Phase 1: Device Hardware

Overview:

This phase is focused on each team building the hardware foundation for your project and is the most critical to hand in on time. Because we will be ordering your PCBs on March 31st, you *must* have all of the hardware designed and working by then. This includes the 3-part Fritzing diagrams: Breadboard, Schematic, and PCB, with the main focus being your PCB design.

> ***Due April 1, 2016*** *(PCB Design due* ***March 30th****)*

Remember—although we've asked team members to 'take point' on different aspects of your devices, *you are all expected to contribute to each phase*. Meaning, in this case, that everyone should play a role in the designing and testing of your hardware.

Considerations:

Consider the following as you work on this phase (this all should have been included in your Project Proposal turned in on 3/14):

Sensors/Components

- Datasheets
- The type of information your sensors will gather
- The type of information your output devices will display
- The hardware interface (e.g., buttons, rotary encoder, etc.)
- *Critically necessary* software libraries required for usage of your component (e.g., an OLED display)

Testing

- How will you test for functionality (independent of software)?

Resources / Guidance

- Web resources that outline or describe each component (or each system) in a functional context. E.g.,
  - "Real-life" examples of your devices. List all example project websites, tutorials, or forums where someone has actual real knowledge about using your components.
  - Where is there potential for trouble with your sensors or components? (eg: Our UltraSonic rangefinders have a bug that makes them practically unusable on a real device -- do your research to find out if this might be a problem with your hardware components!)

Deliverables:

Mon, March 28 (by class)—Breadboard Designed (Preliminary)

Come to class on Monday (we know—its right after break 😞) with a (semi-)functional breadboard that we can help you iterate upon. The bulk of class time will be split between

debugging and testing your hardware, and getting you further up-to-speed on how to build it into a printable PCB in fritzing.

Thurs, March 31 (7:00am)—Fritzing PCB Design

We will be ordering your PCBs the morning of March 31st. Ideally, we would like to have all PCB designs submitted by Wednesday afternoon so that we have time to look them all over and send feedback to anyone with a design that may have some room for improvement.

```
provide comp50wd proj3.1_prelim <your files>
```

Fri, April 1 (5:00pm)—Phase 1 Deliverables

Your final deliverables for this phase are as follows

1. Working Breadboard
   - Instructions on how to test (see status_update.pdf).
   - *Testing may include a Bean Sketch (this* should not *be your final sketch for the project*)

2. Fritzing Diagram
   - including the breadboard, schematic, and PCB designs.

3. status_update.pdf which includes the following:
   - What work did you get done in this phase?
     - Who worked on what?
   - What is working as expected?
     - If anything is not working as you had hoped, what do you plan to do in order to fix it going forward?
   - What is your plan of attack for phase 2?
   - Current (if any) struggles you're having
   - Directions for how we should...
     - Set up your device
     - Test your device
     - Anything we may need to set up or download in order to use your device

These files should be provided no later than 5:00pm on Friday

```
provide comp50wd project3.1 status_update.pdf <your files>
```