CPE 301 - MICROPROCESSOR SYETEM DESIGN
Fall 2019

HOMEWORK No. 9 - **DUE BEFORE 11:59 pm, November 22**

Description of Purpose

The purpose of this assignment is to teach us about interrupts in conjunction with the Arduino board. In addition, this assignment is helping us learn about interrupts for possible future labs in which we might have to design. Overall, this assignment is a build off on the timer's lab we did earlier this year

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Read Chapter 9 in the textbook

1. What is the purpose of an interrupt?

2. Describe the flow of events when an interrupt occurs.

3. Describe the interrupt features available with the Atmega328P.

4. What is interrupt priority? How is it determined?

5. What steps are required by the system designer to properly configure an interrupt?

6. How is the interrupt system turned "on" and "off"?

7. Write a program to set up timer1 using NORMAL mode so that it generates an interrupt in exactly 1/8 of asecond. Write an interrupt service routine (ISR), triggered by the timer interrupt TOV1 that stops, resets, and restarts the timer and toggles the Arduino Mega LED each time it is called. This will produce a light that blinks 4 times/sec.

8. Change your first program and ISR (in 7.) so that the timer now generates an interrupt in 1/100,000 of a

second. You won't be able to see the light switching of course, but using the oscilloscope, measure the signal frequency and pulse width to determine how accurately the microcontroller can perform this task.