Plant Parenthood

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Goals

Plants can be difficult to take care of - they require consistent attention, different species need different care, and unless you are familiar with plants you may not know what it is that a plant needs to be healthy or what is lacking in the care you provide. We seek to create a holistic solution to this problem, by creating an interactive system that supplements the caretaking process and provides helpful insight to improve the health of your plant.

Plant Parenthood is an attempt to facilitate and modernize the at-home plant care experience. Our goal is to provide education and assistance for at-home plant care in a way that is accessible, affordable, and attractive through the use of effective metrics, valuable user feedback, and an aesthetically pleasing mobile application.

Intellectual Merits

Plant Parenthood will implement a holistic, contemporary plant-care solution for the average person who is unfamiliar with the means of it, therefore reaching an unreached demographic and providing another way to propagate interest in home-gardening and healthy plant care.

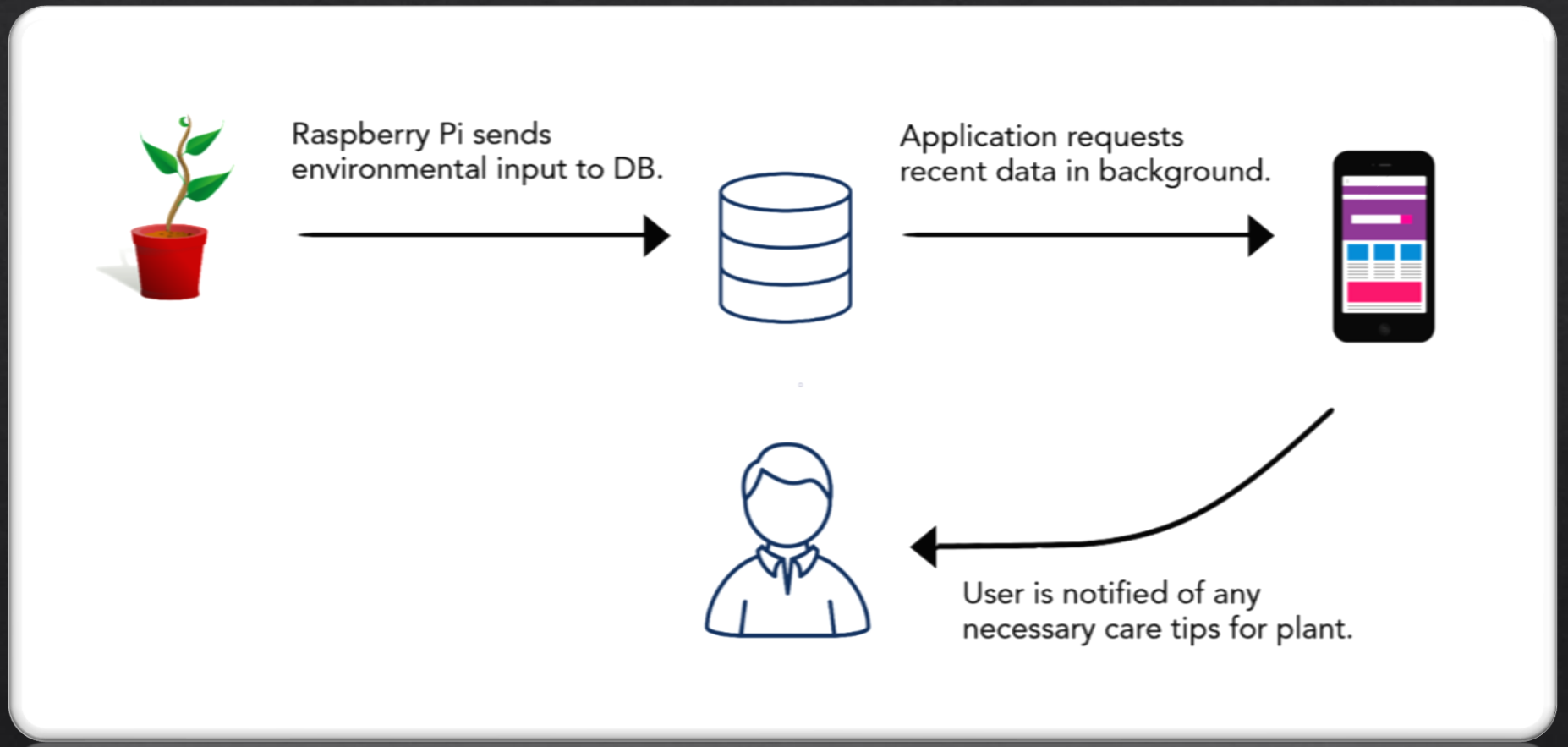
Broader Impact

By reaching a group of people who are interested in gardening yet unfamiliar with it, we hope to educate and encourage a larger community of plant-owners.

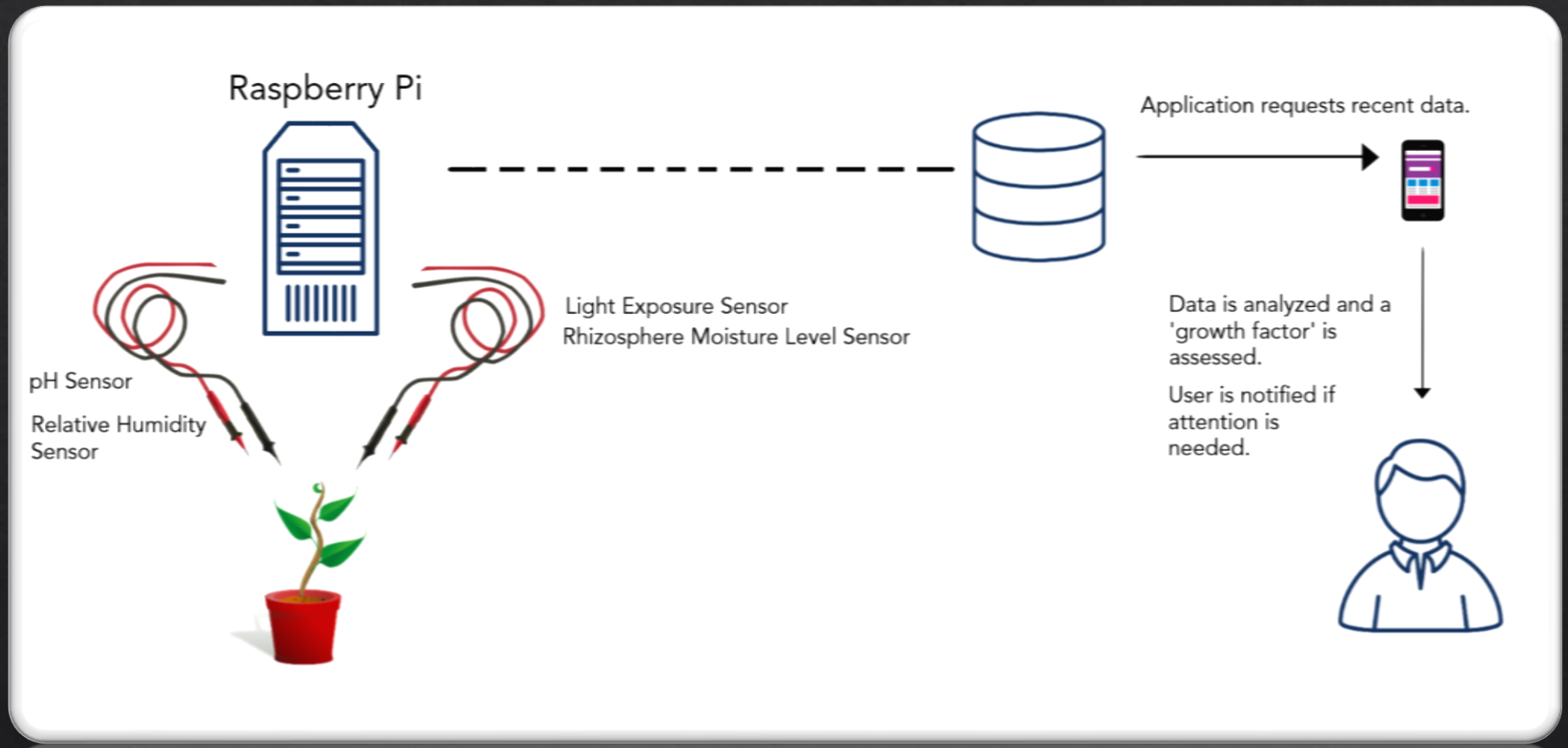
Ideally this would generate more interest in plant-care and help to promote the knowledge and familiarity necessary to successfully raise plants.

At the very least, we hope this project will improve the lives of those who use it by providing an enjoyable new hobby.

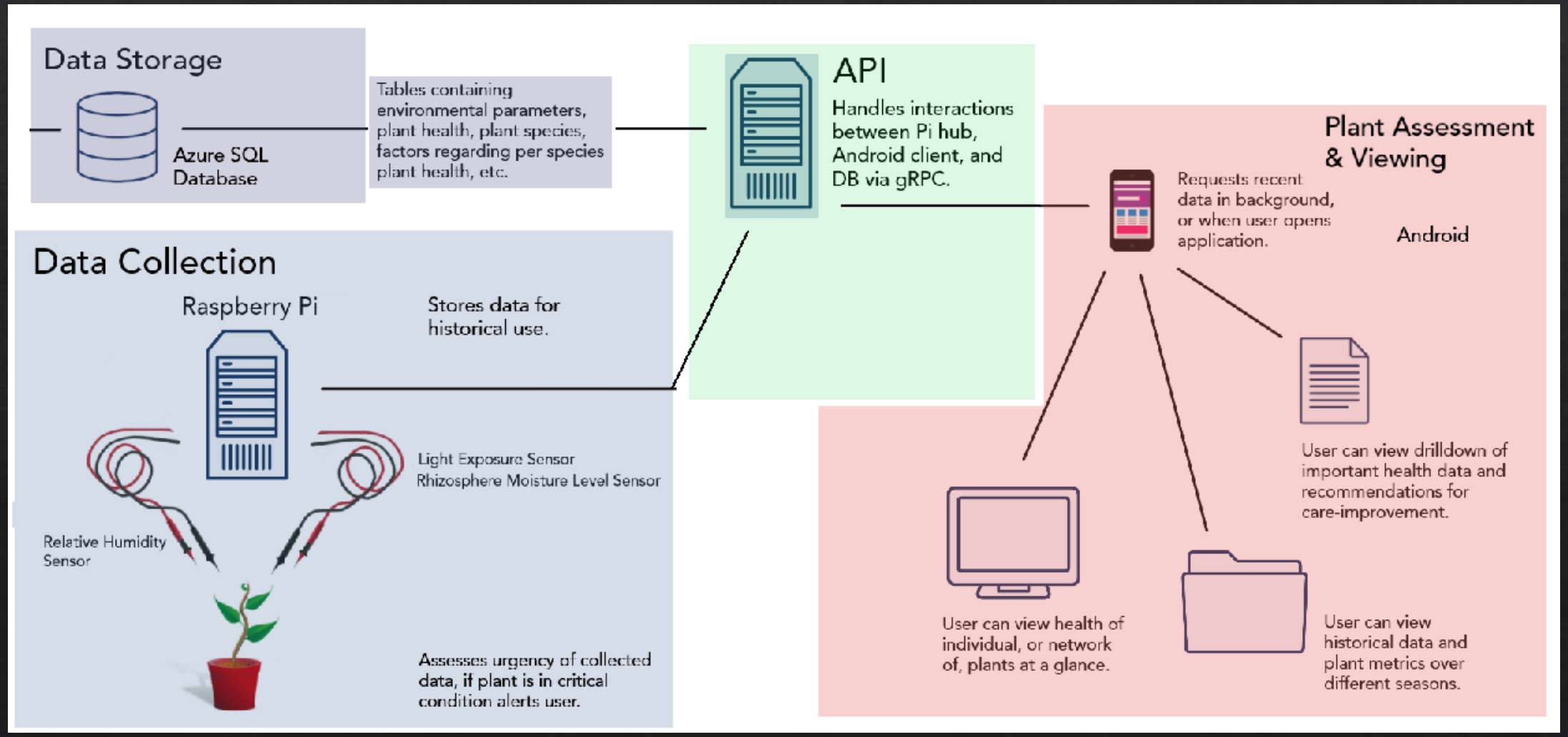
Design Diagram Level I



Design Diagram Level II

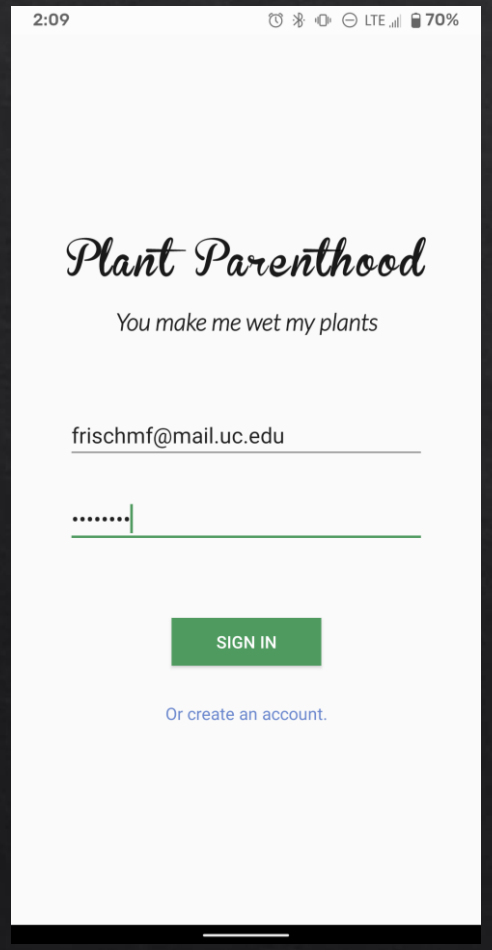


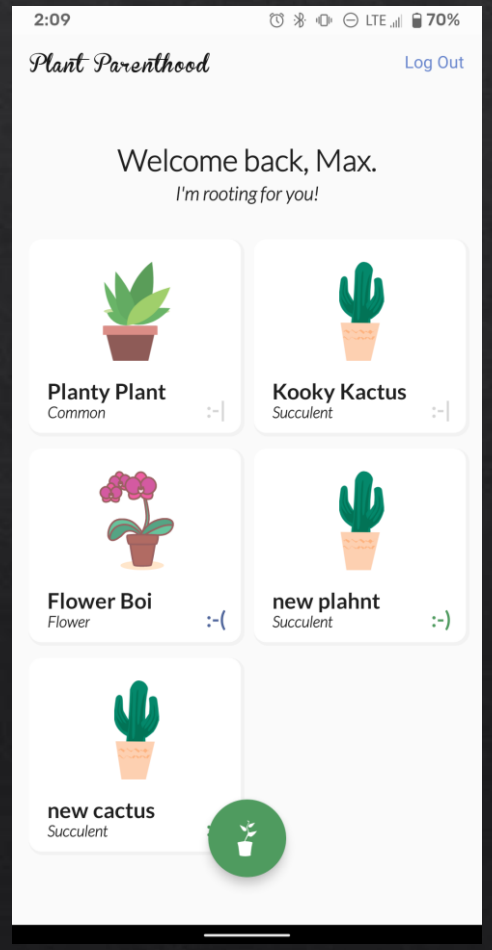
Design Diagram Level III

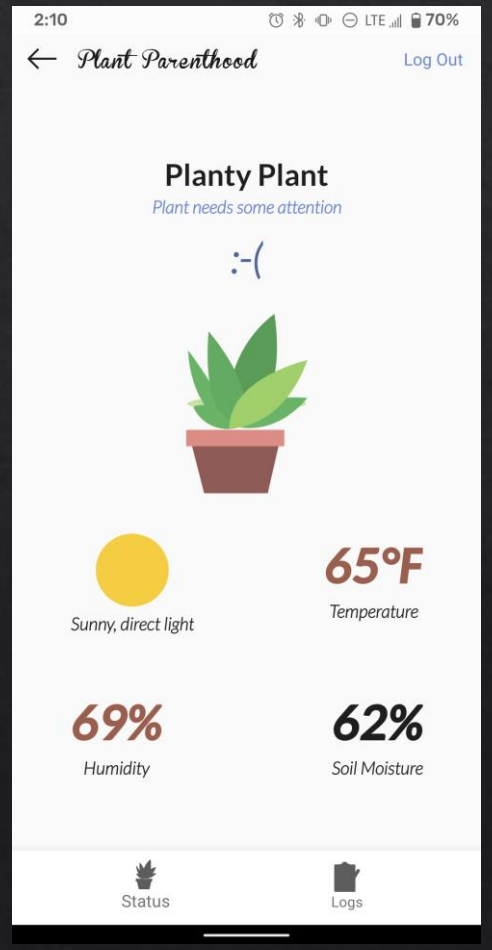


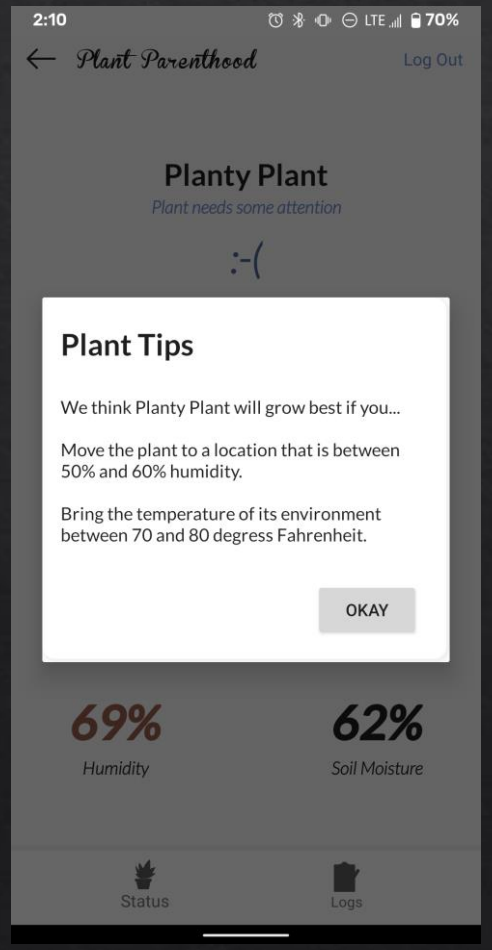
Design Specification

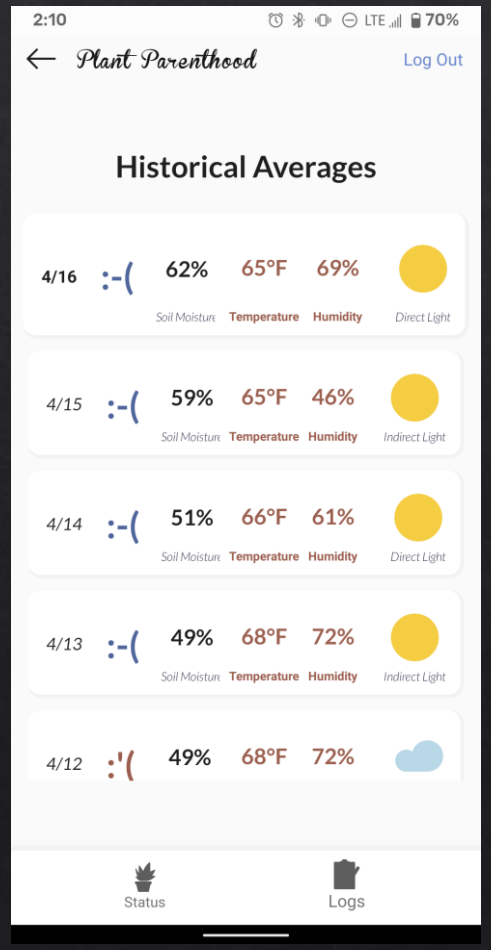
Implementation











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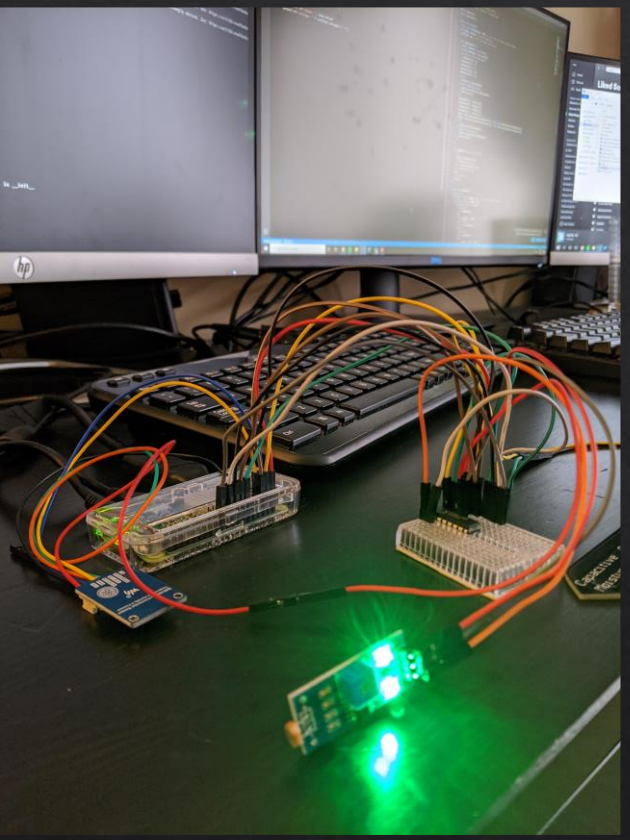
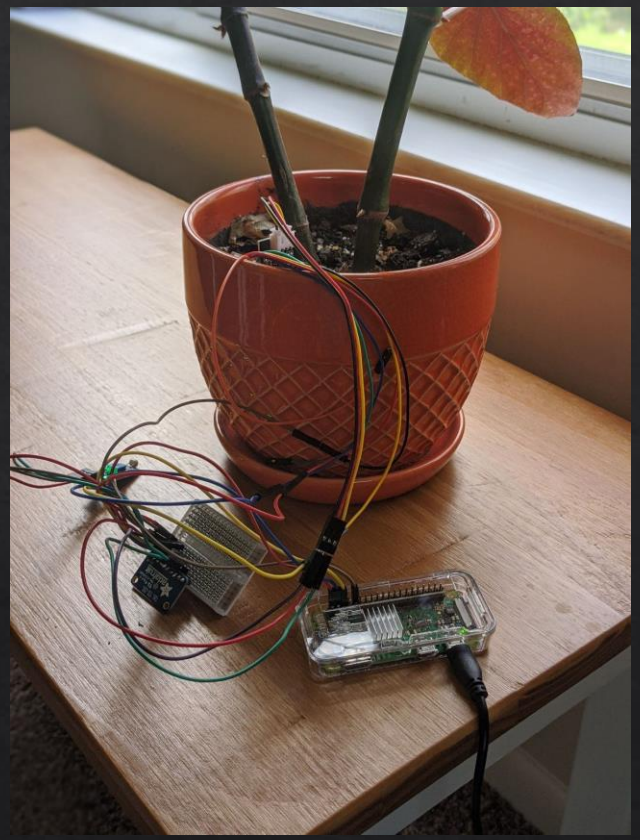
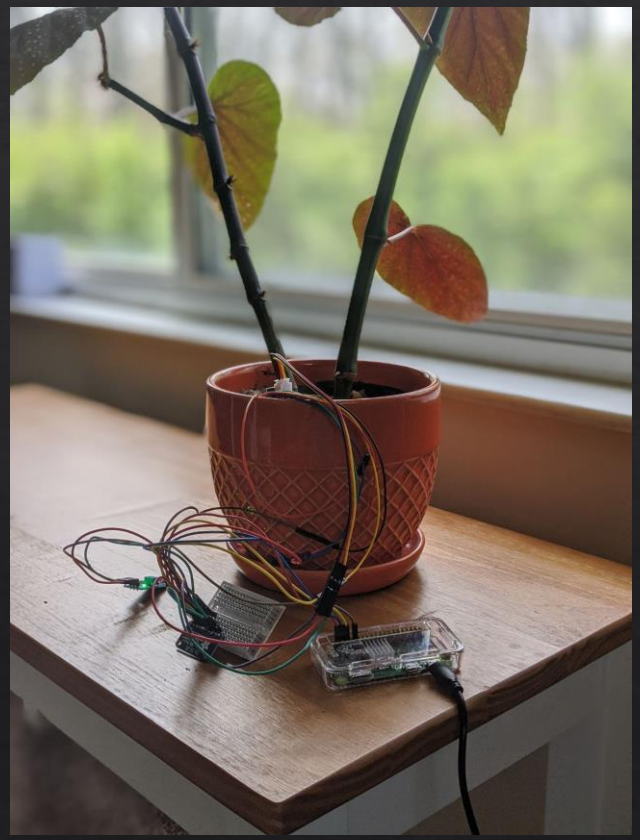






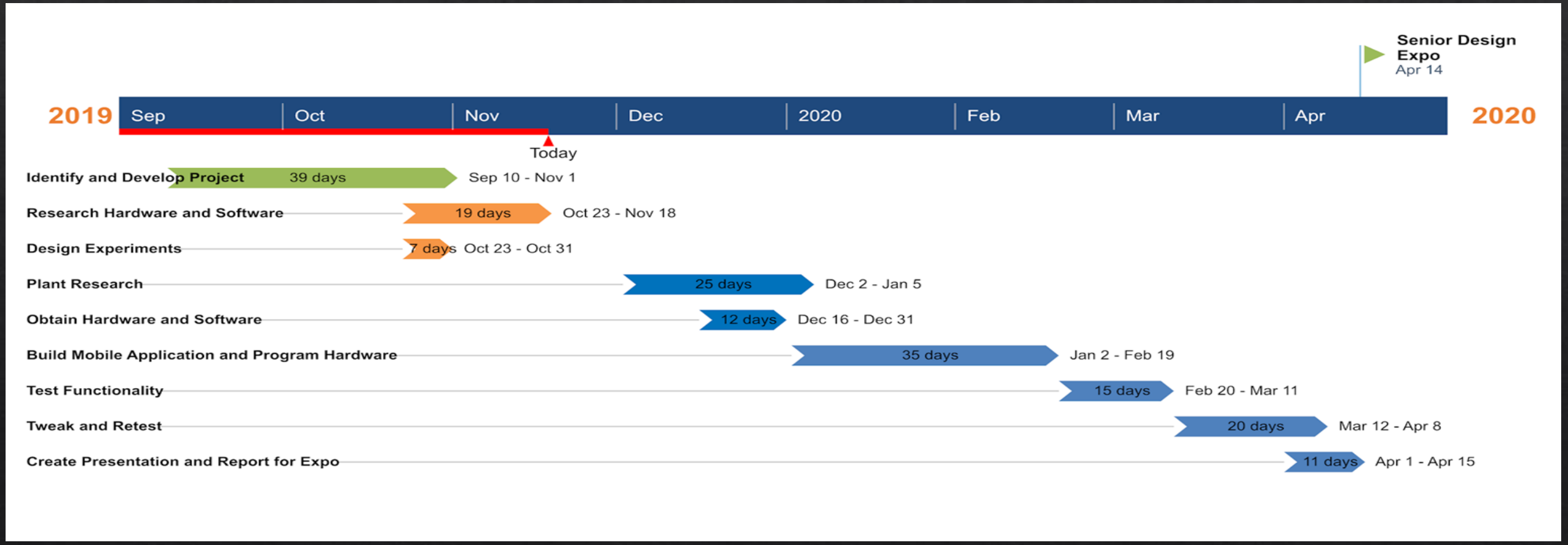
Technologies

- Android
  - Kotlin
  - Java
  - XML
  - gRPC

- Raspberry Pi
  - Python
  - Linux
  - gRPC
  - Soil Moisture, Temperature, Humidity, Air Pressure, Light Exposure sensors

- API
  - C#
  - Entity Framework
  - Azure SQL Server
  - Firebase Cloud Messaging
  - gRPC

Project Timeline & Milestones



Results

We were able to successfully implement the solution we envisioned.

- A working Android client that is able to retrieve sensor data on demand,
- An API that analyzes plant factors and notifies the user to care for their plant
- A hobbyist hub that is able to effectively gather the data we needed

Challenges

- Cost
  - pH Sensor > $80
  - Unforeseen costs...
    - Analog to Digital Converter
    - Wiring / Breadboards
    - Soldering materials
    - SD Card, Power Source

- Hardware Knowledge
  - Getting sensor data
  - Making sense of sensor data
  - Digital vs Analog output
  - Soldering

- Developing in Different Languages
  - Solution is implemented in Python, C#, and Kotlin

Thanks for Watching.

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