Final Project

(Presentation: December 2nd @ 5:30 pm)

DESCRIPTION

- Most embedded systems consist of the following basic components: sensors, computing units, communications, and actuators. Using the Dragon12-Light Board and external components, develop an interesting project that employs these components and that has real-world applications.

- Work in a team of 2 to 3 students. A student working on its own is allowed, but strongly discouraged. Note that more is expected the larger the group is.

- The instructor encourages the students to connect the Dragon12-Light Board to external peripherals (e.g.: sensors, motors, wireless interfaces).

- Projects will be evaluated on the basis of the methodology, execution, oral presentation, and documentation.

- **Project Milestones**:
  - ✓ The students must contact the instructor (llamocca@oakland.edu) with the team members, the project title, and a brief description by October 30th.
  - ✓ An initial Report (no more than a page) will be included as a deliverable in Homework 3 (due November 6th). This report should contain the project title, the project description, and the current status of the project. The team can use the suggested template (see Final Report description).
  - ✓ A second Project Status report (no more than three pages) will be included as a deliverable in Homework 4 (due November 20th). The team can use the suggested template (see Final Report description).
  - ✓ **Final Project Presentation**:
    - o In class, December 2nd at 5:30 pm. You can use slides, the whiteboard, etc.
    - o Each person in the team must participate in the oral presentation.
  - ✓ **Final Report**:
    - o Single-spaced, 2 columns, no more than 6 pages. Students are encouraged to use the suggested template:
    - o Final Project – Report Template.docx.
    - o Your report document (pdf) as well as the code files (.asm, .c, and .h) should be uploaded to Moodle. This is due on December 4th.

REQUIREMENTS

- Use Interrupts.
- Use the Timer Module.
- The code must be a combination of C and Assembly Code (not just inline assembly, but ASM functions).

PROJECT IDEAS

- ✓ You can visit the Projects page of the class in Fall 2010, where you can read the final reports:
  https://sites.google.com/a/oakland.edu/2010-fall-ece470-570/final-project-documents-page

- ✓ The following is a link with a list of many projects (albeit targeted to different microprocessors):
  http://www.ece.cmu.edu/~ece549/projects.html

- ✓ Here are other ideas for projects:
  1. Digital Stopwatch with precision control (100 ms, 10 ms). Options: Pause, Reset.
  2. Sound Synthesizer: The Keypad and LCD display constitute the User Interface. The output can be generated by the DAC connected to a speaker.
  3. LCD controller: Display messages on the LCD sent via an external serial interface.
  4. Digital Multi-meter and Temperature Reading: Display on LCD.
  5. Control of: Robots, Lock Systems, etc.