



# Lab1: Survey on MCU components which includes (i) GPIO port and registers and (ii) Write program to use GPIO for general purpose I/O (Sunday 23 Online class)

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Mosaddek Hossain Kamal • Jan 22 (Edited Jan 30)

100 points

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## **STM32F446xx Bus Matrix (page 16 of 198 Datasheet)**

The student must understand and prepare a report on Registers related to GPIO.

(i) GPIO Port and related pins (build a table in the report) using datasheet

Understand functions and role of the related GPIOx registers (Get it from Reference Manual)

(ii) To enable GPIO clock (RCC AHB1 Enable Register) (iii) Mode Register (iv) Output type and register (a) Push-pull (b) Open Drain (v) Speed Register (vi) Pull-up/Pull-down-Resistor (vii) GPIO port set and Reset register (viii) Alternate function and Alternate Function register

Programming GPIO pin

(i) Program two GPIO pins for input

(ii) Program four GPIO pins for output (use 4 LED)

Demonstration Required:

(a) Based on the input combination, the one output pin must be activated (two input- four output) truth table.

(b) Program two groups of 4-input for two 4-bit integers. Sum/multiply the two input 4-bit integer values and output by lighting 8-LED for the result.