

Team Full Steam

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Project Perennial



Overview

Project Perennial is an automated watering system that measures the moisture in the soil and automatically adjusts the watering schedule of the plant. It includes a web application that allows the user to set up a timer to water their plants. The user can choose from suggested plant condition data from Perennial's database. The user can also input manual watering information for their plant to how they see fit.

Users can add plant devices to their list and monitor their plants as needed through the web application. The conditions in which to keep the plant is determined by the algorithm and data within the Perennial's API layer.

Who Uses Perennial?

- People in urban environments
- Differently abled people who like plants.
- People who are away from home for long periods of time.

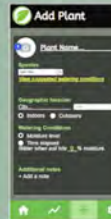


Features



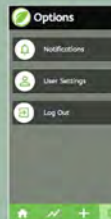
Perennial makes adding plants easy by

- Giving users suggested watering conditions such as plant's species.
- Remotely water their plants from the web application.
- Options include warnings for when the watering tank is empty, when a certain moisture value is reached, or when a plant is being watered.
- User can opt to receive notifications over SMS or email.
- Registering all plants to their collection under one account.



User can check what the current level in their plants

- Moisture .
- Status of external water supply
- Check the humidity level/ temperature around the plant
- Recently water times.
- For outdoor plants, the user can check when the plants most recently underwent rainfall.



User can set

- Watering conditions including timed interval or moisture dependent watering times.
- Outdoors or Indoors plant as a attribute.



Device

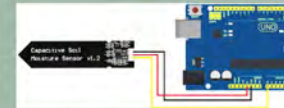
KeeYees ESP32 ESP-32S Development Board Microcontroller

- 2.4 GHz Dual Core WiFi
- Bluetooth
- 38 pins



Other Parts:

- Capacitive Soil Moisture Sensor
- 5V Relay Module
- Mini Water Pump



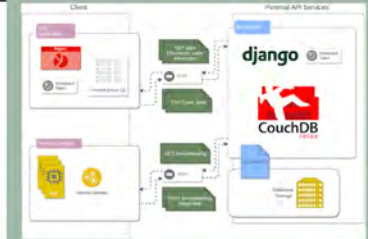
MQTT server

MQTT is used as an IOT message broker since it is easier for the device than using an HTTP API. The server subscribes to device reading topics and posts to topics telling the devices to take actions such as turning on pumps. The IOT device also subscribes for actions and posts readings.

Containerization Service

All of our services are containerize using docker images, including our ESP Home Service that writes the firmware to our device.

Design



RestAPI Model

Frameworks & Applications

- React
- Django
- MQTT
- CouchDB
- ESPHome

Information Architecture Design

