CPE 301 - EMBEDDED SYSTEMS DESIGN
Fall 2019

HOMEWORK No. 8 - **DUE BEFORE 11:59 pm, November 15**

Review HW07 for seven segment details

Description of Purpose

The purpose of this assignment is to help us review for seven segment displays from our previous lab. In addition, this assignment is an intro to our next lab in which we will be reading analog data and convert it to digital data that our devices can read. Overall, this assignment branches off from our previous assignment which is a build of our knowledge of the Arduino board.

Read Chapter 8 in the textbook

Answer Question 8.1 - Explain how you determined the register values.

Write the function requested in Question 8.2

Write the program requested in Question 8.4

NOTE: My interpretation of the 7 segment display changes which are requested in 8.4 is: a) pick some pattern of segments (for example 0 through F) and b) cycle through these patterns and as the analog voltage-in increases cycle faster and faster (or slower and slower) - your choice.

A more simple sequence might be to cycle through the 7 segments one at a time. In fact, almost any sequence you can think up is OK.

Then in preparation for Lab 8 do the following:

1. Read chapter 8 of the textbook and browse section 26 of the Atmel 2560's datasheet, paying extra attention to sections 26.2, 26.3, 26.4, and 26.8. 2. Write two ANSI C functions:

   1. void adc_init( ) – Initializes the Analog to Digital Converter to be ready to read analog data.

   2. unsigned int adc read(unsigned char adc channel) – Returns the analog data read from the analog channel given as a parameter.