Deliverable F

Introduction

The purpose of this document is to summarize the feedback received from the client during the second client meet. Moreover, this document will also devise a test plan for the prototype, in order to gather information and verify assumptions.

Why are we doing this test?

Learning more about or understanding a problem better by drawing can be viewed as a kind of prototype for communication. Communication or getting feedback from users. Reducing the risk associated with a particular aspect of a design. Measuring performance often of the overall functionality of the design.

Test Objectives

Specific test objectives

1) Reduce uncertainty. Having a defined purpose means that the size of the infinity mirror can hide the top part of the line.
2) We will do an early, simpler model that can be used to validate initial concepts, which is making sure the dimension values are feasible.
3) Plan some time to execute and to learn from any prototyping cycles. We plan to make our relatively few comprehensive models in 5-7 days and have a meeting about what to correct to make our design better.

What is Learned or Communicated from Prototypes

Possible Types of Results

1. Dimension problem:

The size of the infinity mirror could be to lager that covers a part of equilibrium, or the size of the mirror could be too small to cover the line on the equilibrium.

2. Program problem:

The code of the IR sensor has logic or error, which can not run as we expect. It can work in the opposite way, which is light on at all time.

3. Hardware problem:

One of Arduino board, LEDs, or IR sensors cannot work in some wiring problem. It could be broken during we transite it.

4. Everything works well. The sensors detect people who go up or down stairs, at the same time LEDs turn on.

How will these results be used to make decisions or select concepts?
If the dimension of the mirror does not fit on the equilibrium, we change the size of the mirror according to our prototype.

If our code would not run or run incorrectly. We debug our code if our code would not make our sensor and LED lights to work in the appropriate order.

We would try to fix the lights or the sensors which are not working, and we would reorder some if we would not be able to fix them.

Basically, we solve the problem and retest our prototype until everything works well.

Criteria for success or failure?
Success: The size of the infinity mirror covers the line on the equilibrium no more or less.
Failure: When sensors detect people who go up or down stairs, at the same time LEDs turn on.
Failure: If any problem listed above occur, it is considered to be a failure.

What's going on? How is it going to be done?

Type of prototype:

For prototype I, our plan is to make a feasible realistic blueprint drawing and develop our prototype II and final prototype III based off of it. The reason for this is because in the past deliverable we were still a bit unsure of what we wanted our prototype to be, but now that we have a clear idea and some free time we want to start off with a solid well-built foundation for the project and have some realistic values to accompany the design as well as a feasible visualization of the project so that the TA's and our group are all on the same page design-wise.

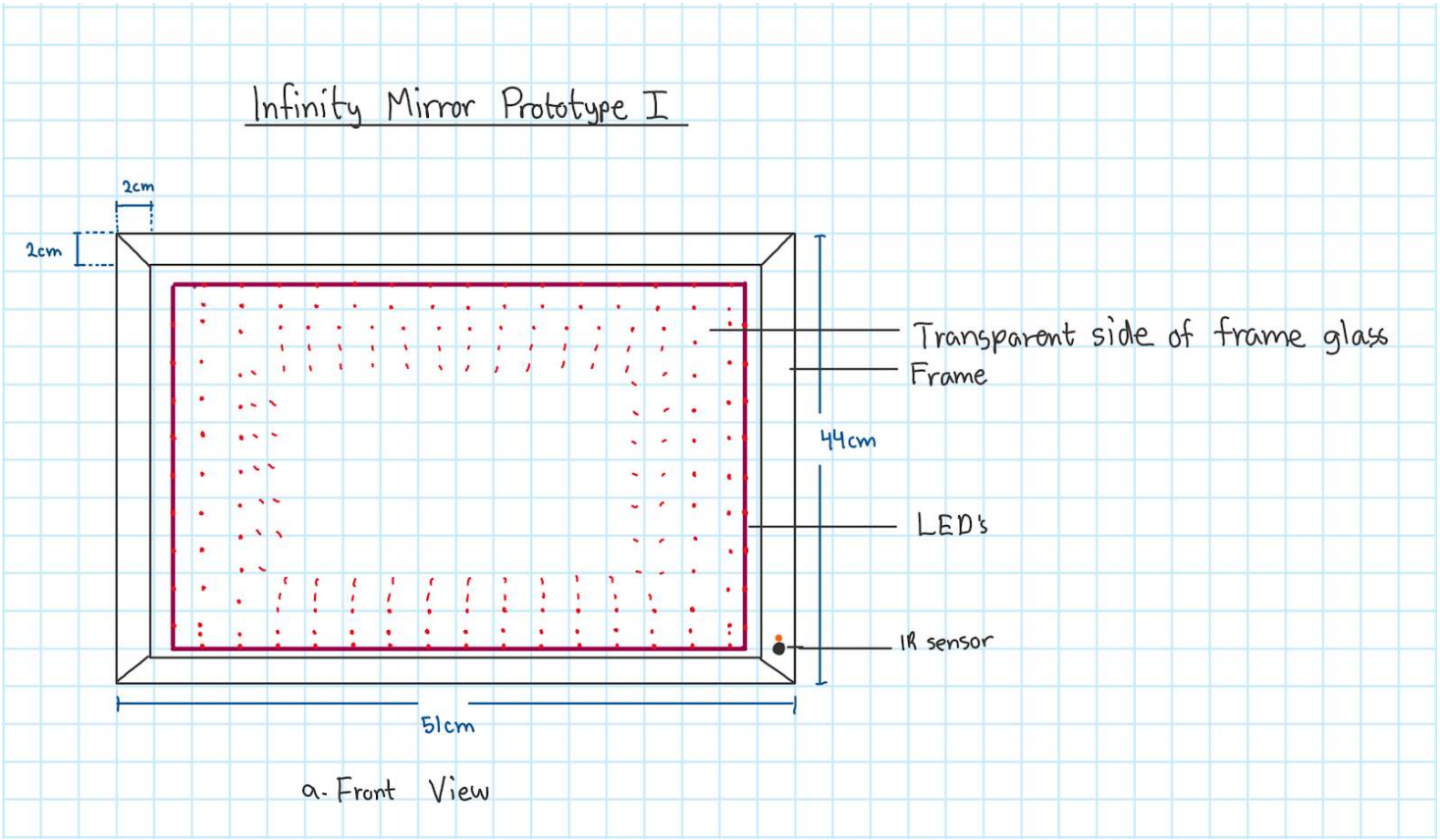
Testing process:
Once the prototype is built we plan to test it by...

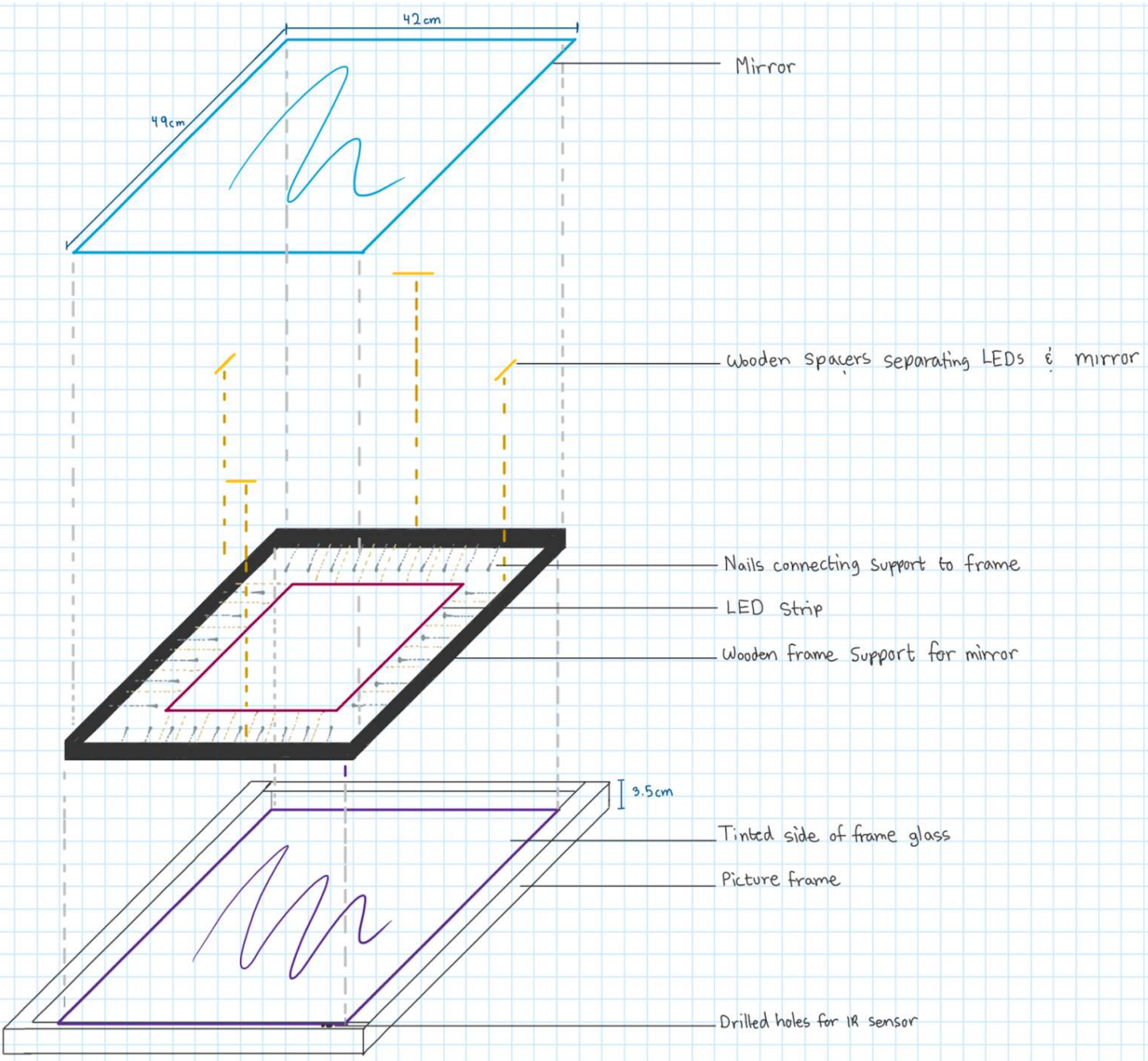
1. Making sure the pieces of our infinity mirror all fit and work to build the design. Basically, to ensure our prototype I dimension values are feasible

2. Once all physical aspects of the project are properly built we will test to make sure all the electronic LEDs and sensors on our design function correctly

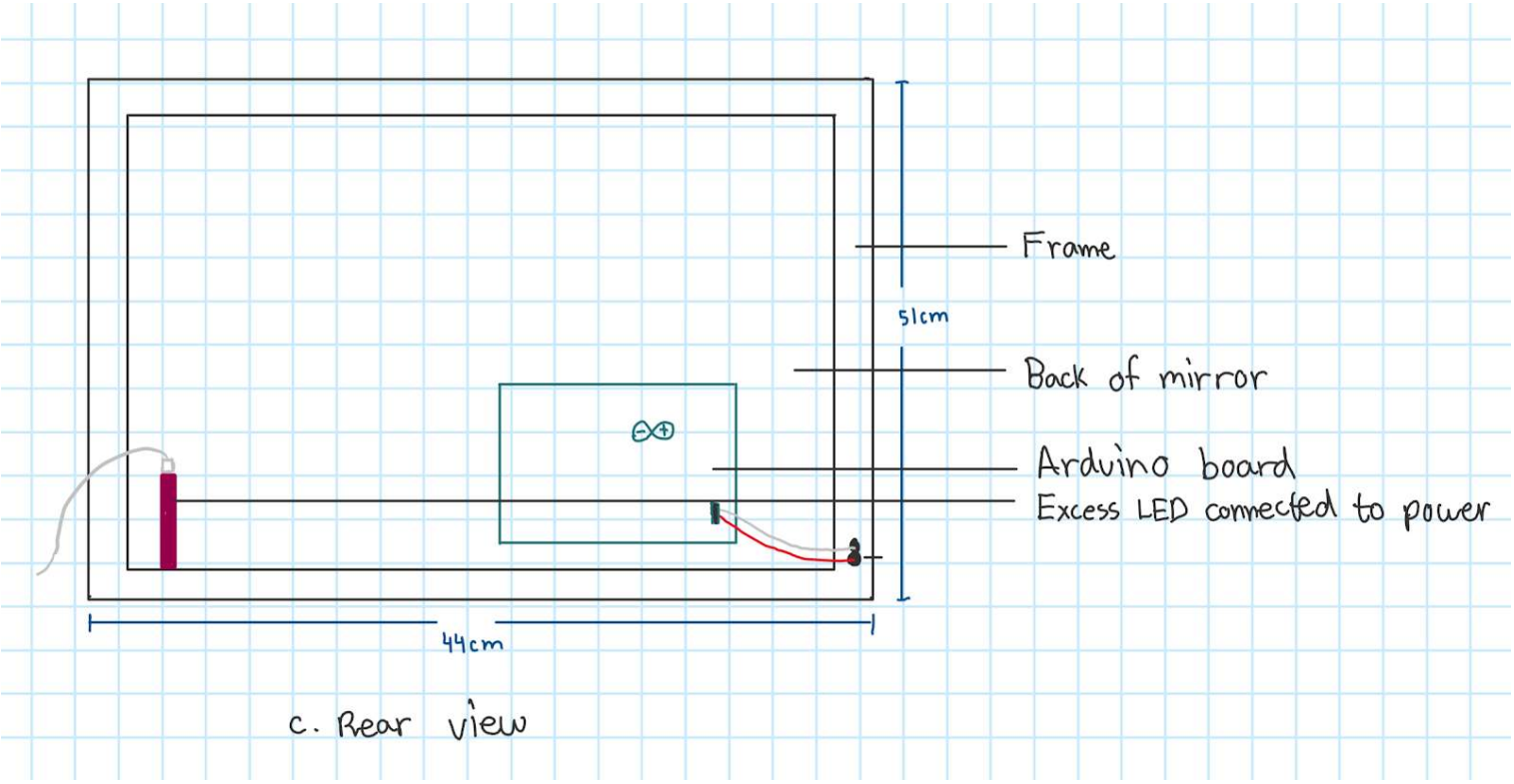
3. After all the input modules of the design are assembled, we need to ensure our IR sensor is programmed to our needs of changing LED colors whenever someone passes by

The information being measured:

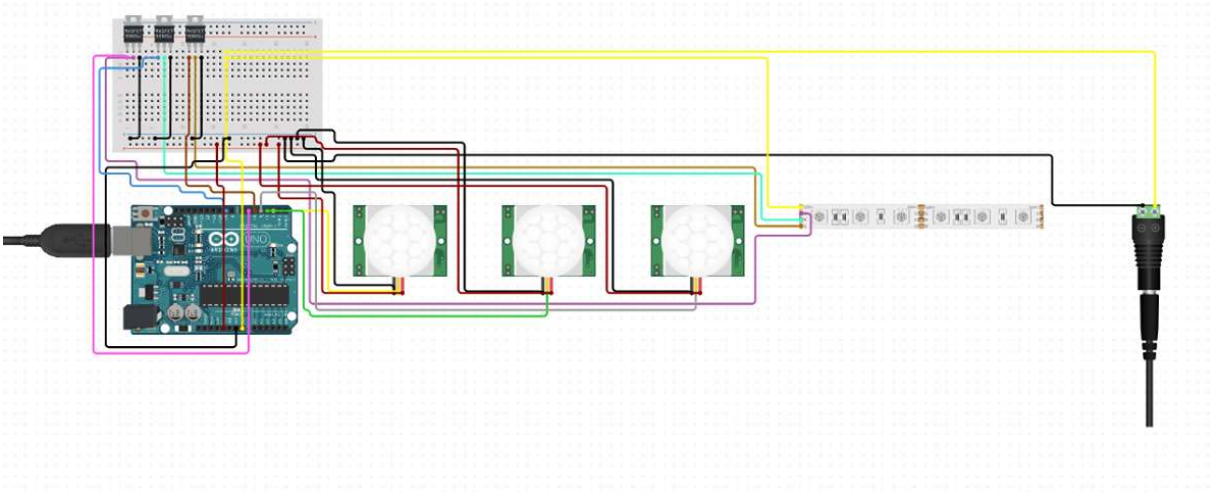




b. Oblique assembly sketch



Circuit Diagram:



What's being observed, how is it recorded:

From a physical perspective, we are observing to ensure that the design fits together properly in a flush and clean way. From a visual and software perspective, The LEDs output are being recorded to see whether whats being programmed is being

represented and that the mirror functions correctly, changing color whenever someone passes.

Materials required/estimated cost:
Picture frame ~ $5-10
Roll of window tint film ~ $16-$300
Arduino IR sensor ~ $16
LED strip ~$20-$30
Mirror ~ TBD

When Is It Happening

The testing phase will begin once prototype one has been constructed (March 3rd). Once constructed the duration of the testing phase will be no more than two days. Starting March 4th a dimension analysis will be done to ensure the proper size of the prototype is achieved. If incorrect dimensions are recorded, adjust as needed. Once complete the next testing phase will occur on the same day as the test for the LED's function, confirming whether or not they work accordingly. The last phase, completed during March 4th to the 5th, will be done on the function of the IR sensors ensuring the LED's, sensors and code all are in proper function. If code and sensors result in an error, troubleshoot code until working properly. Considering more error than expected, the duration of the tests can be extended to the 6th/7th.

The results that need to be met are correct dimension size, proper LED, sensor and code function.

Conclusion

In conclusion, we decided to go with a drawing instead of a physical prototype made up of recycled materials as we determined that there would be no benefit to doing so. Trying to gather materials and constructing such a prototype would take much longer and would not give us anymore benefits that the drawing representation already provides. After constructing the drawing it allowed us to see where mistakes can be made and how we are able to prevent them, saving time and money. The drawing maps the dimensions, and how everything will be placed during construction. Moving forward onto the second prototype and so on, our goal is to have a relatively lost costing prototype II with proper function, then to construct our full-scale prototype III that is fully functioning.