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https://github.com/veropesant/cart360-2019
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PROTOTYPE

PART ONE : 'Why we prototype"

My prototype is really basic, but my overall idea is pretty basic too. I have some aspects already covered, but they are not assembled in the way they're going to be for the final product. If I analyze it in comparison with the scale of my project, I would say I have something between a low to mid-level fidelity prototype. My main circuit is working and coded, although not souldered to anything so not "final" yet.

I've spent most of my time re-exploring my original idea to find a way to make it more interactive with the user. Indeed, my first user feedback was pretty clear, the connexion desired between the human and plant wasn't being felt enough. For my project to be successful, the user felt they would need more of a physical connexion. I spent the beginning of my prototype exploring new ideas that would be possible to do, realistically. I finally settled for the idea of an interactive bracelet that would connect my plant and the user wherever they are (see part three for full description of my new idea). When I found my new idea, I explored different directions, and I finally came to try my circuit, but it was now a bit late.

I figured research is also part of prototyping, since the main goal is to improve our original idea to eventually reach a better final product.

I came across a few problems with my new idea though that we hadn't covered in class yet, which made it pretty hard for me to try and solve them. These problem include the fact that I don't know how to make my bracelet wireless and that I don't have the material or knowledge to create the button to send a detailed email to the user. I did some research on the subject and found some ideas that I will try in the near future, but unfortunately not in time for the first prototype. Anyway, once I've solved these problems, my project is pretty

much going to be complete, so it wouldn't be optimal to have reached this point right now. It could've created some biased feedback from the users. I feel like my mid-level and high-level fidelity prototype are going to be pretty similar.

Even though I don't have much done physically, I feel like I've worked on my project in a different way. I got to understand better the main problems with my original idea and the direction I should opt for during the next steps of my project. I'm going to have time to get some user feedback during the weeks to come to, and hopefully reach a satisfying final result.

The next big step to reach a high-fidelity prototype is going to be to focus on the wireless aspects of my project. It is going to be a big part of the project and a big problems to solve for me, but it would also truly make the user experience better, since it would be portable and available anywhere, and illustrate my goal in a much more accurate way. The email would be a great addition, but not as necessary as the wireless part of the bracelet.

PART TWO: "Technical evaluation of sensors"

The sensor I'm using for the most part of this project is a Soil Moisture Sensor. It is a sensor meant to calculate the humidity of the soil in which a plant lives. Basically, the humidity of the soil represents it's conductivity. It's how much the soil would be able to conduct current. In my project though, I use it as a way to detect if the plant is in need of water.

The data coming out of this type of sensor can vary a lot depending on many factors such as the type of soil and the voltage going through it. It is therefore better to calibrate such sensor to the type of soil your are using it in. It is better to evaluate the data recorded and determine the threshold, when the soil is completely dry, versus when it is completely humid. When the good values are found, it is recommended to use map() function to refine your code. I've used it to create levels of water and associated different colors with the levels so that the user can keep track of when it's going to need water.

Without this sensor, my whole project has no point. Probably the most important need of a plant is the amount of water it needs to survive. My project is based on the vital needs of a

plant, and its importance in our world. I want the user to be attentive to their plant's needs like they would with their own. Plants are definitely more important than humans to make our planet survive and I want people to realize this. I want them to take care of nature and it starts with their home plants. That's why I've focused my attention on the soil humidity sensor to create the bond, but I had to mix it with the interactive bracelet to reveal its true meaning. I feel that with this sensor and the bracelet, the user is able to understand better the nature of a plant's need and to feel a deeper connection to it. It is easy to neglect our home plants because, well, obviously they can't talk to communicate with us so we tend to forget them, but not anymore. With the sensor and the bracelet, the plant finally has a way to communicate with their owner.

The second sensor I had planned on using is basically a light detector, to see if my plant gets enough sunlight per day, but I've come across other difficulties so I kind of forgot to focus on this. For the second part of the project though, I would like to have the time to experience with it. Indeed, sunlight is also one of the only basic needs of a plant so I would have the feeling that my project is incomplete without it. My goal was to calculate from what time to what time did the sun panel detect sunlight in one day and compare the amount with a predetermined "ideal" time. If it's lower than the ideal, then a different LED would light up on the bracelet to warn the user that maybe they should relocate the plant.

PART THREE: "How did the project evolve"

My idea has indeed changed, because it didn't meet the interactivity requirements. At first I wanted to create a way to communicate with the plant through the computer, but we were asked to get away for the screen. Instead, I've decided to create a small wearable that could notify the user when the plant was in need of something. That way, the communication between the plant and user is way more physical. I would be a pretty simple bracelet, with LED's that change color depending on the needs of the plant. One would indicate the level of water contained in the soil (and if the plant needs water), while the other one would only light up if the plant didn't get enough sun during the day. I would also add a button on the bracelet, that could allow the user to receive a full description of the plant's state by email, if desired.

I've also discarded the little plastic person standing by the plant, my intention being that the bracelet would do all the work, and therefore really create a connection plant/human. I haven't eliminated the email idea yet, but I changed it as optional from the user's part. I would like to add a button on the bracelet that could be pushed to send a detailed version of the plant's need to the user, whenever they want it.

Although I've made these changes I'm going to have to see how it goes because we haven't how to do wireless things yet (for the bracelet), or how to send a email.

The overall meaning is still the main however, and I feel like the changes made to the original idea help to make goal clearer. I want to create a *bond* with the plant, and the computer screen I feel wasn't creating a barrier to this bond. With the bracelet, I feel like I'm getting closer to my goal.