1. CPE 325: Laboratory Assignment #13
Creative project

Objectives: In this laboratory, you have learned many aspects of the MSP430 architecture. Being able to program microcontrollers is an incredible tool in the engineer's toolbox; innovators and inventors can make good use of microcontrollers to realize their ideas. For this final project, you will have the opportunity to use the MSP430 to create your own project. You should use some of the things you learned this semester about the MSP430 and the experimenter board to create an original project idea.

1.1. Assignment

Below are lists of topics we covered this semester, MSP430 features, and experimenter board components. You must use at least the specified number of items in each column for your project. If you have your own item or sensor you'd like to use, mention it to your lab instructor for verification. When you have come up with your project, you must submit a short explanation mentioning what your project is, which items in each column it will use, how you will approach the problem, and a flow chart for your approach. Your instructor will review the project with you to ensure that its level of complexity is appropriate. You may work in pairs from the same lab section if you like, but each team member should be very knowledgeable about the project for a full grade.

Topics and MSP430 Peripherals (choose at least 3)

- Port I/O and interrupts
- Clock configuration and adjustment (must be active part of project, not just a single initialization)
- Timers (TimerA, TimerB, or WDT)
- RS-232 communication with Serial App or HyperTerminal
- SPI communication
- Manual chip-chip communication
- ADC12
- DAC12

External components (choose at least 2)

- Switches
- LEDs
- Microphone
- Speaker
- Wireless communication
- Analog thumbstick
- Infrared proximity sensor
- Temperature sensor
- 3-axis accelerometer
- LCD display

1.2. Grading

%20	Project explanation and flow chart Due Nov. 20 for T/R labs, Nov. 21 for F labs
%30	Project makes use of items from list
%30	Project functions properly
%20	Team knowledge of project

If you are having problems completing your project or making it functional, make sure to meet with your instructor before the lab due date.