



Microcontroller Course

Assignment 2

Deadline : 1403/09/18

Objective:

Develop a GPIO library for the STM32F103C8 microcontroller at the register level. The library should allow users to configure GPIO pins as inputs or outputs using a function. The configuration should be based on parameters such as the pin number and mode (input/output). Enumerations (enums) should be used for better readability and usability.

Tasks:

Step 1: Understand GPIO Configuration

1. Refer to the STM32F103C8 reference manual to understand GPIO registers:
 - GPIO Mode Register (GPIOx_CRL and GPIOx_CRH for pins 0-7 and 8-15 respectively).
 - GPIO Input Data Register (GPIOx_IDR).
 - GPIO Output Data Register (GPIOx_ODR).
2. Understand pin modes:
 - Input (Floating, Pull-Up/Pull-Down, Analog).
 - Output (Push-Pull, Open-Drain, Speed).

Step 2: Create a Header File (yourlib.h)

- Define an enum for pin modes.
- Define an enum for GPIO pins.
- Declare a function prototype.

Step 3: Implement the Source File (yourlib.c)

- Implement your function.

Homework Deliverables

- Code Files:

yourlib.h: Contains enums and function prototypes.

yourlib.c: Contains the implementation of your function.

- Documentation:

A brief explanation of how the function works.

Submission

- Submit the project folder containing:
 - Header and source files.
 - A main file (main.c) demonstrating the usage of your library.
 - A report explaining the implementation.

Good luck! 😊