PLANTOS

IAT 267 D103

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OVERVIEW

Our project is an interactive toy aimed towards a younger audience with an educational purpose in mind.

WHAT IS PLANTOS?

Plantos is a plant care simulator used to educate children by informing them about the correct procedures needed to care for a plant

WORK DESCRIPTION

We began our work with ideation and sketches, to determine which stream would suite our ideas the best. Throughout Milestone 1, we worked on developing our concept into a more realistic goal, thinking about realistic materials and resources we had access to.

Our physical structure consists of a cardboard box with a fake plant resting on top of it. This structure was decided due to its simplicity, and workable structure.

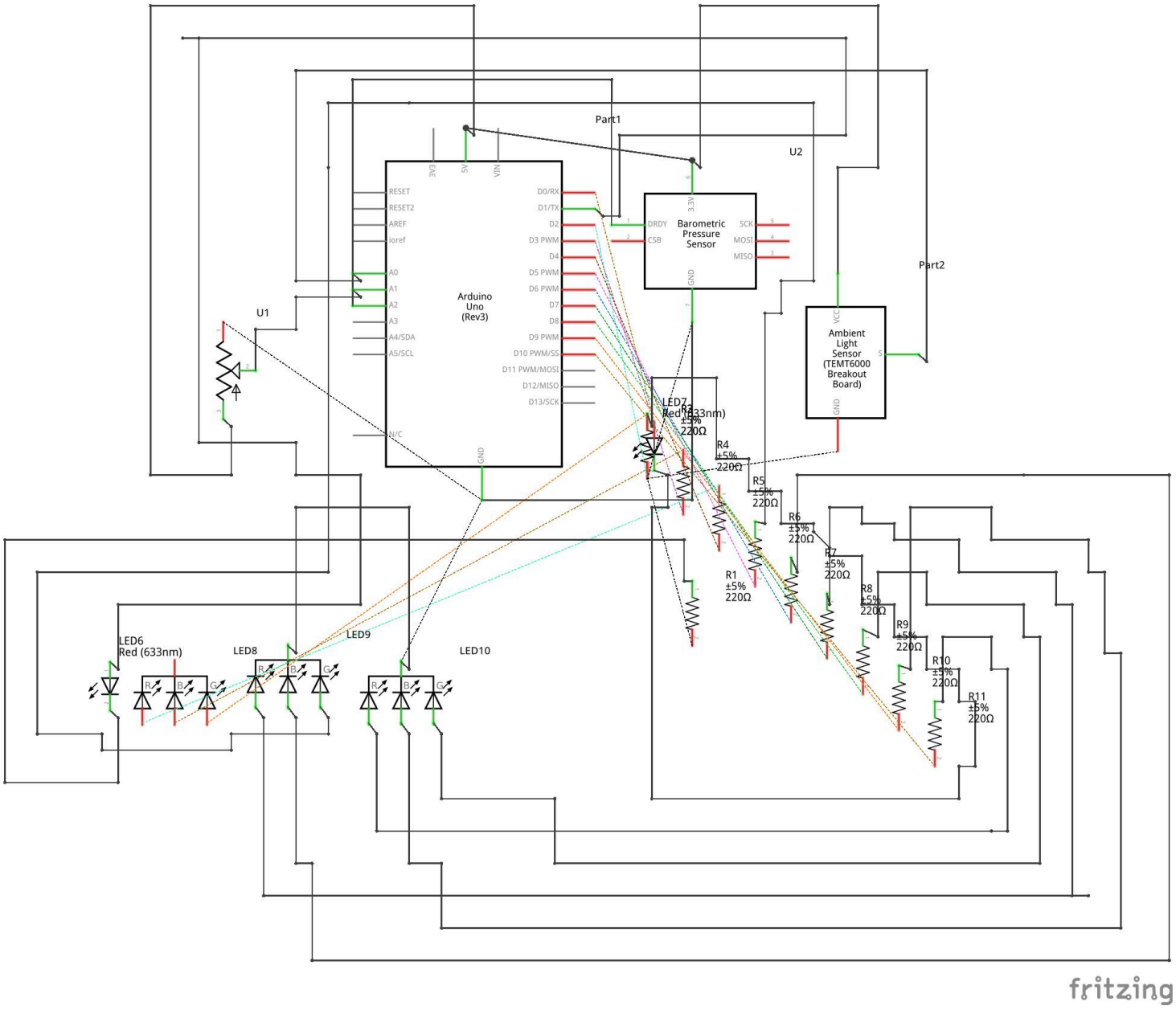
The sensors we used include: light, force, and slider sensor. The light sensor is used to represent the process of photosynthesis. The force sensor is used to allow the user to be affectionate to Plantos. Lastly, the slider sensor is used to water the plant. The sensors allowed us to make the toy as realistic as possible by thinking about what real world senses are used when working with plants. In addition to the sensors, we also have LEDs to communicate Plantos' overall condition to the user.

Processing plays the role of GUI as it serves as the visual representation of what is happening to the physical model.

FINAL RESULT

Our final implementation of all of our ideas manifested into Plantos. Some major challenges we faced were how to get all of the physical aspects such as the LED's and sensors, to be visually appealing, and still be a modest size. Due to the fact that our targeted audience is children, we made sure to make each function clear using easy-to-understand visuals.

SCHEMATIC


Part1
U2
Barometric Pressure Sensor
DRDY
CSB
SCK
MOSI
MISO
3.3V
GND
Part2
Ambient Light Sensor (TEMT6000 Breakout Board)
VCC
GND
U1
Arduino Uno (Rev3)
RESET
RESET2
AREF
Ioref
A0
A1
A2
A3
A4/SDA
A5/SCL
D0/RX
D1/TX
D2
D3 PWM
D4
D5 PWM
D6 PWM
D7
D8
D9 PWM
D10 PWM/SS
D11 PWM/MOSI
D12/MISO
D13/SCK
3V3
5V
VIN
N/C
GND
LED7
Red (633nm)
R3
±5%
220Ω
R4
±5%
220Ω
R5
±5%
220Ω
R6
±5%
220Ω
R7
±5%
220Ω
R8
±5%
220Ω
R9
±5%
220Ω
R10
±5%
220Ω
R11
±5%
220Ω
R1
±5%
220Ω
LED6
Red (633nm)
LED8
LED9
LED10
fritzing

TASK ASSIGNMENT & SUMMARY

JUSTIN HO

RESPONSIBILITIES:

In the Plantos project, I was tasked with creating the Plantos graphical interface on processing such as creation of the classes as well as its animations. In addition, I helped wire the LEDs to the arduino board and map the schematic with the use of Fritzing.

REFLECTION:

Initially, I was not completely convinced a plant was the right solution for this project. However, after spending time discussing with my group and working through the problems to make this project successful, I believe we went above and beyond our simple idea of an electronic plant. In regards to Plantos, the GUI took many hours of coding and faced two major revisions after feedback: relocation of the Plantos HUD and animating all its components. I learned coding techniques to adapt to the many revisions and accepted criticism from my group members. Altogether, this project was an excellent insight into design related group work for the future.

JUSTIN LAU

REPONSIBILITES:

I was responsible for the serial communication between Arduino and Processing. I needed to make sure that Arduino and Processing were communicating efficiently and effectively. This included sending information from Processing to Arduino, and sending multiple values to Processing from Arduino. I also helped with the physical assembly of Arduino.

REFLECTION:

Overall, this project emphasized the importance of time management and productivity. Since Milestone 2 required us to have the physical prototype complete, this meant we essentially had to finish the project a month before its due date. However, this meant that it was easier to focus on the final touches as the deadline for Milestone 3 approached. Due to such a heavy emphasis on completing the prototype, this project has made me realize the importance of being able to achieve a big goal, in smaller steps.

LUCY HUANG

RESPONSIBILITIES:

I was mainly responsible for creating graphics for the GUI in processing and putting together the physical model. I also helped place the sensors on the physical model in a discreet and functional way.

REFLECTION:

This project not only allowed me to further my skills and knowledge of Processing and Arduino, but it also tested everything I've learned throughout my time at SFU. I was able to learn to use these skills together to create a functioning product. Overall, it was a great experience as it required teamwork, communication, patience and time-management as well.

KRYSTAL SHIU

RESPONSIBILITIES:

I contributed mostly to the visual aspects of our project, this includes creating graphics for the GUI in processing, and assembling the physical model which also includes circuit implementation. To go in depth about our project to the audience, I was also responsible for creating the presentation slides.

REFLECTION:

From working on this group project, I was able to understand the coding process between Arduino and Processing more clearly from the help of my group members. Because this project was more focused on coding rather than designing, my group's time-management skills were put to the test as a lot of time is needed to ensure that a code works successfully.
I appreciated the two previous milestones because they allowed our project to progress at a reasonable pace and they also played a major role in keeping my group focused.

REFERENCES

"Fun Plant Facts for Kids – Trees, Flowers, Photosynthesis, Weird Species." *Fun Plant Facts for Kids.* Science Kids, n.d. Web. 25 July 2016.

"Fun Sunflower Facts for Kids – Interesting Information about Sunflowers." *Fun Sunflower Facts for Kids.* Science Kids, n.d. Web. 25 July 2016.