

LAB # 4**INTERFACING DIP SWITCHES AND LEDSs TO THE PIC18F4321 USING PIC18F ASSEMBLY AND PROGRAMMED I/O**

1. Title: Interfacing DIP switches and LEDs with the PIC18F4321 via its I/O ports.

2. Objective:

The purpose of this lab is to perform simple I/O experiment by interfacing DIP switches and LEDs to the PIC18F4321 using Microchip's MPLAB™ assembler and PICKit3™.

3. Prelab:

The PIC18F4321 microcontroller is required to drive the LEDs connected to bit 0 of ports C and D based on the input conditions set by switches connected to bit 1 of ports C and D. The I/O conditions are as follows:

-If the input at bit 1 of port C is HIGH and the input at bit 1 of port D is LOW, the LED at port C will be OFF and the LED at port D will be ON.

-If the input at bit 1 of port C is LOW and the input at bit 1 of port D is HIGH, the LED at port C will be ON and the LED at port D will be OFF.

-If the inputs of both ports C and D are HIGH, both LEDs of ports C and D will be OFF.

-If the inputs of both ports C and D are LOW, both LEDs of ports C and D will be ON.

Write a PIC18F assembly language program to accomplish this.

4. Equipment, Software, and Components required:

-Microchip's MPLAB assembler /Debugger

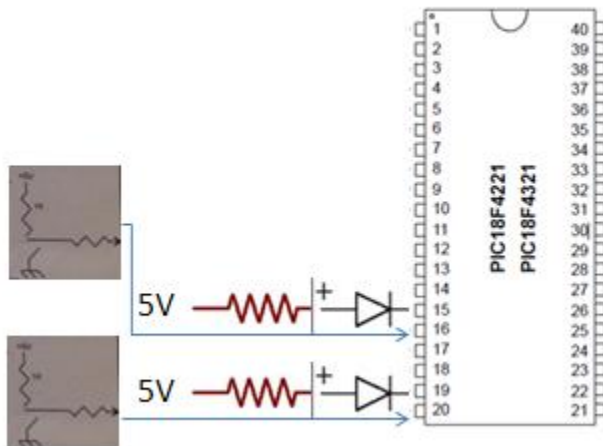
Parts List:

- PICKit3 and the PIC18F4321 chip from Microchip
- DIP Switches, LEDs, and a push button
- Resistors
- Breadboard
- Wires and Clip leads
- Power Supply

5. Description (corresponding topics covered in the textbook):

Implement a PIC18F4321-based stand-alone by interfacing DIP switches and LEDs to using the PICKit3 and the MPLAB software. (Sections 8.1, 8.2.1, 8.2.2, 8.2.4, 8.2.5, Examples 8.1 and 8.2 on Pages 217-218)

Schematic:



6. Prerequisites:

Sections 8.1, 8.2

7. Procedure:

- i) Assemble the PIC18F assembly language program using the MPLAB.
- ii) Download the assembled program into the PIC18F4321 on the breadboard from your Personal Computer or Laptop using the PICKit3™ and MPLAB following the steps provided in Appendix H of the book.
- iii) Use the default clock of the PIC18F4321 and connect the appropriate RESET circuit to the PIC18F4321 $\overline{\text{MCLR}}$ pin.

- iv) Connect the DIP switches and LEDs to ports C and D, and demonstrate the lab as a PIC18F4321-based stand-alone system.

8. Deliverables:

- i) **Postlab**

Write a C language program for the Pralab.

- ii) **Lab report**

- Submit a final Lab report (Staple Signed prelab, postlab, and the schematic using Word, p-spice, Wordpro or other software tools, at the end of the quarter or semester).

8. Concluding remarks:

- Complete each prelab before coming to the lab. Please get it signed.