Project Proposal

Overview:

Your project proposal should identify the exact purpose and use case of your device, and give us a sense of how you plan to achieve these results. You should indicate who is taking point on each focus area, and what your general approach to building out each category will be. It would behoove you to also include a proposed alternative means for achieving each critical function of your device, in case you find your original approach does not work as expected.

Proposal:

Each proposal should include the following sections:

Mission Statement:

Who will be using it? **What** will they be doing to interact with it? **When** will they want to use it? **Where** are they likely to be / what environment will they be in? **Why** will they be using it? In what ways will it enhance the user's experience in this particular use case?

Big Idea:

What is your project to you? What do you want the final product to be? Go into more detail than your mission statement.

Object Diagram:

When architecting a program, we often draw up *call-trees* or *object diagrams* to describe how methods and modules in our system are interacting and how data is passed in our program. Please draw up an object diagram for your device that encompasses all modules in the system — including both software-side methods and hardware-side modules. Indicate the input(s) and output(s) for each of these, and how each module connects to each other. Be sure to briefly specify the functionality of the module.

Hardware:

We have two distinct considerations we need to plan for here — how will this device be built (high level) and how will the device be tested. In order to most effectively debug hardware problems, we will want to have a clear sense of which modules need to be communicating and what we will expect to see when they are doing so effectively. We will also want to figure out a way to test the hardware that is ***independent of the software*** so that we can more easily isolate errors and debug them quickly. Address your plan for the hardware side of your device's architecture. Be sure to include things such as:

- What unique Sensor(s)/Component(s) will you be using?
  - *Reference(s) to their Datasheets*
  - *Table of input(s)/output(s) for each component*
- How will you test your hardware's functionality (independent of software)?
- Find (& cite) a web resource for each component that outlines expected behavior and has a walk-through for how to get it up and running

- Identify areas that you anticipate there being a sneaky margin for error (eg: UltraSonic range is very particular about length of trigger)

Software:

Think about what processing will be necessary for your device to function and plan out how you will go about accomplishing it. Consider what different modules will have to be communicating and how you will actualize this. Be sure to touch on:

- What processing will be necessary to get from an input to an output?
- How will this work will be broken into different modules?
- What work should be done where?
  - *(if you plan to have additional drivers communicating with your bean/arduino, such as: an iOS app, a server, some other device)*
- What frameworks or technologies might you use? (eg. XCode, NodeRed, AppleScript)
  - *Find an example of someone using this technology similar to the way you hope to use it. Make sure it includes a repo or step-by-step setup that you can follow so that you will be able to have a (presumably) working foundation that you can extrapolate on.*
- Where should your data live? (also hardware consideration)
- How will you test your code's functionality independent of hardware?

Include a rough call tree that indicates how your methods will be interfacing with one another (may look very similar to your object diagram)

User Interface / User Experience:

Describe how you foresee a user interacting with your device. Address things such as:

- Who is your target user and what are they characterized by?
- Where will the device be situated on the body?
- How will the device be fastened or affixed?
- Will you be creating a device from scratch or building off a current form (eg: modifying a shirt)
- How does the user interact with it?
  - *Describe the various "states" of your device and how the user may interact with the device in each one (what inputs/outputs are relevant to the user and how might the user influence (or be influenced by) them)*
- How do you plan to test that your device meets the needs of your user?

Preliminary Budget:

Each team member will be given a Visa Gift Card for $50 to be used on the necessary materials for your device. We are happy to provide you with the materials and resources that we have, but things such as *novel components, device housing materials, and/or additional PCB costs* will be encompassed in this budget. If your team would like to exceed this amount in their device that is fine, but it cannot be covered by the course. Please outline your initial plans for how this money will be spent. Keep in mind that overestimating in particular areas (particularly with things that are likely to break) may be beneficial.

Providing:

Your Project Proposal will be ***due by March 14th at 11:59pm***. Submit a PDF of your proposal to:

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provide comp50wd project3 ProjectProposal.pdf
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Please let us know if you have any questions, or if you would like us to review the budget portion of your proposal in advance so that you can begin getting components ordered.