

# 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
```

## Macro (DEFINES)

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

## Macro (header guards)

```
{NAME_OF_HEADER}_H  
MY_COOL_LIB_H
```

- 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      /* undef _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...
- 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.

## Linux kernel coding style

GNU `indent` now has an option to format your code according to the Linux kernel coding style: `indent -linux [file]`. Doc: <https://www.kernel.org/doc/html/v4.10/process/coding-style.html>

## References/resources

- *Notes on Programming in C*, Rob Pike
  - *C Header File Guidelines*, David Kieras, University of Michigan
- 

## 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
|   |   +-- usedGPLFont.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
./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
```