Final Project Assignment

Think about a project that you can do during this course. Here are the requirements for it:

- It should be slightly more complex than any of our 100 point labs.
- You should be able to completely finish it by the end of the course.
- It should be done using the MSP430 Experimenter Board or any other MSP430-based development board (including the 5529 board).
- There should be some sensible idea behind the functionality you are going to implement: do not blink an LED for no reason; explain what real world problem this blinking solves (even if this problem is insignificant).

Additionally, you will need to include the minimal number of items from the following lists:

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

Proposal

For your project proposal, explain your idea and specify what topics/peripherals (timers, interfaces, sensors etc), external components, and algorithms you are going to use to implement it. Submit your text (approximately 1/3 - 1/2 of a page) to Canvas by your section's project proposal due date.

To be on the safe side, submit your proposal in advance and ask your instructor to approve it (instructors are not notified when you just submit something). Non-approved projects have a chance to get less points for being too simple.

The functionality of the project is not necessarily limited by what we did in the lab assignments. You can use anything on the development board. Here are some examples of what students did in last years:

- Morse code interpreter/generator (translates Morse code entered via touch sensor to characters and converts characters to beeps of the buzzer)
- Morse code communication between master and slave using bluetooth
- Hearing test system (checks your upper frequency limit)
- Music player capable of playing a few motifs via the buzzer
- Matrix multiplication calculator that uses the MAC feature of the hardware multiplier.
- Automated dog meal dispenser using stepper motor
- Stress monitoring using Heart beat sensor (user will be playing snake game)
- Alert system using Proximity sensor
- Pong game on the console
- MIDI synthesizer

Final Report

For your final project submission please follow the following guidelines:

Submission should include:

- All files with source code
- Final report
- Any other artifact that you may have

Grading Policy:

- 40% - Project functionality (make sure it works as expected)
- 20% - Project complexity and robustness of the design
- 20% - Final documentation (formatting, comments, and the final document describing the instructions to the user (what your program does, how the user can use etc.))
- 20% - Knowledge of the project

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