ECPE 174 – Fall 2011
Final Project

Objective:
Define and design an advanced digital project using the skills we have learned throughout the semester and extending knowledge of specific topics of interest.

Requirements:
Students choose their own group of size 2-3 (although can be bigger depending on project) and own project (both subject to approval). Project should equal 2.5 labs worth of work and require significant digital design utilizing the Cyclone boards. Sufficient tasks should exist such that students can work in parallel on different aspects of the project. Students can choose to write project in either VHDL or Verilog.

Students will present a demo of the functional project along with a poster and will write an extended lab report. Separate handouts will describe the poster and report requirements.

Proposal:
Proposal should consist of:

- 1-2 paragraphs describing the problem
- 1-2 paragraphs describing the proposed solution
- Timeline outlining the different tasks, who will work on them, and the deadline for each

Proposal will be graded using the lab report rubric.

Progress Reports:
Progress reports should consist of:

- 1-2 paragraphs describing the progress made over the past week
- 1-2 paragraphs describing any technical difficulties and approach to solving them
- 1-2 paragraphs describing the plan for the week ahead

Progress reports will be graded using the lab report rubric.

Grading:
Project will count for 20% of class grade. Specific assignment weighting is:

- Project Proposal = 5%
- Progress Reports = 5%
- Demo = 15%
- Poster = 25%
- Report = 35%
- Final Discussion = 5%
- Teamwork and Leadership = 5%

Deadlines:

- Meeting to discuss project with rough draft of project proposal – before 11/15 at 2pm (during office hours or by appointment)
- Project Proposal – Approved and final draft due 11/15 at 2pm via Sakai
- Progress Report 1 – Due 11/22 at 2pm via Sakai
- Progress Report 2 – Due 11/29 at 2pm via Sakai
- Poster – Due 12/5 at 9am if you want me to print it
- Demo and Poster – Due 12/6 at 3pm (1 hour of setup time provided)
- Report – Due 12/8 at 5pm

Ideas (no particular order or importance):

- Pong game
- Implement a calculator using a keypad through the 40pin connector
- Implement standard 5 stage processor
- Instantiate NIOS processor on system and implement programs on it
- Implement an audio system using microphone and speaker
- Implement VGA, connect to a monitor, and display an interesting, changing picture
- Analog to Digital Converter
- Fixed Point Math Units
- Morse code message system using 7-segment displays or UART
- Traffic light controller
- Keyboard synthesizer (inspirational YouTube video)
- Musical one octave keyboard (inspirational YouTube video)
- Implement some DSP system using Matlab and program board