Véronique Pesant: https://github.com/veropesant/cart360-2019/tree/master/ASSIGNMENTS
CART 360
Professor Elio & Sabine
December 4th, 2019

ARTIFACT

"Insights & Future Developments"

My project hasn't been a good experience for me. From the start I had difficulty understanding the concepts and organizing my time to achieve my goals. C++ was not a familiar language to me either so I was not off to a good start. I loved my idea, but simply couldn't reach my goals. I managed to work through it for part 1 and 2 which I think I did pretty well, but the last part was not as successful. I kept falling upon small problems that prevented me from moving forward and on top of that had a lot of difficulty managing my time between my other classes and work (although I know I'm not alone in that situation).

At some points I needed some material that was only available to me at school, so that slowed my process down. I reached the end of the semester with almost nothing more than what I had for part 2 of the project. I tried to add a few sensors, but nothing worked as planned and I never knew if it was the sensors or my code. It was honestly quite hard for me to progress with my project.

Therefore, I can think of a lot of improvements for this project. First of all, the motion detector. I have been trying to use a motion detector to detect if someone was passing by the plant. When movement was detected, if the current state of the plant was red (in need of water), the plant would emit a small sound to catch the user's attention and ask for water. I never was able to make the sensor work correctly though.

I also wanted to create a bracelet that the user could wear to have a physical link to the plant wherever they were. I did not get to that part. However, I had improved my original idea: instead of simply making a LED show a color, I wanted to use a pattern of light to display the emotion of the plant instead of a color. Therefore, the connection between the human and the plant would reach some kind of emotional level that a regular, colored LED could not reach.

Finally, I would have liked to make the bracelet wireless, because I felt it was the whole point of the project, to be able to communicate with the plant from a distance, but once again that goal was never met. I did managed to send a message from one arduino to the other when the sensor detected a change in the plant's state, but I ran short on time to push that part further.

In a perfect world, I would like to add an automatic watering system, allowing the user to water their plants from a distance by the simple push of a button, that would trigger the watering system and give a predetermined quantity of water to the plant.

If I had to do this project again, I would have to manage my time more efficiently. I don't know how it got this bad, but I definitely can't go back and change it. I think my main problem was that I was so overwhelmed by the amount of work that I didn't know really where to start and what to focus on. Topped with the fact that I was not familiar at all with the subject and didn't seem to get any better at it as the project went.

It is quite disappointing to me, because I was coming into this class with a lot of expectations and at first was truly motivated, but I guess my semester in general did not go as planned and one classe had to take a hit...Unfortunately it was this one. Hopefully I'm going to have another experience that is going to change my opinion about this subject, because it is a really interesting class.

Research process

Most of my research was done through the internet, the rest through thinking and imagination.

Once I had my idea, I had to research on the ways to get there and the first step was my soil sensor. It is in fact a sensor that evaluates the amount of water/humidity contained in the soil.

That's pretty much the clearest/simplest source I found, with details on the sensor and how it works. However, treating the data for that kind of sensor can be quite complicated, and with a low budget sensor, the accuracy is not quite there:
https://randomnerdtutorials.com/guide-for-soil-moisture-sensor-yl-69-or-hl-69-with-the-arduino/

However I used another website for the tutorial on how to plug it in:
https://www.instructables.com/id/Arduino-Soil-Moisture-Sensor/

I then had to search about the motion sensor. I first tried to use the code provided in the tutorial on this website but couldn't managed to make it work. I changed it for something more simple, the version I'm currently using, but it seems to work only part of the time. I didn't quite understand why considering the code is fairly simple:
https://randomnerdtutorials.com/arduino-with-pir-motion-sensor/

For the connection between the arduinos I started from the notions we saw in class and then googled a tutorial to be able to send my message.

https://www.arduino.cc/en/Tutorial/MasterWriter

I also did some research on the materials to use for the bracelets and at first explored some interactive fabrics or fabrics I could make interactive but then decided it would be more complicated to use and settled for a rubber bracelet on which I would glue the microcontroller, but in the end it never got to that.

Problems encountered:

First problem:

First of all, I had a problem with the power at some points and some smoke got out of my arduino. I had to change some of my material, that was unfortunate.

Second problem:

My motion sensor was really hard to get to work. I think in the end it was kind of working, but it kept detecting movement so I wasn't able to make anything out of the data I got. So for the final delivery I commented out the code on this part.

Third problem:

I managed to send a message between my two arduinos, but I wanted to use a condition to send it only at a certain moment, which is when the soil is dry. The arduino that sent the message was respecting the condition, but the receiver seemed to receive the message all the time and did not respect the condition. I did not have time to figure out the problem, but I think it's pretty good that I managed to establish a connection between the two.

Fourth problem:

This problem is basically the whole wireless part. I couldn't figure it because of previous problems so in the end the project is not wireless.

Full circuit: