Knowns & Unknowns

Knowns

Water the plant:

Start the pump automatically when the soil is dry

Make a button on the dashboard that manually waters the plant

Set the blue button to manually water the plant

Publish each watering action to the waterHistoryFeed

Get and Publish Grove Sensor Data

Get the Air Quality data and publish it to the airQualityFeed

Get the Dust Particle Sensor data and publish it to dustFeed

Get the Soil Moisture data and publish it to the soilMoistureFeed

Get and Publish the Room temperature

Get the room temp reading from BME280

Publish the room temp reading to roomTempFeed

Display Data on the OLED

Display the following on the OLED

latest air Quality Reading

latest Dust Sensor Reading

latest Soil Moisture Reading

latest Room Temperature Reading

Control the NeoPixel Lights

Set the Encoder to control the brightness of the NeoPixels (map)

Set up a custom color picker/subscribe to it and control the color of the lights from the Adafruit dashboard

Set the black button to turn the Neopixel lights on/off

Set the encoder switch to cycle through the color arrays in the rainbows.h file

Set the Encoder Lights

Set the Encoder Red light to turn on when the soil reads dry

Set the Encoder blue light to turn on when the soil is being watered

Set the Encoder green light to turn on when moisture level is good and the plant isn't being watered.

Unknowns

Set the Grow Light to turn on at Sunset

how do we get the time for sunset?

how to **get the current time** and display a clock on the OLED.

how to **get the current date** and display it on the OLED

how to **get the temperature outside** and display it on the OLED

how to **get Google Calendar events** into an Adafruit /subscribe and display each event cycling through on the OLED

how to **get the wireless camera feed** displayed in the Adafruit dashboard for SmartThumb

Watering the Plant

Related Components

2N3906 Emitter Follower and Relau

Pump

Grove Soil Moisture sensor

Blue Button

Adafruit Dashboard: Blue Button

Adafruit Feed: Soil Moisture Readings

Grove Soil Moisture Sensor:

Reads Soil Moisture Level

If Reading changes from last reading:

Publish Reading on Adafruit dashboard

If Reading >= 2960

Turn on Pump & Water for:

1/2 sec increments for 30 sec

Publish Watering Cycle to Adafruit Dashboard

wait (timer) 5 minutes

Loop back to If Reading >= 2960

Blue Button:

Turn on Pump & Water for:

1/2 sec increments for 30 sec

Publish Watering Cycle to Adafruit Dashboard

wait (timer) 5 minutes

Check moisture reading

Adafruit Dashboard Blue Button

Turn on Pump & Water for:

1/2 sec increments for 30 sec

Publish Watering Cycle to Adafruit Dashboard

wait (timer) 5 minutes

Check moisture reading

NeoPixel Components

Black Button: Toggle lights on/off

Encoder: Adjust LED brightness

Encoder Switch: Cycle through light settings

Auto Feedback:

Encoder Red Light: Turn on when soil reads dry

Encoder Blue Light: Turn on when watering action is initiated

Encoder Green Light: Turn off when soil reads dry or watering action is initiated

Components

Argon Microcontroller

2N3906 Emitter Follower & Relay

Pump

BME280

Grove Dust Sensor

Grove Air Quality Sensor

Grove Moisture Sensor

Grow Light

WEMO outlet

OLED

blue button

black button

Encoder

Neopixels

Wireless Camera

Adafruit Dashboard

Adafruit Feeds

Google Calendar

OLED Display Components

BME280 Room Temperature Reading

Weathermap: Outside Temp Reading

Time: Current Time of Day

Date: Current Date

Google Calendar Events

Soil Moisture Current Reading

Dust Sensor Current Reading

Air Quality Sensor Current Reading

Grow Light Components

WEMO smart Outlet

Grow Light (plugged into WEMO)

Turn WEMO on at sunset to turn on light

Turn WEMO off at sunrise

Adafruit Dashboards

Grove Soil Moisture Sensor: Readings

Publish when the reading changes

Feed Name: **soilMoistureFeed**

Watering Cycles: Publish when the plant is watered

Feed Name: **waterHistoryFeed**

BME280 Room Temperature Reading: Publish when the Reading Changes

Feed Name: **roomTempFeed**

Grove Air Quality Sensor: Publish when the reading changes

Feed Name: **airQualityFeed**

Grove Dust Sensor: Publish when the reading changes

Feed Name: **dustFeed**

NeoPixel Light Color Selector: Selects a custom light color for the Neopixels

Feed Name: **neopixelColorFeed**

Import: Wireless Camera feed

Feed Name: **cameraFeed**

Import: Google Calendar Feed

Feed Name: **calendarFeed**

Import: Open Weather Outside Temp Reading

Feed Name: **weatherFeed**

Diagram nodes and connections: Google Calendar, Wireless Camera, Encoder, Adafruit.io, OpenWeatherMap, OLED, Enc Red Light (D5), Enc Blue Light (D7), Enc Switch (A5, D6), BME280 (A = D3, B=D2), Enc Green Light, Computer, USB port, Black Btn (A4), Argon, Blue Btn (A3), Reset D4, publish/subscribe, Dust Sensor (A2), Air Quality Sensor (A1), Soil Moisture Sensor (A0), WEMO (D8), NeoPixels, Grow Light, 2N3906 Emitter Follower & Relay, Pump (12V) (11)