

# 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_Habbenning; }

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

#endif      /* ndef _THAT_GUARD_THOUGH_ */

```

## 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](https://lars-lab.jpl.nasa.gov/JPL_Coding_Standard_C.pdf)
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## Project tree

### 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
```

```

| | +-- usedGLFont.zip
| | -- inc
| | +-- SFML
| | | -- Audio
| | | | -- AudioResource.hpp
| | | | -- Types.h
| | | +-- ...
| | | -- Graphics
| | | +-- ...
| | +-- ...
| | -- Makefile
| | -- libsfsys.c
| | -- libsfsys.h
| | -- project.c
| | -- project.h
| | -- mod.c
| | -- mod.h
| | -- utils.c
| | +-- utils.h
|-- wip
| | -- DevLog
| | | -- Screenshot - 12142013 - 02:44:22 PM.png
| | +-- ...
| | -- datMusicParts
| | +-- ...
| +-- ...
|-- NOTES
|-- README
+-- TODO

```

## Directories

[Name]	[Content]
./	Regular README files and possibly other (few) things
./bin	Binaries ; 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

[Name]	[Content]
./wip	“ <b>W</b> ork <b>I</b> n <b>P</b> rogress” material

## Releasing

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

\* ./wip