Test plan for prototype 2
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Introduction

The purpose of this document is to summarize the information that was gathered from the first prototype. Additionally, this document will also devise a test plan for the second prototype, in order to further verify assumptions and gather more information that is useful for the final prototype.

Prototype Purpose

In the previous prototype, a diagram for the structure of the frame and the circuit used for the lighting was presented. From this prototype, we will base the design of the second prototype based on the diagrams. We will also further improve the prototype by writing more of the code to pair with the Arduino and LED lights. The Arduino, LED lights, and the code constitutes the most crucial subsystem of the final design.

Test Objectives

What are the specific test objectives?

According to the first prototype, we found that there were errors in our code. In this prototype, we will fix our code and ensure the LED lights work appropriately.

What exactly is being learned or communicated with the prototype?

The LED and the code for the LED are set up well. The LED will bright according to the code.

What are the possible types of result?

1) The codes still does not compile.
2) The codes can compile, but the LEDs are not compatible.

3) The code and LEDs are working independently, but the Arduino is not working.

How will these results be used to make decisions or select concepts?

Firstly, if there is an error in our code, we correct our code until it can compile. Secondly, We detect if our LEDs and Arduino is working. In the end, we make different parts together and make sure they work well.

What are the criteria for test success or failure?

Success: The lights brighten and dim according to the code and Arduino in our expectations.

Failure:

1.The codes still does not compile.

2.The codes can compile, but the LEDs are not compatible.

3.The code and LEDs are working independently, but the Arduino is not working.

What is going on and how is it being done?

Describe the prototype type (e.g. focused or comprehensive) and the reason for the selection of this type of prototype.

Our prototype will be a focused prototype because we are not working on the whole prototype. We will just work on code, LEDs, and Arduino, which constitute the major component of the project.

Describe the testing process in enough detail to allow someone else to build and test the prototype instead of you.

Firstly, we must test each part individually. (compile the code, Test LEDs and Arduino) Secondly, connect different parts together and make sure the lights flash according to the code.

What information is being measured?

The power supply to the Arduino and LEDs must be checked to make sure that the parts are compatible. Also, the length and overall size of the prototype will be measured and will be adjusted to the size of the frame.

What is being observed and how is it being recorded?

The pattern emitted by the lights that is produced by the code. It's being observed visually and will either be on par with expectations or not match our

expectations. If the latter is the case, the prototype will have to be improved until it matches expectations.

What materials are required and what is the approximate estimated cost?

1) Laptop - ($0)
2) LEDS - ($15)
3) Arduino - ($25)
4) Wire - ($1.50)

   Total Cost: $46.50

What work (e.g. test software or construction or modeling work or research) needs to be done?

The code needs to be further completed and improved from previous iterations. Additionally, the Arduino, LEDs, and breadboard must be connected together as per the diagram in the previous prototype and all components must work as intended.

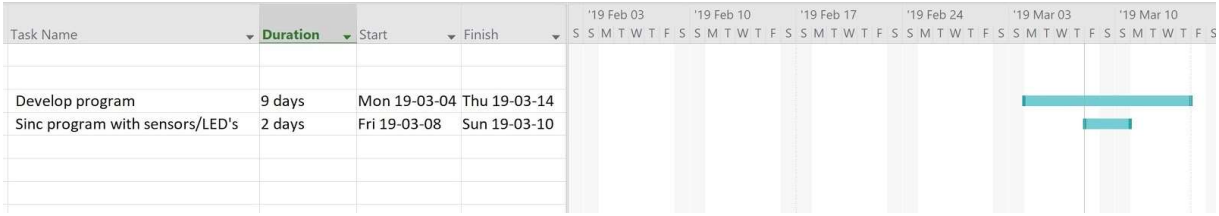
When is it happening?

How long will the test take and what are the dependencies (i.e. what needs to happen before the testing can occur)?

It will take 1 hour to do if everything works well. We need a half hour to correct code, and 20 mins to test our Arduino and LED. In the end, we use 10 mins to connect all 3 parts and run it.

A separate test planning Gantt chart can be created to help to make sure that the testing fits with the overall project schedule or it can be defined as part of that schedule (i.e. as a sub-task).

Figure 1: Gantt Chart of the Prototype II Subtask



When are the results required (i.e. what depends on the results of this test in the project plan)?

The pattern emitted by the lights that is produced by the code written. It is being observed visually and must be on par with expectations.

Feedback

We have consulted with our lab TAs about the prototype and surveyed our idea with the public. Despite it being a simple idea, it seems to be a very interesting concept for many of the people we survey. Even the lab TAs are encouraging us to come up with a solution to fix the full-scale projects sensors with our concepts IR sensors. Our client was not too thrilled about the idea and was expecting more, but in our opinion, the fundamentals of the model should be covered before adding overly complex ideas. It seems that our prototype, once troubleshooted, will be a successful, useful, and creative component to be added to the fullscale equilibrium model.

Conclusion

In conclusion, our second prototype may have some issues both from a financial and software perspective. On the software side, our code is supposed to change colors whenever someone passes by as the creative design aspect of our concept. Unfortunately, we are finding it difficult to solve this software issue. From a financial perspective, we are realizing that the RGB LEDs are more expensive then what we originally thought and will take us over budget. Worst case scenario, we may have to compromise by instead buying single color LEDs and having the lights turn off and on when someone passes by instead of changing. This may be of a disappointment but it doesn't affect our core demonstration of trying to sell our IR sensor replacement idea and give equilibrium a fresh interactive perspective when u walk by (instead of equilibrium just keeping its lights on) with our infinity display reflecting and adding a better look to the overall design. This also keeps equilibrium environmentally conscious, instead of keeping the display on and wasting power or keeping the beautiful sculpture off all year because of power consumption, have it turn on when people are admiring it automatically. Fixing these fundamentals are key to a seamless and more complex evolution of equilibrium in the future.