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Semester: Spring 2024

Course: ECE445L

A) ***Objectives*:**

1. In a few sentences, describe the purpose of the lab:

The goal of this lab is to create a plan for the final project. That includes creating a proposal and requirements document for our systems, designing our system at the schematic level, implementing low-level software for our system, and demonstrating that the project is feasible.

B) ***Hardware Design Deliverables:***

1. Deliverable 1: Using **KiCad**, create a schematic for your design. Include a screenshot in the space below.

A diagram of a circuit board

Description automatically generated

1. Deliverable 2: Using **KiCad**, create a Layout for your design. Include a screenshot in the space below.

A circuit board with many different colored lines

Description automatically generated

C) ***Software Design Deliverables:***

1. I have pushed my project to GitHub for grading (Yes/No): Yes
2. Deliverable 3: System design diagram of the modules created.

A computer screen shot of a computer

Description automatically generated with medium confidence

D) ***Deliverables:***

1. Deliverable 4: Total cost estimate

I have updated the bill of materials (Yes/No): Yes

Out of pocket costs: $36.76

Adjusted competition costs: $24.33

1. Deliverable 5: Estimated current usage

25 + 160 + 3.6 + 25 + 7\*2 = 227.6 mA (max current draw)

1. Deliverable 6 (5pt EC): TIW Training

Completed P1P TIW Training for the 3D printers (Gabriel Moore)

A screenshot of a computer

Description automatically generated

1. Deliverable 7 (10pt EC): Discrete IC usage

YES: (check PCB for details)

1. Deliverable 8 (10pt EC): Characterization of the system

E) ***Analysis and Discussion Questions:***

1. How did you debug your system? How intrusive was it?

As of right now, we haven’t been able to debug our system as we weren’t able to order our parts until recently. We couldn’t join a group since all groups were filled, so now we’re doing the project as a 2-man group.

1. What’s the difference between unit testing, integration testing, and functional testing?
   1. Unit testing: is when you test individual sections/modules of your SW to ensure that they are performing correctly.
   2. Integration testing: this is when you combine and test the individual sections/modules of SW to ensure that they interact with each other as expected.
   3. Functional testing: is when you test the I/O of the SW by examining the output of the device based on different inputs.