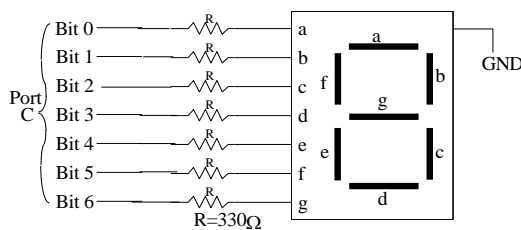


LAB # 6**INTERFACING DIP SWITCHES AND A SEVEN-SEGMENT DISPLAY TO THE PIC18F4321 USING C AND PROGRAMMED I/O**

- Title:** Design and implement hardware and software (C-program) for adding two 3-bit numbers entered via DIP Switches and display the result (0-9) on a Seven-Segment Display.
- Objective:**
The purpose of this lab is to build hardware and write a C-program for displaying the addition result (0-9) of two 3-bit numbers on a common cathode seven-segment display based on inputs from DIP switches.
- Prelab:**



The PIC18F4321 microcontroller is required to add two 3-bit numbers entered via DIP switches connected at port D of the PIC18F4321, and output the sum (not to exceed 9) to a common-cathode seven-segment display connected at port C as shown in the above figure. Assume that the first 3-bit number and the second 3-bit number are entered via six DIP switches connected at bits 0-3 and bits 4-6 of Port D. Write a C language program to accomplish this.

- Equipment, Software, and Components required:**

-Microchip's MPLAB C18 Compiler /Debugger

-Parts List

- PICKit3 and PIC18F4321 chip from Microchip
- DIP Switches, Seven-segment Display, and a push button
- Breadboard
- Resistors
- Power Supply

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

Section 8.2.4 (Pages 215-216), Example 8.6 (Pages 225-226), Appendix G, Appendix H)

6. Prerequisites:

Sections 8.1, 8.2

7. Procedure:

-Compile the C language program using the MPLAB.

-Download the compiled 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.

-Use the default clock of the PIC18F4321 and connect the appropriate RESET circuit to the PIC18F4321 $\overline{\text{MCLR}}$ pin.

-Connect the DIP switches to port D and the seven-segment display to port C, and demonstrate the lab as a PIC18F4321-based stand-alone system.

8. Deliverables:

i) Postlab

Write a PIC18F assembly language program to write the program for the Prelab.

ii) Lab report

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

9. Concluding remarks:

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