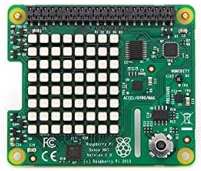
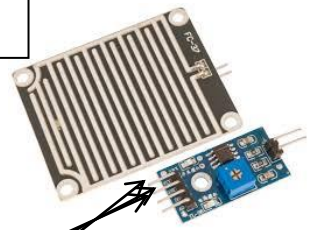
Blynk app is used through Wi-Fi to activate the two different methods on the raspberry pi once its main script is running. One for just the SenseHat data the other for the rain sensor as well .

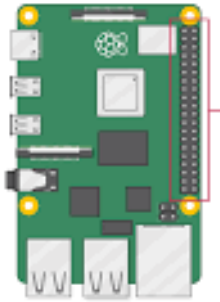
Sensehat used to get data such as Temperature, Humidity and pressure from its built-in sensors .The Led matrix is Turns Green when running the sensor data method and blue when the rain notification method is running and displays “RAIN” when it is detected.

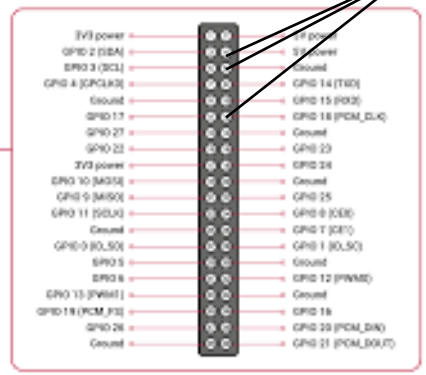
Rain Sensor is connected to Rpi with wires connected to a 5v power pin and Digital output at GPIO18. Returns a Low output if enough water is detected.

A Website on the Glitch Platform is used to display the Sensor data from ThingSpeak using their embedded charts (Dashboard). Another Page (Forecast) on the site displays current weather data using the embedded ThingSpeak widgets. The page also displays tomorrows weather data from OpenWeather using a fetch request written in script tags at bottom of the HTML file.

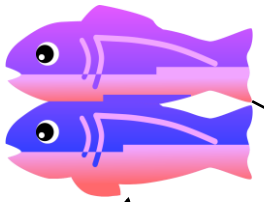








The Rpi’s Bluetooth is used as a beacon advertise the URL of the website.



OpenWeather

MATLAB

ThingSpeak’s MATLAB Analysis App is used to retrieve the current weather data from the OpenWeather API. The code is run every 6 minutes using ThingSpeaks Time Control app. This info is stored on a separate Channel from the Rpi data. ThingSpeak widgets are then embedded into the website on a different web page from the Rpi sensor data .

Raspberry Pi runs a Main script that awaits input from Blynk. First script records the sensor data from the SenseHat while the other is the same except it also reads the rain sensors output. This Info is sent to ThingSpeak using the home Wi-Fi router using the 802.11 protocol. The Rpi would ideally be placed Outside with a waterproof case where it can catch falling rain and record more accurate sensor readings.

Data is sent to the ThingSpeak IoT platform as I used several of the platform's tools.

ThingSpeak

IFTTT

ThingHTTP is used when rain is detected to send a HTTP POST to a webhook on IFTTT that will then send an email notifying them that it is raining, and they should bring in their washing.