IoT Project 2021 – Automatic Plant Bed/Garden

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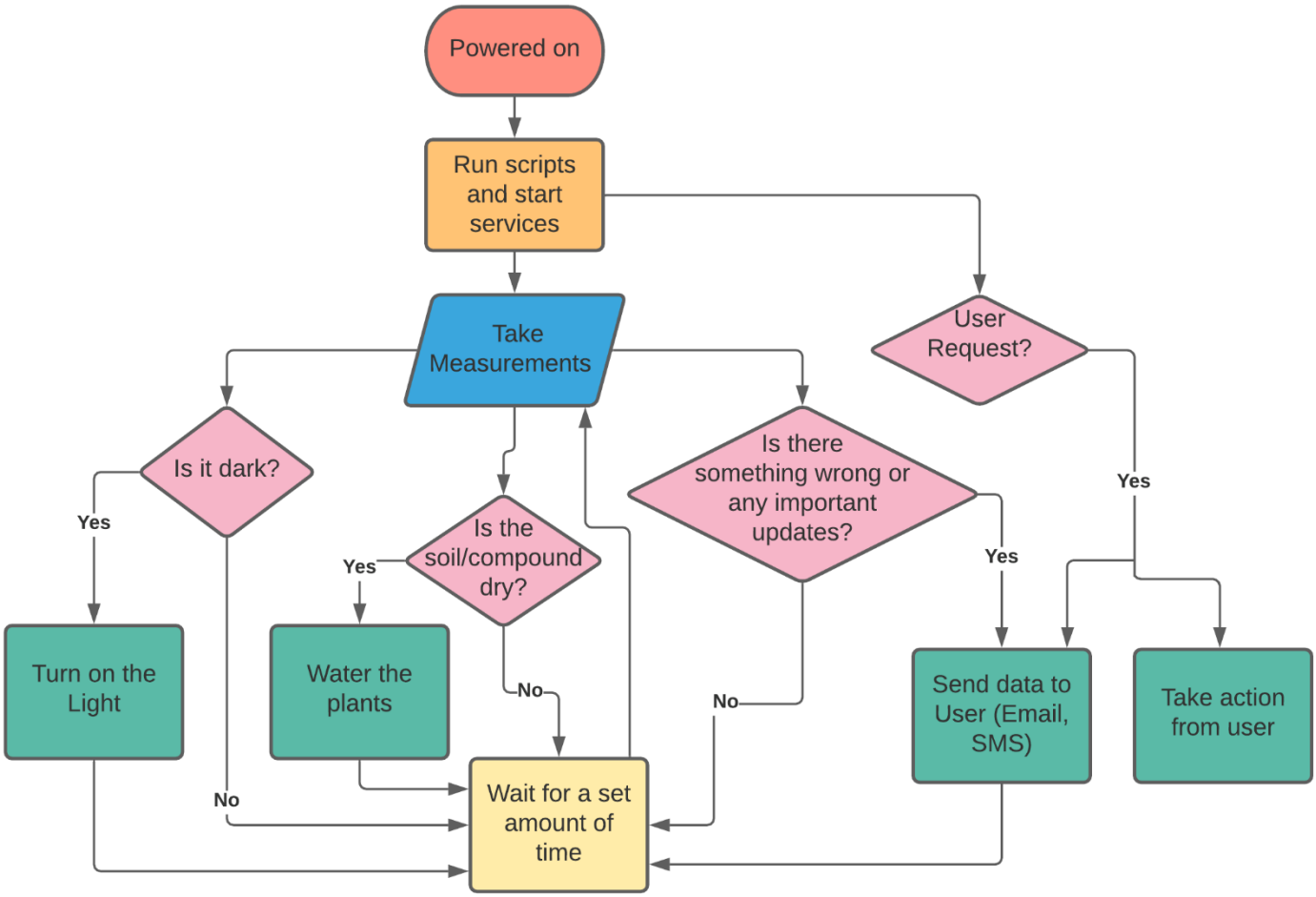
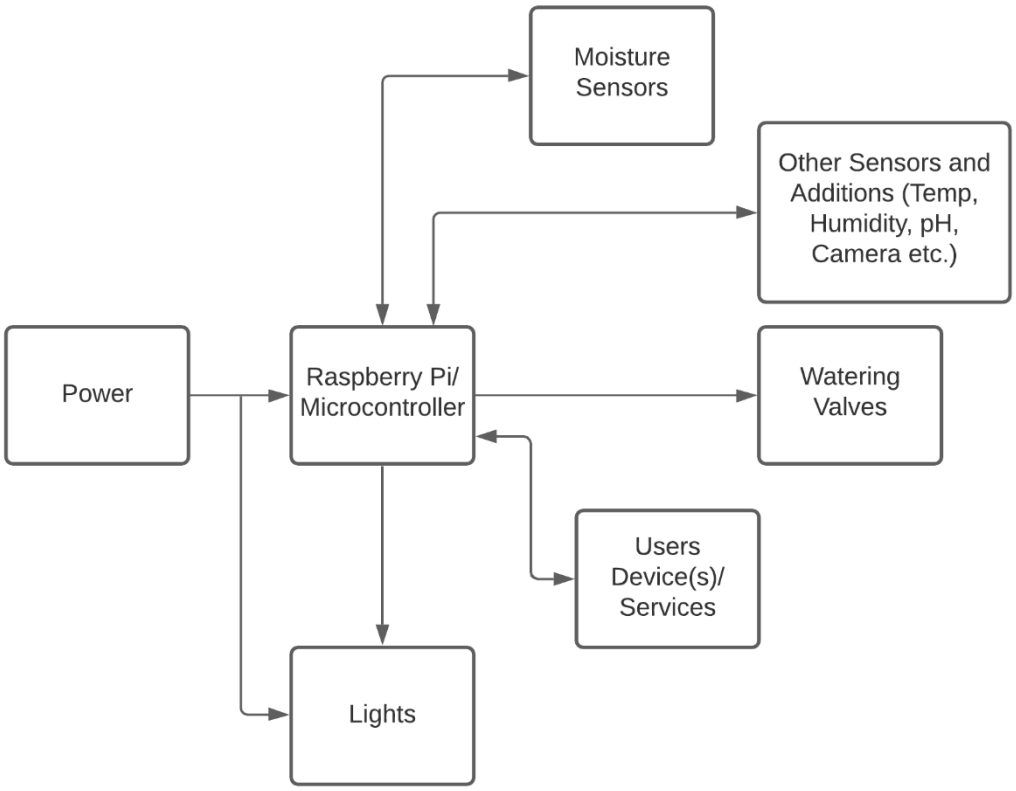
This document contains a basic flowchart and block diagram, as well as brief explanations of what they represent and more details. The charts do not represent everything possible or planned with this project as it would make them quite messy and complicated but represent a basic simple autonomous plant bed with an automatic watering and lighting system as well as connections to an external user device. This system should be easily expandable with more functionality due to its structural simplicity and could be as simple or as expansive as desired!

Flowchart:



Upon powering on the device immediately starts up any necessary scripts and services for the functionality of the system. After this it takes readings from the sensors and makes decisions based on the readings and how we have it configured to react and when in the code. The device should only take measurements on a time interval (Every 15-30 minutes should be well sufficient) to reduce the load on the device and any services or platforms it might be connected to and relaying information to. If the device has an issue or the user requests data the device should be able to relay this data back to the user using a service like e-Mail or Twilio (For example: the water tank for the watering system is low or empty) Ideally the user shouldn't have to intervene very often with the system, but it would be nice if the user had the option to manually activate parts of the garden through a service like Blynk. Adding the likes of a camera to the system to let the user keep an eye on the plants and their health remotely would be ideal for this setup!

Block Diagram:



External power for the system is connected to the controller and any other devices that need external power (in the case of this diagram, the lighting). The controller, which can just be a Raspberry Pi/SBC or combine a microcontroller like an Arduino with an SBC to allow for the simple implementation of analogue sensors, is connected to any sensors and devices/services and relays data to and from them, it uses what it gathers to make decisions and toggle or activate functionality. The relative simplicity and modularity of this system leaves it open to extra additions down the line like a temp/humidity sensor and the camera!