EE 2920 - Week 8 Lab: IR Sensor

1 dedicated lab period, 2 lab periods to complete

Name:_____

Objectives

- Understand and use the integrated Timer Counters
- Interface to the IR Sensor

Prelab

student check off

- Review the Timer/Counter class notes   ☐
- Review the IR Sensor specification   ☐

Assignment

Part 1: a) Interface the IR transmitter/receiver pair to the MSP432 Launchpad.
          b) Interface 1 LED to the MSP432 Launchpad
          c) Program TimerA to generate the required IR waveform
          d) Verify using an oscilloscope
          e) Configure the system to turn on the LED when an object is detected
             Use a 6 inch by 6 inch object for testing.
          f) Characterize your sensor by measuring the following:
             1) maximum detection distance
             2) sensor directivity as a function of angle for an object placed 18 inches from the sensor

Part 2: a) Expand your basic program so that it measures distance to the detected object.
          b) Characterize your sensor's detection range.
          c) Your software should print the distance measurement on the LCD

True Object Distance (inches)	LCD Printout
> 24 Object	Far
12 to 24 Object	Mid
< 12 Object	Near

Check Off

You must demonstrate your working design(s) prior to the end of the 2nd lab period

- Demo your Part 1   50%   _____
- Demo your Part 2   30%   _____

Lab Report (informal)

- Due at 4:00 pm, 1 day after the second lab period – in the box outside my office
- Include this cover sheet
- Include a properly documented informal lab report.   20%   _____