ECE 3301L **CAL POLY POMONA**

ECE Department

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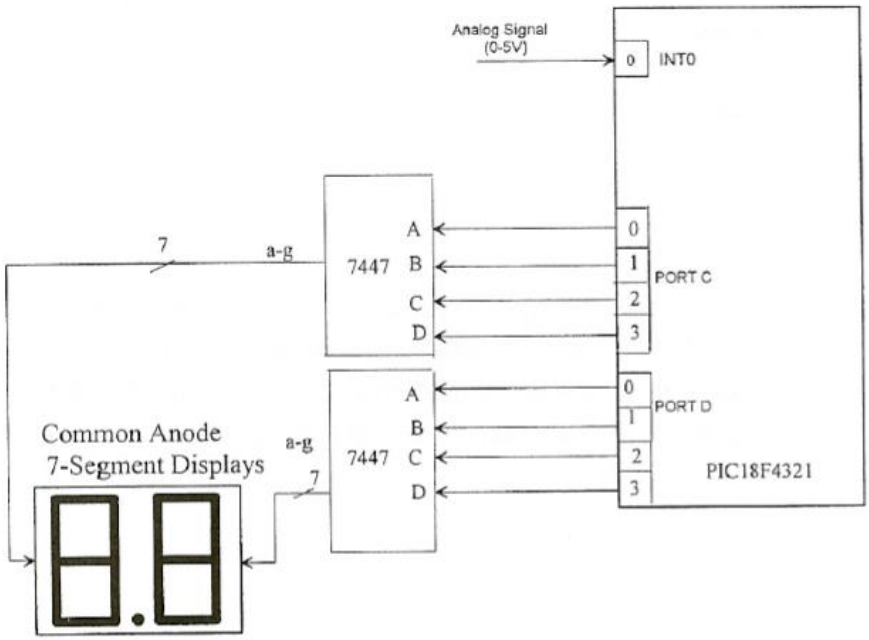
use ADC Module

LAB # 9

PIC18F4321-BASED DIGITAL VOLTMETER USING C

1. **Title:** PIC18F4321-based Digital Voltmeter
2. **Objective:** The purpose of this lab is to design and build a PIC4321-based digital voltmeter using interrupt I/O.
3. **Prelab:**



In the above figure, the PIC18F4321 microcontroller is used to implement a voltmeter to measure voltage in the range 0 to 5 V and display the result in two decimal digits: one integer part and one fractional part. Use default interrupt upon power-on reset with 0x000008 as the interrupt address vector.

Write a C Language program using polled I/O to accomplish this.

interrupt

4. **Equipment, Software, and Components required:**

   -Microchip's MPLAB assembler /Debugger

-Parts List:

- PICKit3 and PIC18F4321 chip from Microchip
- Push button and Seven-segment Displays
- Breadboard and 7447 Decoders
- Resistors
- Power Supply
- Wires and Clip leads

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

   Example 10.12 on pages 309-315

6. **Prerequisites:**

   Section 10.2 on Pages 301-309

7. **Procedure:**

   -Assemble the PIC18F assembly language programs using the MPLAB.

   -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.

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

   -Connect the hardware to the PIC18F4321 , and demonstrate the lab as a PIC18F4321-based stand-alone system.

8. **Deliverables:**

   i) Postlab

ii) Write a PIC18F assembly language program at address 0x200 to accomplish the prelab.

ii) **Lab report**

- Submit a final Lab report (Staple Signed prelabs, typed postlabs, programs and schematics using p-spice, wordpro or other software tools, at the end of the quarter).

8. Concluding remarks:

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