**Sprints**

**Coding Guidelines**

**Version 1.1**

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# Version History

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| --- | --- | --- |
| Version 1.0 | Initial Draft | 1/11/2019 |
| Version 1.1 | Added 3.13 , 3.14 and Ex in 3.7 | 8/12/2019 |

## Coding Rules

## Code Line Width:

The code line have to between 80 to 120 character to fit to any type of screen.

## Multiple Inclusion Protection

All the include files MUST have a header protection using the same name of the file but CAP latter with \_ between the words and two \_ in the before and after the name.

Ex: BCM\_PbCfg.h should have

#ifdef \_\_BCM\_PBCFG\_\_

#define \_\_BCM\_PBCFG\_\_

/\*Your code \*/

#endif

## [Signed Operations and Mathematical](#_Toc477365546)

Don’t use shifting operation with the sign variables, also don’t expect the ordering of the operation always use the Braces ().

## Pointer Basic Rule

Always check the pointer before using it.

If (ptr != NULL\_PTR)

{

\*Ptr = 5 ;

}

## Local Variable:

Name should be unique in the function and not the same as to any global.

Use the same examples below but remove **g** Ex: au8\_BcmCounter.

## Global Variable

Naming should be unique and prefer to be descriptive as his scope, type and functionality

Ex1, gpstr\_BcmJobBuffer : when I see it I will know this’s global pointer struct for bcm job buffer.

Ex2, gau8\_BcmConfig : global array uint8

Ex3, gu8\_BcmTxStatus, gb\_Bcm, gstr\_BcmTxBuffer and so on

## Type Definition

Each type define should ended by \_t .

* Don’t use the native data type like int always re type them under compiler.h

Typedef unsigned short uint16\_t;

* When define a complex datatype always define as strName\_t, enuName\_t, uniName\_t.
* You can use gstrName\_t if this’s a global struct (user can use it), if not just keep it strName\_t also for enum and union.
* If you need to define pointer datatype use ptrName\_t/gptrName\_t.

NOTE: for the module typedef use the module name after the type like gstrBcmConfig\_t

Ex: typedef struct {

}strBcmConfig\_t;

strBcmConfig\_t gstr\_BcmConfig;

## Inclusion Sequence

Standard include should done first then other module in sequence from MCAL to APP.

## Inclusions General Rule

* Don’t define any variable inside the header file.
* Don’t include any .c file.

## Code Template

You files should be structured as follows:

* Any “.h” file should be partitioned and ordered into the following sections:

|  |
| --- |
| #ifndef \_\_BCM\_H\_\_  #define \_\_BCM\_H\_\_  /\*- INCLUDES -----------------------------------------------\*/  /\*- CONSTANTS ----------------------------------------------\*/  /\*- PRIMITIVE TYPES ----------------------------------------\*/  /\*- ENUMS --------------------------------------------------\*/  /\*- STRUCTS AND UNIONS -------------------------------------\*/  /\*- FUNCTION-LIKE MACROS -----------------------------------\*/  /\*- FUNCTION DECLARATIONS ----------------------------------\*/  #endif /\*BCM.h\*/ |

|  |
| --- |
| /\*- INCLUDES ----------------------------------------------\*/  /\*- LOCAL MACROS ------------------------------------------\*/  /\*- LOCAL Dataypes ----------------------------------------\*/  /\*- LOCAL FUNCTIONS PROTOTYPES ----------------------------\*/  /\*- GLOBAL STATIC VARIABLES -------------------------------\*/  /\*- GLOBAL EXTERN VARIABLES -------------------------------\*/  /\*- LOCAL FUNCTIONS IMPLEMENTATION ------------------------\*/  /\*- APIs IMPLEMENTATION -----------------------------------\*/ |

* Any “.c” file should be partitioned and ordered into the following sections:

## Error Handling

* Each module should have list of errors which are declared already in the file “module \_retval.h”.
* This file, “module \_retval.h”, should be included in the final file “module.h” of the module.
* Errors should be formatted as the following example:

|  |
| --- |
| /\*\*  \* @brief: This return value indicate that the function could  \* run successfully and it returns no errors.  \*/  #define BCM\_SUCCESS ( 0 )  /\*\*  \* @brief: This return value indicate that the selected resource  \* not found in the platform.  \*/  #define BCM\_ERROR\_RESOURCE\_NOT\_FOUND ( -1 )  /\*\*  \* @brief: This return value indicate that the function tries  \* to use an uninitialized module.  \*/  #define BCM\_ERROR\_NOT\_INITIALIZED ( -2 ) |

## Explicit Casting is Mandatory

In assignment or mathematical formula use explicit casting with the constants to ensure they are stored in the correct format, giving the correct result.

## ENUM and #define naming convention

General rule to know that name is just define or label in ENUM,

You have to name it in CAP letters with \_ to between the words.

Ex: BCM\_IDLE\_MODE

## TAB and Spaces usage

Don’t ever never use TAB always use three spaces, you can setup this in your editor.

## Files naming and Folder Structure

SprintW4

* App
  + Project1
    - App.c
  + Project2
    - App.c
  + And so on ….
* Firmware
  + BCM
    - Bcm.c
    - Bcm.h
    - Bcm\_PbCfg.h
    - Bcm\_PbCfg.c
  + TMU
    - Tmu.c
    - Tmu.h
    - Tmu\_Lcfg.c
    - Tmu\_Lcfg.h
    - Tmu\_Cfg.h
  + And so on ….
* Mcal
  + Timer
    - Timer.c
    - Timer.h
  + Uart
    - Uart.c
    - Uart.h
  + And so on ….
* Infrastructure
  + Compiler.h
  + Retval.h

And so on ….

## Code commenting and Doxgen Format