Project Identity
Shampoo-Conditioner Identification Device/ Medicine Reminder
Week 9: 4/1 - 4/8
Kenta Umetsu

Work Completed
This week, major planning on the device casing for the shampoo and conditioner identification device was made. The first thing we did was review the ordered sample plastics that we had purchased the previous week. Three different plastics were ordered which were polypropylene, acetal, and PVC. Out of these materials, the stiffness was lowest on the polypropylene and was the highest on acetal. Judging by the material property, PVC was the best candidate out of the three materials. Problems with this choice was that we could not find PVC in the thickness we desired originally. We increased the thickness to give us more choices of material. By searching under a larger thickness we were able to compare the prices of the three sample materials that we ordered. We ultimately chose polypropylene because of its properties and price. The price of acetal and PVC were about $100 more than the polypropylene block we are planning to order. The purchase form was filled out and submitted so we will expect to be able to work on the device casing this upcoming week since our PC board fabrication is scheduled to be finished soon as well.

Sheldon and I have met and discussed the many features that will go into the device so that assembling the casing will go as smooth as possible. Each component that will be implemented into the casing were reviewed and discussed in how we are going to make the cut out for that piece in the casing as well as where we will be placing the component. The components that we discussed were the color sensor and its window for it, batteries and its compartment cover, switch, and the waterproof speaker.

For the color sensor, we discussed how we will need to adjust the height of the poles that support the sensor because we will no longer be measuring our objects from that distance. In order to compensate for the device casing, Sheldon and I will decrease the length of the support by the device casing thickness so that we will keep the same measuring distance of our intended object with the casing. We also discussed how we
will make the color sensor window. The shape will not be a simple square so that we will not be exposing our attachments to the window visible to the outside. Glued joints will be covered and can be only seen from the inside of the device casing.

For the waterproof speaker, our original design had the speaker on the back panel of the device. We have decided to change this idea because of the testing done in lab. We found out that amplifying the signal to the waterproof speaker made the audio severely distorted compared to the original sound we delivered. Thus we decided to stick with the original volume of the speaker we can provide but move the speaker to the front so that optimal volume is achieved. The device will most likely be intended to be hung on the shower rod furthest away from the showerhead. This will allow the device to avoid as much moisture as well as noise from the shower head so that the volume of the audio will not be an issue.

We also discussed the device switch. Our problem we ran into in testing was that we were using two batteries to power two separate devices. Waterproof switches do not have much variety and it would be hard for us to find a switch that can do the task we want to without making a huge purchase. We confronted several people to ask for opinions and we decided that we will be only using one switch but putting the batteries in series and running tests to see if battery life is any better. The switch location is planned to be on the side of the device casing as of now.

For the medication reminder, I have now put measurements of the casing for the PDA on the ordered plastic we have received. This will allow our teammate who will be machining the plastic to make accurate cuts on the material. Once the pieces are cut, we will need to assemble the window and casing together and attach the hinge.

**Future Work**

We will need to purchase the rest of the smaller materials we will need for the rest of each project as well as finding the wood for the medication cabinet. I am currently having issues trying to find a site where they offer a variety of wood in the thickness I want between ¾” and 1” thickness. Sheldon and I will plan out the rest of the shampoo and conditioner identification device casing and start working on the casing as soon as our material arrives.


**Project Review**

Two weeks are left until the projects are due. We are doing our best to get as much done on time for each project. Major aspects of each device are close to being finished so two weeks will hopefully be enough to wrap up the rest of our project and deliver the product we intended.

**Hours Worked:** 14