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\* STM32F4xx.h

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\* Created on: Mar 5, 2021

\* Author: 99003772

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\* stm32f4xx\_gpio\_driver.h

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\* Created on: Mar 5, 2021

\* Author: 99003731

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**#ifndef** INC\_STM32F4XX\_GPIO\_DRIVER\_H\_

**#define** INC\_STM32F4XX\_GPIO\_DRIVER\_H\_

**#include**"STM32F4xx.h"

//Creating structure for GPIO pin configuration

**typedef** **struct**

{

uint8\_t GPIO\_pin\_number;

uint8\_t GPIO\_pin\_mode;

uint8\_t GPIO\_speed;

uint8\_t GPIO\_otype;//output type

uint8\_t GPIO\_pupd;//pull-up pull-down

uint8\_t GPIO\_altfn;//alternate functions

}GPIO\_PinConfig;

//creating handle structure

**typedef** **struct**

{

GPIO\_RegDef \*pGPIOx;//declared a pointer variable of GPIO\_RegDef type for selecting the port

GPIO\_PinConfig pin\_config;// declaring the variable for pin configuration

}GPIO\_Handle;

//Creating API prototype

//I. peripheral clock enable or disable

**void** **GPIO\_PeripheralClK**(GPIO\_RegDef \*pGPIOx,uint8\_t EnorDI);//EnorDI is enable or disable

//II. Init and DeInit

**void** **GPIO\_Init**(GPIO\_Handle GPIOx);

**void** **GPIO\_DeInit**(GPIO\_Handle \*pGPIOx);

//III. Read/Write to/from port/pin

uint16\_t **GPIO\_Read\_from\_port**(GPIO\_RegDef \*pGPIOx);

uint8\_t **GPIO\_Read\_from\_pin**(GPIO\_RegDef \*pGPIOx,uint8\_t GPIO\_pin\_number);

**void** **GPIO\_Write\_to\_port**(GPIO\_RegDef \*pGPIOx,uint16\_t value);

**void** **GPIO\_Write\_to\_pin**(GPIO\_RegDef \*pGPIOx,uint8\_t GPIO\_pin\_number,uint16\_t value);

//IV. Toggle

**void** **GPIO\_toggle**(GPIO\_RegDef \*pGPIOx,uint8\_t GPIO\_pin\_number);

//Defining macros for pin number

**#define** GPIO\_Pin\_num\_0 0

**#define** GPIO\_Pin\_num\_1 1

**#define** GPIO\_Pin\_num\_2 2

**#define** GPIO\_Pin\_num\_3 3

**#define** GPIO\_Pin\_num\_4 4

**#define** GPIO\_Pin\_num\_5 5

**#define** GPIO\_Pin\_num\_6 6

**#define** GPIO\_Pin\_num\_7 7

**#define** GPIO\_Pin\_num\_8 8

**#define** GPIO\_Pin\_num\_9 9

**#define** GPIO\_Pin\_num\_10 10

**#define** GPIO\_Pin\_num\_11 11

**#define** GPIO\_Pin\_num\_12 12

**#define** GPIO\_Pin\_num\_13 13

**#define** GPIO\_Pin\_num\_14 14

**#define** GPIO\_Pin\_num\_15 15

//Defining macros for pin mode

**#define** GPIO\_pin\_mode\_in 0

**#define** GPIO\_pin\_mode\_out 1

**#define** GPIO\_pin\_mode\_altfn 2

**#define** GPIO\_pin\_mode\_analog 3

//Defining macros for GPIO speed

**#define** GPIO\_speed\_low 0

**#define** GPIO\_speed\_med 1

**#define** GPIO\_speed\_fast 2

**#define** GPIO\_speed\_high 3

//Defining macros for GPIO OTYPE

**#define** GPIO\_otype\_pp 0

**#define** GPIO\_otype\_od 1

//Defining macros for GPIO PUPD

**#define** GPIO\_pupd\_no 0

**#define** GPIO\_pupd\_pu 1

**#define** GPIO\_pupd\_pd 2

//Defining macros for alternate functions

**#define** GPIO\_Altfn\_0 0

**#define** GPIO\_Altfn\_1 1

**#define** GPIO\_Altfn\_2 2

**#define** GPIO\_Altfn\_3 3

**#define** GPIO\_Altfn\_4 4

**#define** GPIO\_Altfn\_5 5

**#define** GPIO\_Altfn\_6 6

**#define** GPIO\_Altfn\_7 7

**#define** GPIO\_Altfn\_8 8

**#define** GPIO\_Altfn\_9 9

**#define** GPIO\_Altfn\_10 10

**#define** GPIO\_Altfn\_11 11

**#define** GPIO\_Altfn\_12 12

**#define** GPIO\_Altfn\_13 13

**#define** GPIO\_Altfn\_14 14

**#define** GPIO\_Altfn\_15 15

**#endif** /\* INC\_STM32F4XX\_GPIO\_DRIVER\_H\_ \*/