE ()  
#define LOCATE_ALIENS_ON_PLANET ()
```

Header guards

```
{NAME_OF_HEADER}_H  
  
#ifndef MY_COOL_LIB_H  
#define MY_COOL_LIB_H  
/*...*/  
#endif
```

- Rationale: _- and __-starting header guards are used by standard library headers

Parenthesis / braces

```
{func}({args});  
  
printf( "spaces btwn args and parenthesis : %d", true_dat );  
  
{statement} ({condition}) {  
/*...*/  
}  
  
if (true_dat == 1) {  
    /*...*/  
} else {  
    /*...*/  
}
```

Code example

```
#ifndef THAT_GUARD_THOUGH_H
#define THAT_GUARD_THOUGH_H

#include "myheader.h"

#include <header1.h>
#include <header2.h>

#define STR_SIZE_OF_PLANET "BIG"

noreturn void
f_datFunc( void )
{
    unsigned int aliens_cnt = 100;
    int happn = 0;

    printf( "This planet is %s.\n", STR_SIZE_OF_PLANET );
    if (aliens_cnt > 50) {
        puts( "it's happening" );
        happn = 1;
    } else if (aliens_cnt > 0) {
        puts( "we still have time" );
        happn = 0;
    } else { puts( "ERROR" ); goto GT_Habbening; }

    switch (happn) {
    case 0:
        return( EXIT_SUCCESS );
    default:
    GT_Habbening:
        return( EXIT_FAILURE );
    }
}

#endif      /* ndef THAT_GUARD_THOUGH_H */
```

General advices

- *snake_case*: easier to type, harder to read
 - Though: some of the best ever written softwares were made in *snake_case*
- *camelCase*: harder to type, easier to read
 - Microsoft uses it, so...
- Dividing the code in functions increase its comprehension and readability.
- Code must not be generic, but very specific to what exactly you're doing.
- Code for debug purpose must be removed from the final form of the code.
- Always use header guards in header files.
- Put braces even on one-line statements.

Formatting your code using *sindent*

sindent, my own taste of GNU *indent*, format your code according to the Linux kernel coding style (`-linux`) plus the one option it's missing (`-ps1`), which allows for easier **grep**-ing of function definitions.

References/resources

- *Linux Kernel Coding style*: <https://www.kernel.org/doc/html/v4.10/process/coding-style.html>
 - *Notes on Programming in C*, Rob Pike: <https://www.lysator.liu.se/c/pikestyle.html>
 - *C Header File Guidelines*, David Kieras, University of Michigan: <http://umich.edu/~eecs381/handouts/CHeaderFileGuidelines.pdf>
 - *JPL Coding Standard C*, Jet Propulsion Laboratory, NASA: https://lars-lab.jpl.nasa.gov/JPL_Coding_Standard_C.pdf
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Project Hierarchy Standard

Tree

```
[PROJECT DIRECTORY]/
|-- bin
|   |-- data -> ../data
|   |-- Project
|   |-- Project.exe
|   +-- log.Project
|-- data
|   |-- images
|   +-- ...
|-- etc
|   +-- conf.project
|-- lib32
|   |-- libcsfml-audio.dll
|   +-- ...
|-- lib64
|   |-- libcsfml-audio.so.1.6
|   +-- ...
|-- man
|   +-- project.6
|-- readme.d
|   |-- AUTHORS.txt
|   |-- LICENSE.SFML.txt
|   |-- LICENSE.txt
|   |-- changelog
|   +-- copyright
|-- src
|   |-- font
|   |   +-- usedGPLFont.zip
|   |-- inc
|   |   +-- SFML
|   |       |-- Audio
|   |           |-- AudioResource.hpp
|   |           |-- Types.h
|   |       +-- ...
```

[illegible]

Directories

[Name]	[Content]
./	Regular README files and possibly other (few) things
./bin	Binairies ; where the program is built
./data	Project data (images, sounds, fonts, etc...)
./etc	Configuration files
./lib32	32-bit libraries (*.lib, *.so, *.a, *.dll)
./lib64	64-bit libraries (*.lib, *.so, *.a, *.dll)
./man	Linux manual pages
./readme.d	Remaining licensing information and other informative text files (not mandatory)
./src	Source files
./src/inc	Included external headers
./wip	“ W ork I n P rogress” material

Releasing

When releasing the project to a wider audience, it's necessary to remove useless files and directory such as:

- ./wip