Detailed Design of Button Driver

Team X

Contents

Introduction and functional overview:

This document specifies detailed design of the module Button Driver.

The Button driver provides services for configuration, initializing the Button, reads the value on the button's pin, and sets the state pull-up for the button.

The behavior of those services is synchronous.
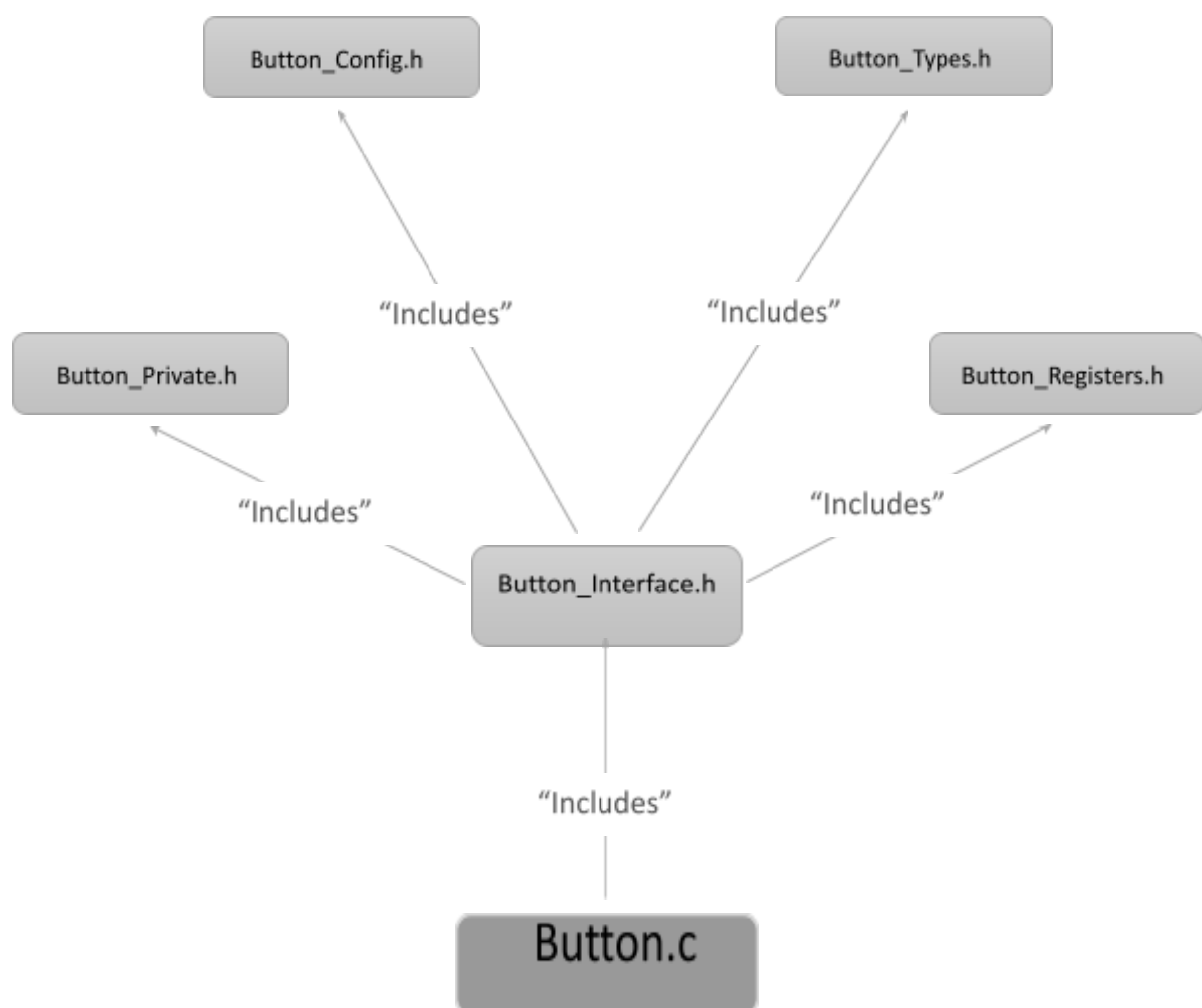
Dependencies to other modules:

DIO driver module
Button ports and pins are initialized and written on using the DIO driver module.

File structure:

The Button module shall comply with the following file structure:

Requirements traceability:

Requirement	Description	Satisfied by
[SRS_Button_211]	The Button Driver shall support symbolic names for Button pin.	[DD_Button_211] [DD_Button_212] [DD_Button_213]
[SRS_Button_212]	The Button driver shall provide a service that initializes the Button	[DD_Buttom_214]
[SRS_Button_213]	The Button driver shall provide a service that reads the value of the button pin.	[DD_Button_215]
[SRS_Button_215]	The Button driver shall provide a service that makes the button pull up which button"s pin will be input and high.	[DD_Button_216]

API specification:

Imported types:

1- [DD_Button_211]

Module	Imported Type
DIO module: **DIO_Types.h**	E_DioPort E_dioPin

Type definitions:

1- [DD_Button_212]

Name:	Button_pin
Type	E_DioPin
Range:	0…<number of pins>
Description:	Button pin number
Covered requirements:	[SRS_Button_211]

2- [DD_Button_213]

Name:	Button_port
Type	E_DioPort
Range:	0…<number of ports>
Description:	Port ID that contains Button pin
Covered requirements:	[SRS_Button_211]

Function definitions:

1- [DD_Button_214]

Service name:	Button initialization
Syntax:	E_ErrorType HAL_BUTTON_init( )
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	none
Parameters (out):	none
Parameters (inout):	none
Return type:	E_ErrorType
Description:	Function that initializes the button
Covered requirements:	[SRS_button_212]

2- [DD_Button_215]

Service name:	Read the button's pin
Syntax:	E_ErrorType HAL_BUTTON_read(u8PinValue *btn_state)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	*btn_state .. takes the value of the pin
Parameters (out):	none
Parameters (inout):	none
Return type:	E_ErrorType
Description:	Function that reads the value of the button pin.
Covered requirements:	[SRS_button_213]

3- [DD_Button_216]

Service name:	Pull up the button
Syntax:	E_ErrorType HAL_BUTTON_set_pullup()
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	none
Parameters (out):	none
Parameters (inout):	none
Return type:	E_ErrorType
Description:	Function that makes the button state as pull up
Covered requirements:	[SRS_Button_214]