CEG4330 HW#2 Fall 2019

DUE

: November 15 (Friday)

Unlike lab projects, all HW assignments should be done individually. Discussion

with friends should be limited to clarification of problems and approaches. Sharing

or copying of the solutions will be treated as academic dishonesty.

In a system that contains an Arduino UNO board and a TI MSP432 board, a long

string of data will be sent from the UNO to the MSP via SPI.

1.

(20%) Draw a diagram that shows one possible pin connection between the two

boards. For each needed pin for the connection, identify its pin number on both

boards and label it in a way so that its purpose is clear. Use only pins that are

readily accessible with the existing headers.

A screenshot of a cell phone

Description automatically generated

2.

(40%) For each board, identify the SPI register(s) that need to be configured for

SPI to work between those two boards. What is the highest data rate that can be

achieved? Why?

*For the Arduino, the SPCR register will need to be configured to set SPI master mode and clock rate, and the DDRA register configured to set pins 4 and 5 to output and pins 2 and 3 to input. For the TI MSP, the UCA1CTLW0 register will need to be configured to set SPI mode to 4-pin.*

3.

(40%) Identify the values that need to be written to the previously mentioned SPI

register(s) of each board. Suitable comments should be provided. No coding is

necessary.

*DDRA should have a 1 written to bits 4 and 5 to set those pins as output, and a 0 written to bits 2 and 3 to set those pins as input.*

*SPCR should have a 1 written to bit 6 to enable SPI, a 1 written to bit 4 to set the Arduino as master, and a 0 written to bits 0 and 1 to set clock rate to fosc/2.*

*UCA1CTLW0 should have a 1 written to bit 9 and 0 written to bit 10 to select 4-bit SPI mode, and a 0 written to bit 11 to select slave mode.*