GROUP 28

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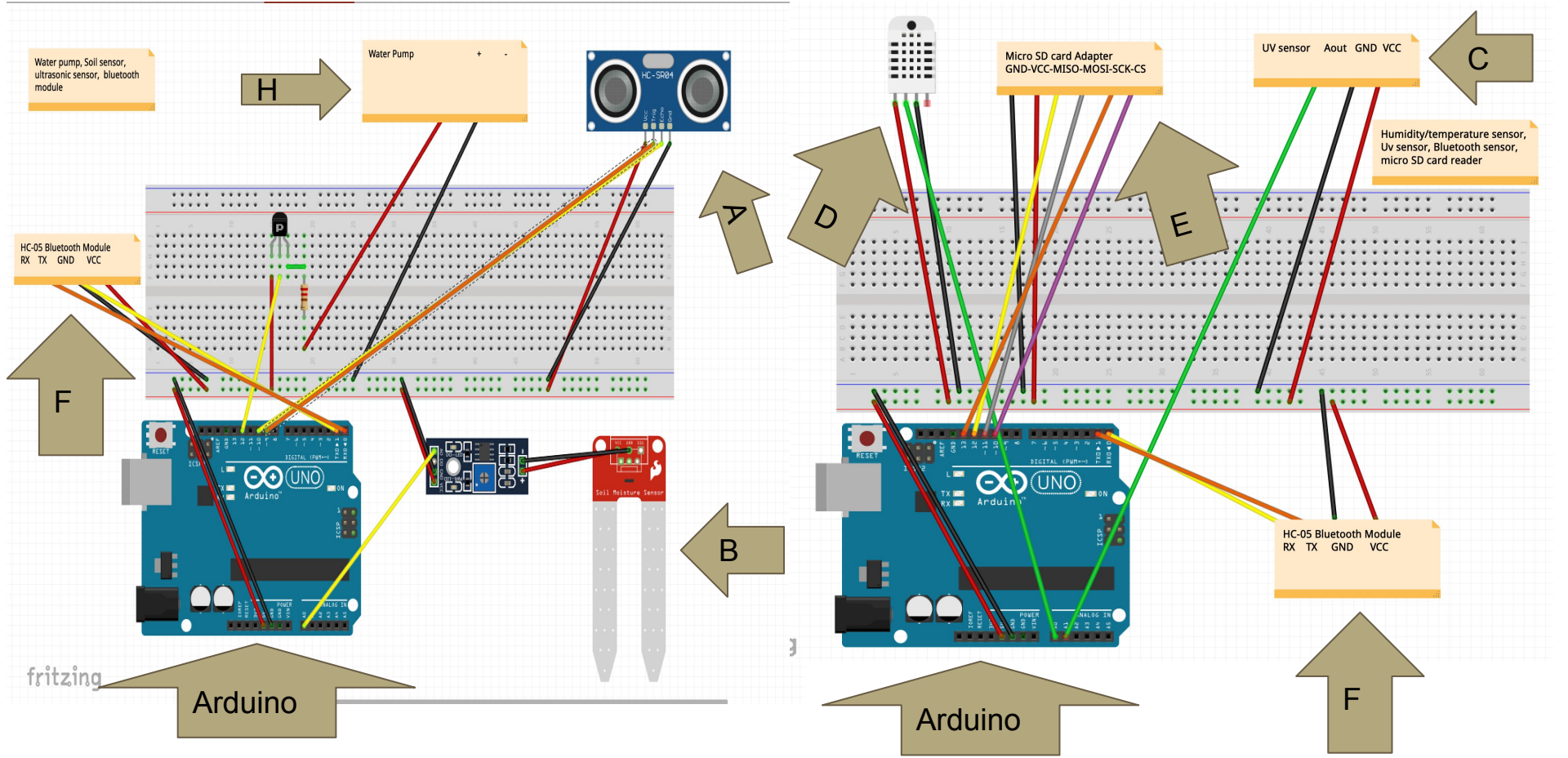
GArduino - The Gardening Assistant

The Garduino is a system that enables anyone to succeed in growing and caring for their plant by allowing sensors such as the UV light sensor, soil moisture sensor, SD card reader, temperature/humidity sensor, and a water pump to read in data and take care of your plant. The user will have access to the information taken from the sensors through the SD card by plugging it into a computer and looking at the graphs via Excel. The Arduino will also send current plant information to a mobile device via Bluetooth when the user requests for it.

Project Design - Input/Output Devices Used



Project Design - Input/Output Devices Used

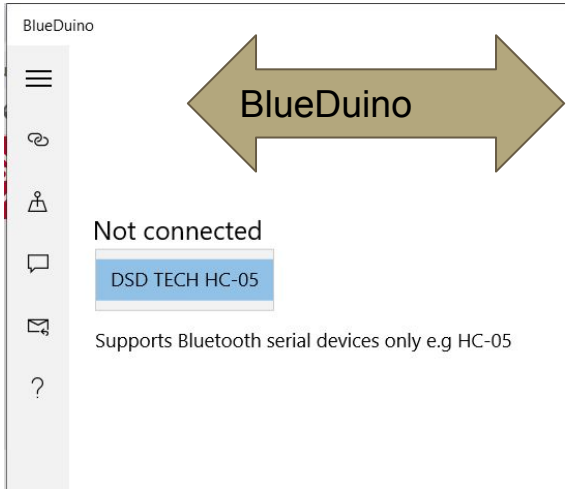
Devices that we used to get Inputs were the following:

- Ultrasonic Sensor (A)
- Soil Sensor (B)
- UV Sensor (C)
- Humidity/Temp. Sensor (D)
- SD Card Reader (E)
- BlueTooth Module (F)

Devices that we used to get Outputs were the following:

- Water pump (G)
- SD Card Reader (E)
- BlueTooth Module (F)

Project Design - Communication



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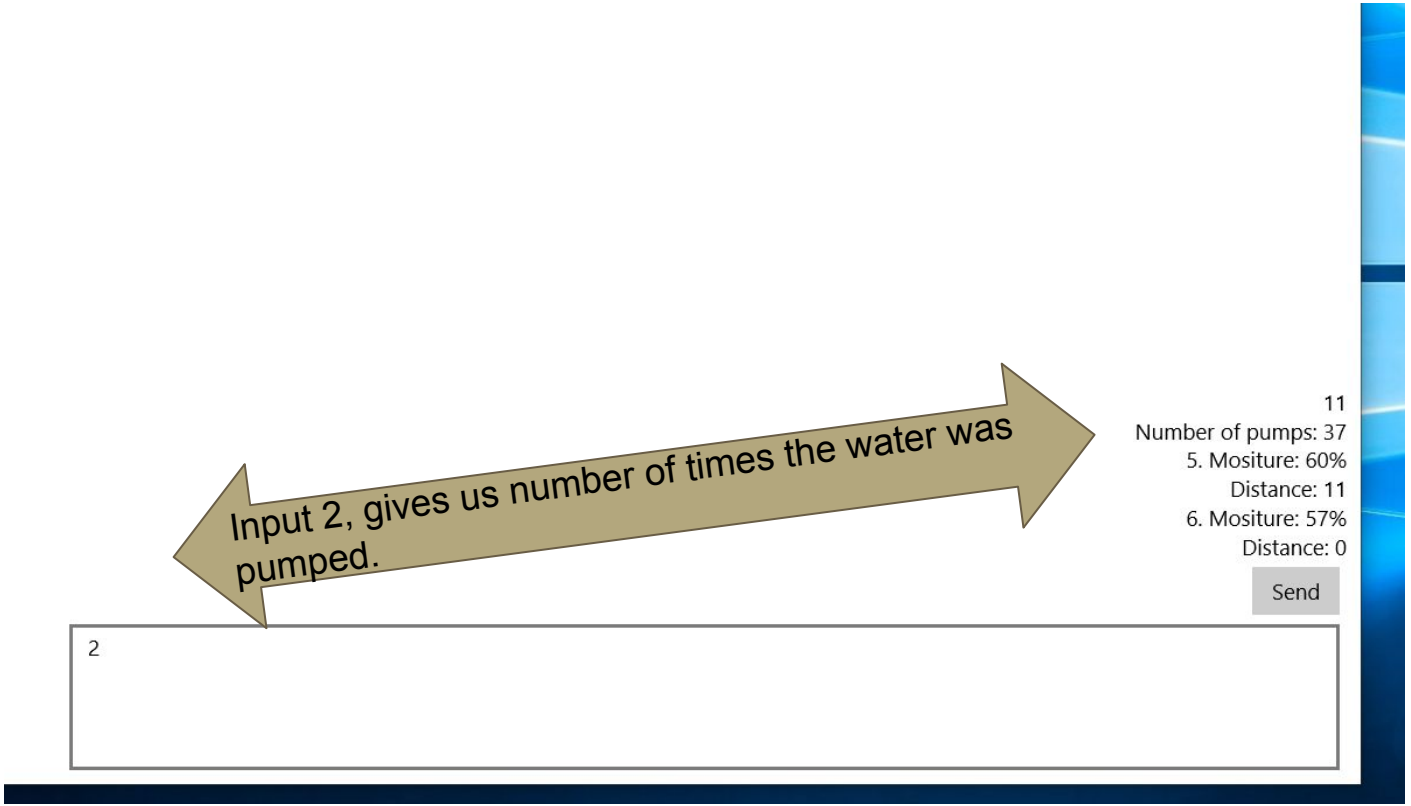
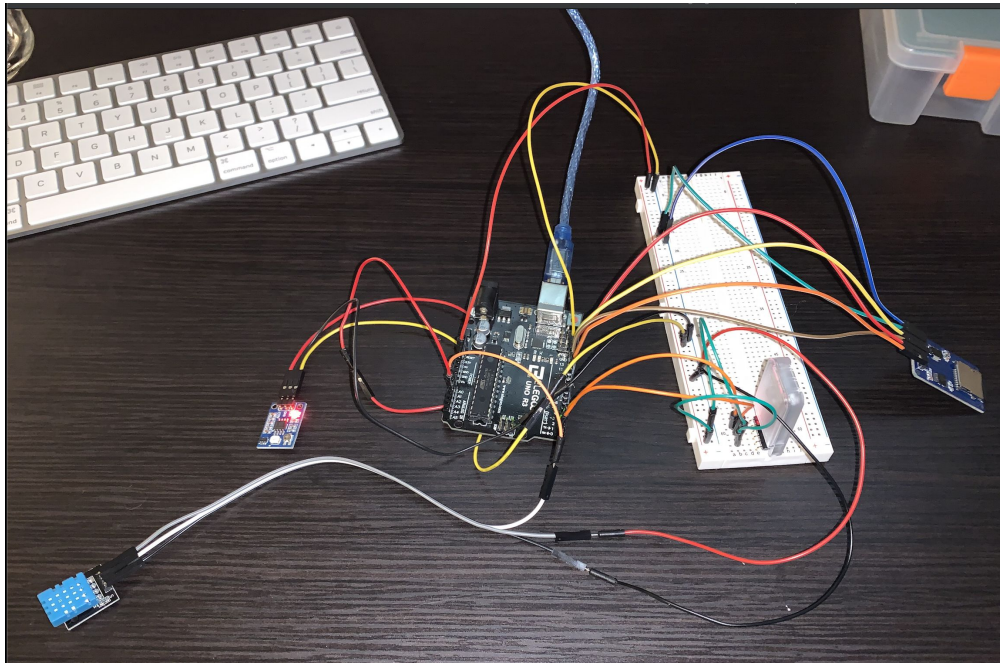

Input 2, gives us number of times the water was pumped.
11
Number of pumps: 37
5. Mositure: 60%
Distance: 11
6. Mositure: 57%
Distance: 0
Send
2

Project Design - Communication

We used BlueTooth communication from our arduinos to an application we found on the Microsoft store called BlueDuino Published by HassaanAkbar.obj.

- We have two HC-05 BlueTooth modules, one on each arduino.
- Originally, we had the idea that one arduino would have all the sensors, and will communicate all that information via BlueTooth to the other arduino and store the Information onto the SD Card Reader
- Our Adjustment is that both arduinos are communicating to the BlueDuino app separately, and through the app, we can request certain information.

Project Design - Original Work



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Steps to instert text file to excel: click on the ‘Data tab’ -> select ‘From Text’ -> choose your file -> check off delimiter and hit ‘next’ -> than select ‘comma’ for the delimeter -> hit ‘Finish’ -> Afterwards, Highlight columns you would like to graph -> Within the ‘Insert tab’ -> and click on the charts.

Time	Humidity	Temperature	UV Ray
0:00	0	32	44
0:00	0	32	25
0:00	0	32	31
0:00	0	32	26
0:00	0	32	37
0:00	0	32	24
0:00	0	32	30
0:00	0	32	24
0:00	0	32	24
0:00	0	32	24
0:00	0	32	24
0:00	0	32	30
0:00	0	32	23
0:00	0	32	28
0:00	0	32	12
0:00	0	32	28
0:00	0	32	27
0:00	0	32	27
0:00	0	32	22
0:00	0	32	18
0:00	0	32	27
0:00	0	32	28
0:00	0	32	22
0:00	0	32	22
0:00	0	32	27
0:00	0	32	22
0:00	0	32	22
0:00	0	32	22
0:00	0	32	21
0:00	0	32	22
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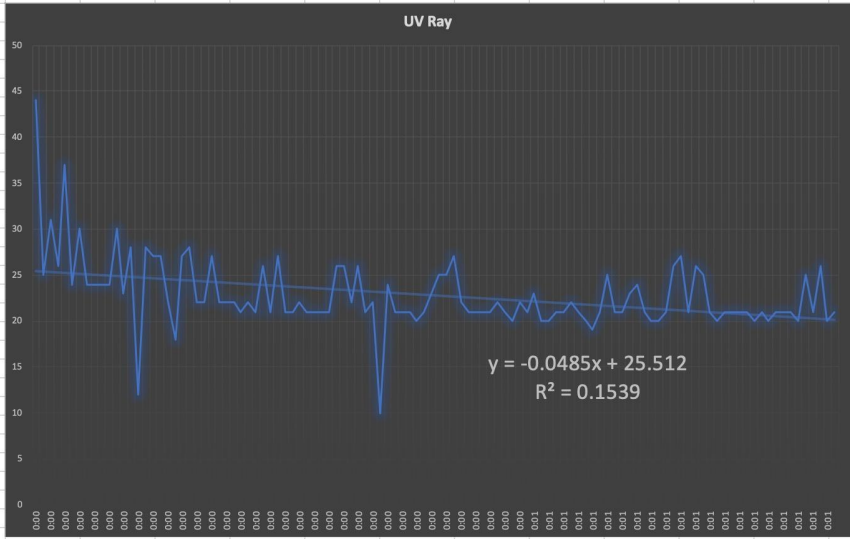
0:00	0	32	21



Project Design - Original Work

Our idea came from another plant setup that had used similar sensors, however, they just relayed specific information for an instance. Our goal was to used the same idea but to also analyze the data to see if the plant was really growing properly.

By graphing the following we could learn if the plant is growing steadily...

- Number of water pumps the plant received in a day.
- Amount of sunlight.
- Humidity and Temperature around a plant.

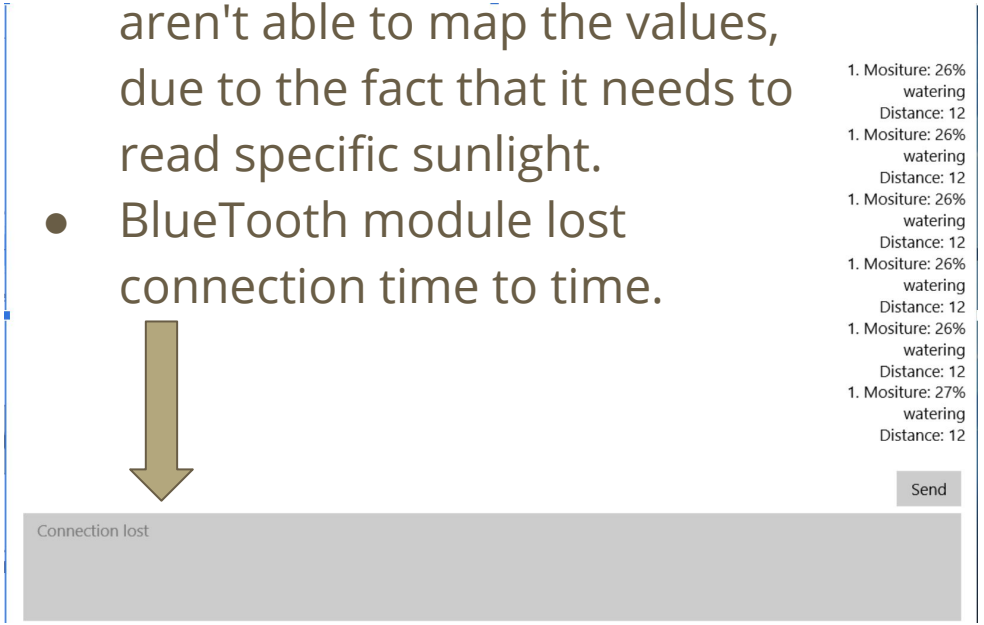
These values in the long term can tell us if the plant is truly being taken care of along with calculating the Line-of-Best-Fit to see the trends.

What Worked

- Getting most of the sensors properly adjusted to the correct values.
- Correctly receiving BlueTooth Values to external device.
- Sending text file to Excel and properly graphing it.

What Didn't Worked

- The UV sensor and Humidty/Temp sensor was tricky to figure out because we aren't able to map the values, due to the fact that it needs to read specific sunlight.
- BlueTooth module lost connection time to time.



Process/Team Roles