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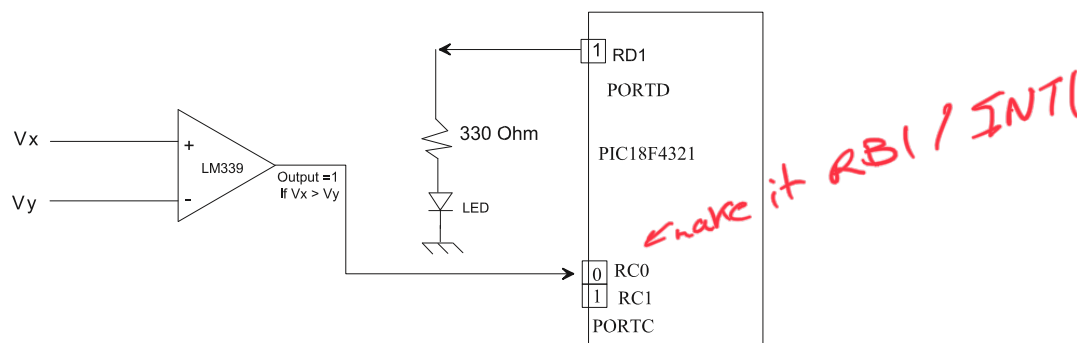
LAB # 7

PIC18F CONDITIONAL I/O (POLLED I/O) USING ASSEMBLY AND C

1. Title: PIC18F4321 Conditional I/O (Polled I/O) using PIC18F assembly and C

2. Objective: The purpose of this lab is to illustrate the concept of PIC18F4321 conditional or polled I/O.

3. Prelab:

In the above figure , the PIC18F4321 is required to turn on an LED connected to bit 1 of PORTD if the comparator voltage $V_x > V_y$; otherwise, the LED will be turned off. Write a PIC18F assembly language program at address 0x200 to accomplish this using:

      (a) Conditional or Polled I/O   *← Assembly*
      (b) Repeat (a) using C   *← C   Then use interrupt to do the same*

4. Equipment, Software, and Components required:
-Microchip's MPLAB assembler/debugger and C compiler
-Parts' List

a) PicKit3 and PIC18F4321 from Microchip
b) Breadboard
c) Resistor (330 ohm) and LED
d) Resistors (1K and 10K), and Push button for RESET circuit
e) LM339 Comparator
f) Power Supply
g) Wires and Clip leads

5. Description (corresponding topics covered in the textbook):
Example 9.1, Appendix F, Appendix H
6. Prerequisites:
Sections 9.1
7. Procedure:

-Assemble the PIC18F assembly language program and compile the C-program using the MPLAB.

-Download the assembled or 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 hardware and demonstrate the lab as a PIC18F4321-based stand-alone system.

8. Deliverables:

Postlab:
-What are the basic differences between conditional I/O and interrupt I/O?
-Summarize the basic differences between PIC18F external and internal interrupts.
Lab report:
-Submit a lab report (Stapled signed prelab, typed postlab) at the end of the quarter or semester.

9. Concluding remarks:
-Complete the prelab before coming to the lab, and get it signed by the instructor.