Irrigation System

USER GUIDE

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**System Overview**

Diagram of a diagram

Description automatically generated

**1 GENERAL SYSTEM INFORMATION:**

The user will be able to access the 4 Key components of the system. Here is a brief overview of these scripts.

1A) Configurator.py

* 1. This will allow the user to create **configuration files** for new devices including moisture sensors, valves, and light sensors (to be implemented in future project)
  2. **New Plant Creation** allows the user to add a new plant, with its low/high moisture % requirements to the database.

1B) Subscribe.py

* 1. This script will listen to all moisture sensors, store their readings, and will add plants that need to be watered to a job list
  2. If a new device has been added, this will start the calibration mode for tracking how much water to use when watering a new plant/device

1C) waterQueue.py

* 1. This script will pull all watering jobs from the job list and send requests to the associated valve to water its plant.
  2. After the plant has been watered, it will get a confirmation that there are no leaks, and it will store the amount of water that has been used in the database.

1D) statusChecker.py

7. This script will poll all devices, and return to screen any moisture devices that have

not made contact in the last 30 minutes, and any valve controllers that have not

responded to a callback message.

*Note: 1C does not need to be run if the user would like to only monitor the moisture level of plants, however in the 1B terminal window the user will see a QueryError when attempting to log a device that needs watered if it exists in the job list, this can be ignored.*

**2 SYSTEM ACCESS:**

2A) The user will access 1A-1C throughout the terminal windows on the Raspberry Pi. To access this, do the following:

* Find location of the entire irrigationSystem Folder
* Open terminal window and cd into irrigationSystem Folder

**3 Software Instructions:**

3A) Configurator Instructions

Run the Configurator by passing the following command to the terminal after you have accessed the system, and pressing enter.

* python3 configurator.py

From here, the user can select enter via keyboard the answers to the on-screen prompts.

*Note: If a user chooses to create a moisture sensor first, they will be prompted to also create a plant to be used, and a valve system to associate with.*

3A.1) Saved Device Configurations

After creating the device configuration, you will see a new device appear in the “NewConfiguredDevices” folder within the irigationSystem folder. Keep note of this as this will be used to load to each device.

keep note of the terminal output after creation, as this will remind you of what the device name, plant, valve, and relay were chosen during configuration.

**Example output:**

Name:moisture2 Job:Moisture Location:Inside Plant: coffee

Valve-Controller:valve1 Relay:4

3A.2) Deactivate/Activate Specific Valves

After a valve has been created, the user will have the option to either enable or disable

specific valves of their choosing. If disabled, the system will not attempt to water the associated device when it has hit its lower bound.

3B) Subscribe Instructions

Run the Subscribe script by passing the following command to the terminal after you have accessed the system and pressing enter.

* + python3 subscribe.py

Once run, confirm that the system has connected by seeing,

iriData

CONNACK received with code Success.

Subscribed: 1

If this is not visible, try restarting the script, and confirming that you have an active internet connection.

Once the system has started to run, it will continue until the terminal shell is closed. If you would like to stop the subscribe script, click “x” on the top of the terminal window.

3C) waterQueue Instructions

*3C.1) Prereqs:* The waterQueue must be run

* + after the subscribe script has been started
  + in a second terminal window
  + on the same device
  + In the same file system path as subscribe

Run the waterQueue script by passing the following command to the terminal after you have accessed the system and pressing enter.

* + python3 waterQueue.py

Once run, confirm that the system has connected by seeing,

CONNACK received with code Success.

Subscribed: 1

If this is not visible, try restarting the script, and confirming that you have an active internet connection.

Once the system has started to run, it will continue until the terminal shell is closed. If you would like to stop the waterQueue script, click “x” on the top of the terminal window.

3D) statusChecker.py Instructions

Run the statusChecker by passing the following command to the terminal after you

have accessed the system, and pressing enter.

* python3 statusChecker.py