Course Project – Arduino Controller – Going Into Depth on Your Custom Project

1. After you have explored and investigated a project you need to prepare a Project Proposal, then do the work and document the results. Steps are

    1. Research and Project Identification
    2. Project Proposal posted for class review and submitted (see Section 3 below)
    3. Development and trouble shooting
    4. Interim reports to class on progress / problems
    5. Final Demonstration (see Section 4 below) and project code and documentation submitted
    6. Materials Return to Stock well organized (unless you have other arrangements with me). If using some of your own parts, keep track of what is what.

2. Project Guidelines (to aid selection and definition of your work)

    a. Individual work or 1 to 3 person team (Teams must do 2 or 3 times as much work and must be defined during step 1 and 2, no later)
    b. Expand on something you have already worked on or do something brand new.
    c. Significant systems, hardware, and software work evident. Focus is on REAL TIME CONTROL (so, a web browser is not cool). Include interesting sensors and/or actuators. Develop some sophisticated software (find and use some new parts of Arduino, the hardware, or library modules)
    d. Understand the hardware, how to build it, and *how to keep the parts safe*.
    e. Build a project box using the 3D printers if you wish!
    f. You can use any parts from the class (electronic brick items, breadboards, components, wiring harnesses, etc.) If soldering is needed, let me know in the proposal.

3. Project Proposal Outline

    a. Project Overview: name of the project, who will work on it, goals (be specific)
    b. Project Description:
        i. Architecture (using breadboards, robots, 3Dprinter, etc).
        ii. Hardware Components / Parts List. Be complete
        iii. Initial schematic of components (even if you don't have all the values yet)
        iv. Software Design Notes (the three key things you will use and what they will do)
    c. Resources
        i. References materials. Give complete reference to web pages, books, etc. that you have identified to help you with your project. THIS IS A KEY PART OF THE PROPOSAL. You need the have a good idea how you will make your project work!
    d. Schedule
        i. Weekly schedule with activities and outputs (PERT nice but not required)
        ii. For multi person project, who will do what

4. Project Report Outline – Upon project completion you will show your work to class and completely document the project and findings
    a. Demonstration – show the working project fully
    b. Software used
        i. Give an overview of the software structure you used
        ii. List all the Arudino methods / classes you used and brief description of what you used them for.
        iii. List any software you have created from your project for reuse by others (if not already done, post in the group files)
    c. Systems Software and Your Best Code
        i. Select one key part of your system and show us the software and what and why you did it that way.
    d. Turn in (multiple files in Sakai, do not zip)
        i. Your full code
        ii. Any presentation materials you use for the demo
        iii. Include in the files your complete name(s), dates of the work, and project name
    e. Plan 10 minutes or so in class to do demo; plan the demo carefully and rehearse it. How do you plan to show the significance of what you have done?
    f. You will be evaluated by the full class on your work using these criteria
        i. Success in implementing project goals
        ii. Success in doing something deep and relevant to learning Arduino
        iii. Effectiveness of presentation and demonstration

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