PROJECT SCOPE

Project Name	
Smart Irrigation System Using Weather	Forecasting Api
Project Members	VIKAS KUMAR NIGAM RUTHALA MEHER BHAVANA AYALURI SOUJANYA SHAIK AFIFA AIMAN
Project Sponser	SmartBridge
Kickoff Date	1/08/2021

Project Summary

Farming is a major input sector for economic development of any country. Livelihood of majority of population of the country like India depends on agriculture. In this project, it is proposed to develop a Smart Farming System that uses advantages of cutting edge technologies such as IoT, Wireless Sensor Network and Cloud computing to help farmers enhance the way farming is done.
Using sensors like temperature, humidity, soil moisture etc. are used to get information about the field and help farmers to take precise decisions on insights such as turnng ON/OFF the pumping Motor and recommendations based on the collected data.

Need of Project

Measuring soil moisture is important in agriculture to help farmers manage their irrigation systems more efficiently. Not only are farmers able to generally use less water to grow a crop, they are able to increase yields and the quality of the crop by better management of soil moisture during critical plant growth stages. Embedded system for automatic irrigation of an agriculture field offers a potential solution to support site-specific irrigation management that allows producers to maximize their productivity while saving the water.

Project Requirements

Github
Slack Channel
Zoho Writer
IBM Cloud
IBM Watson IoT Simulator
Open source whether API platform
MIT App Inventor
Python IDE

Technical Requirements

Node-Red App
IBM Watson IoT
Cloud Service : Cloudant
Slack Channel for communication with mentor
MIT App Inventor

Software Requirements

Chrome Web Browser
Slack Bot
Python 3 IDE

Project Deliverables

The scope of the project is to build an Smart Agriculture system based on IoT and to advance the farmers to control thier irrigation work remotely through mobile.

Project Schedule

Project Planning & Kickoff	1 Day
Setup of Development Environment	1 Day
Exploring IBM Cloud platform	3 Days
Exploring IBM Watson Service	2 Day
Setup of Node-red, Watson IoT with IoT simulator & Open whether API	2 Days
Building a Web App	3 Days
Building Mobile App through MIT	2 Days
Developing Python Code	3 Days

Project Duration	15 Days
From	18/07/2021 to 3/08/2021

TASKS COMPLETED

Project Scope Document :

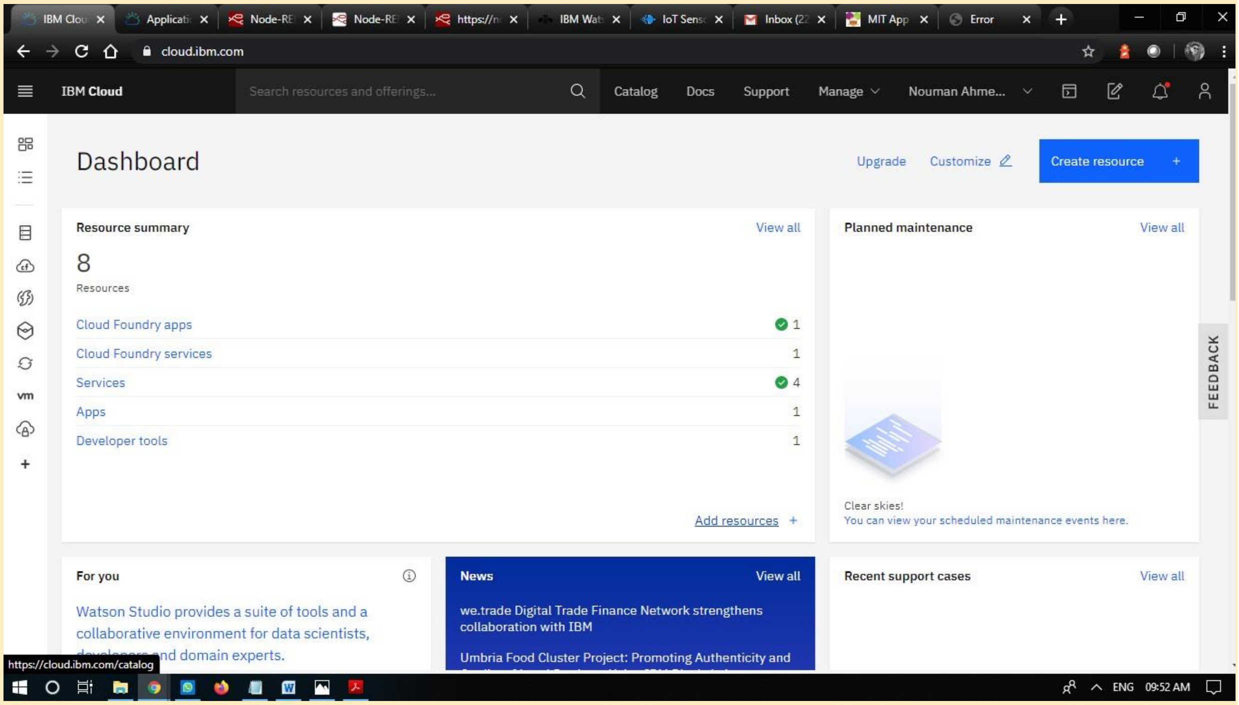
Project planning is completed by developing the schedule, requirements needful and Deliverables of the project.

Setup of Development Environment :

- ✓ Git Hub account is created and the smartschool practice git spository is linked with the account.
- ✓ Slack account is created and joined the slack channel of our IoT6 internship group.
- ✓ Got familiar working with zoho writer.

Explore IBM Cloud platform:

- ✓ IBM Cloud academic initiative account is created with SmartInternz Email ID.
- ✓ Node red is Installed succesfully.
- ✓ IBM Watson IoT is created and all the credentials are connected with the IOT simulator.



Dashboard

Upgrade Customize Create resource +

Resource summary View all

8
Resources

Cloud Foundry apps	✓ 1
Cloud Foundry services	1
Services	✓ 4
Apps	1
Developer tools	1

Add resources +

Planned maintenance View all

Clear skies!
You can view your scheduled maintenance events here.

For you

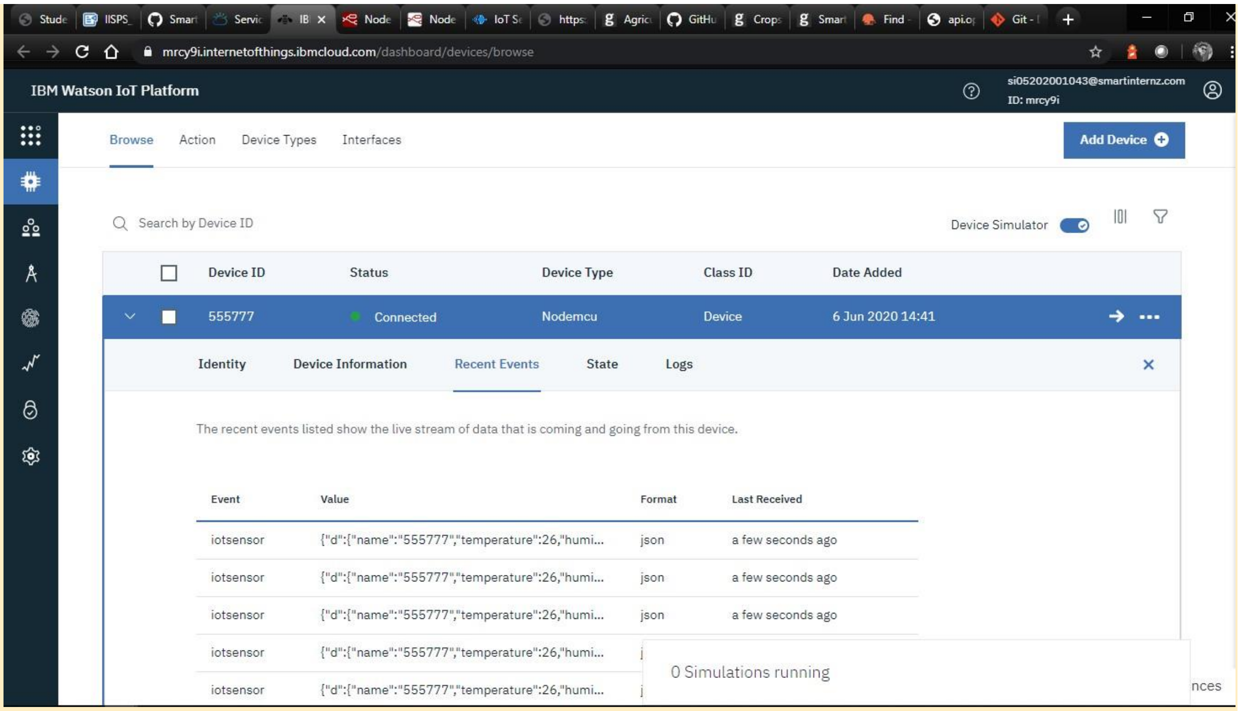
Watson Studio provides a suite of tools and a collaborative environment for data scientists, developers and domain experts.

News View all

we.trade Digital Trade Finance Network strengthens collaboration with IBM

Umbria Food Cluster Project: Promoting Authenticity and

Recent support cases View all



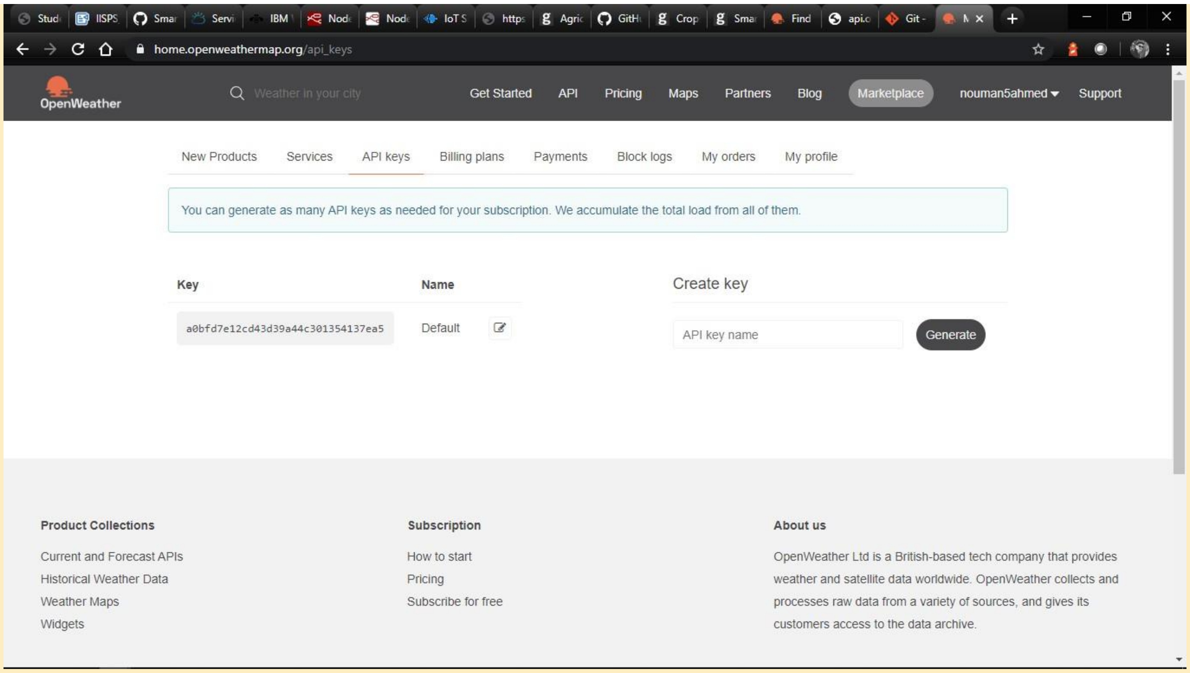
	Device ID	Status	Device Type	Class ID	Date Added
□	555777	● Connected	Nodemcu	Device	6 Jun 2020 14:41

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
iotsensor	{"d":{"name":"555777","temperature":26,"humi...	json	a few seconds ago
iotsensor	{"d":{"name":"555777","temperature":26,"humi...	json	a few seconds ago
iotsensor	{"d":{"name":"555777","temperature":26,"humi...	json	a few seconds ago
iotsensor	{"d":{"name":"555777","temperature":26,"humi...	j	
iotsensor	{"d":{"name":"555777","temperature":26,"humi...	j	

Configuration of Node-red with Open Weather API:

- ✓ An account in Open weather website is created and API is set up.
- ✓ Weather URL : api.openweathermap.org/data/2.5/weather?q=Mysore, IN&units=metric&appid=a0bfd7e12cd43d39a44c301354137ea5
- ✓ With the help of http request node, Live Forecasting Weather data is obtained.



You can generate as many API keys as needed for your subscription. We accumulate the total load from all of them.

Key	Name
a0bfd7e12cd43d39a44c301354137ea5	Default

Create key

Product Collections

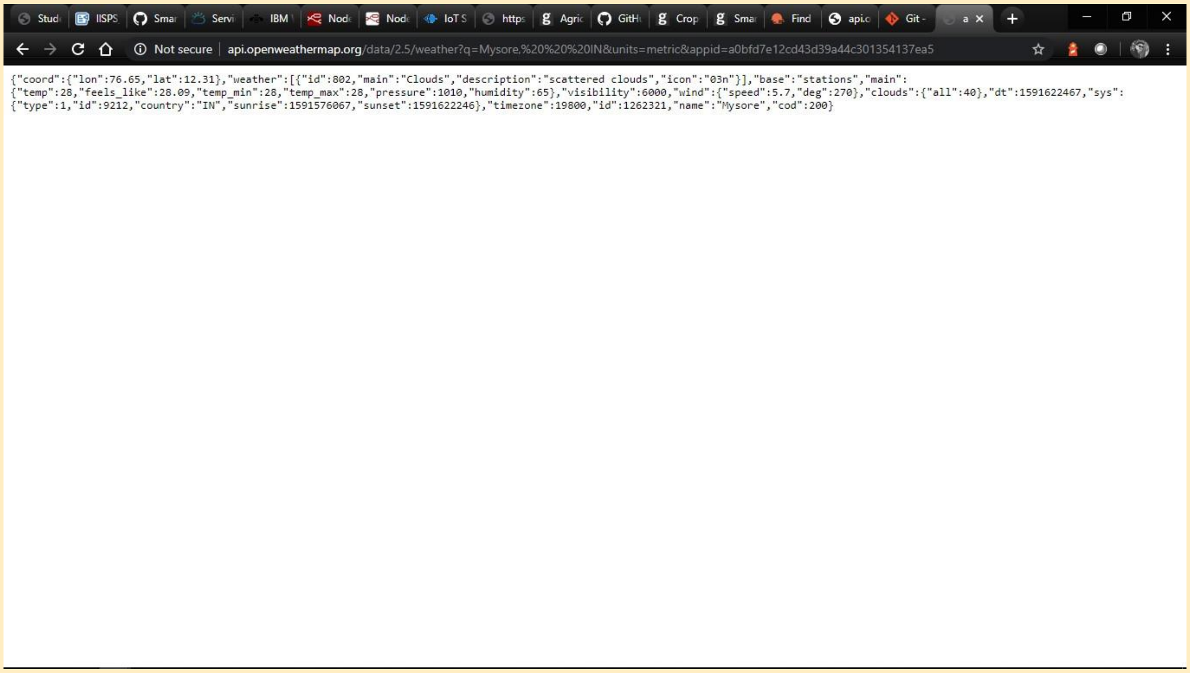
Current and Forecast APIs
Historical Weather Data
Weather Maps
Widgets

Subscription

How to start
Pricing
Subscribe for free

About us

OpenWeather Ltd is a British-based tech company that provides weather and satellite data worldwide. OpenWeather collects and processes raw data from a variety of sources, and gives its customers access to the data archive.



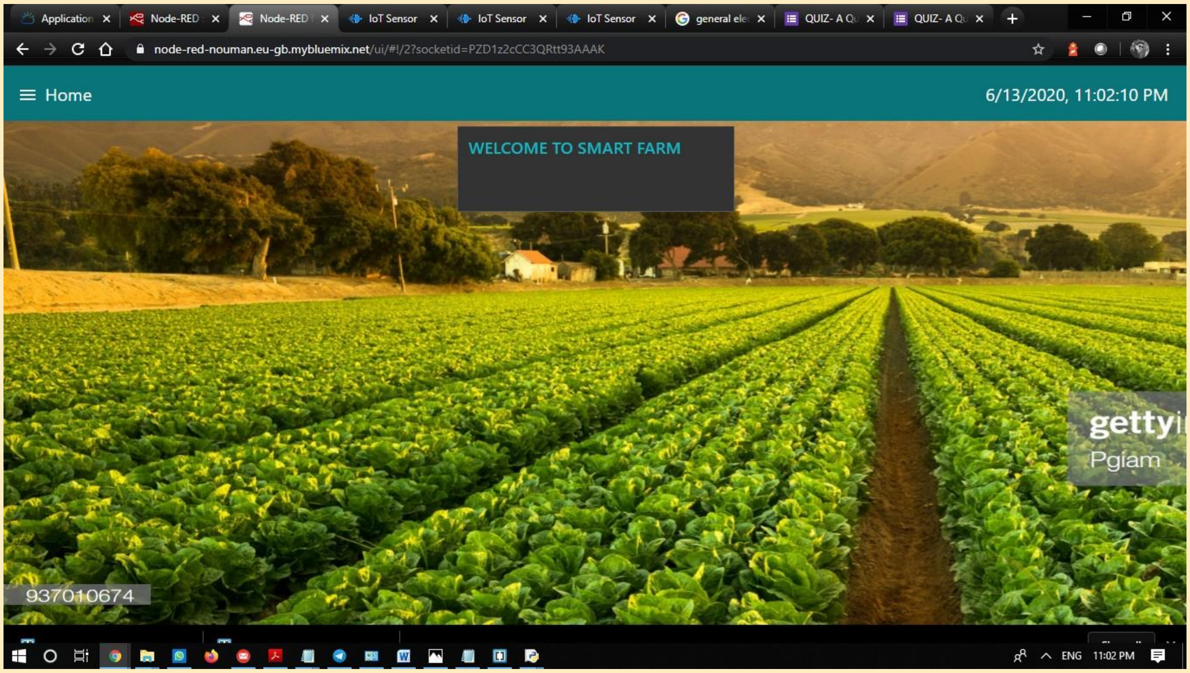
api.openweathermap.org/data/2.5/weather?q=Mysore,%20%20%20IN&units=metric&appid=a0bfd7e12cd43d39a44c301354137ea5

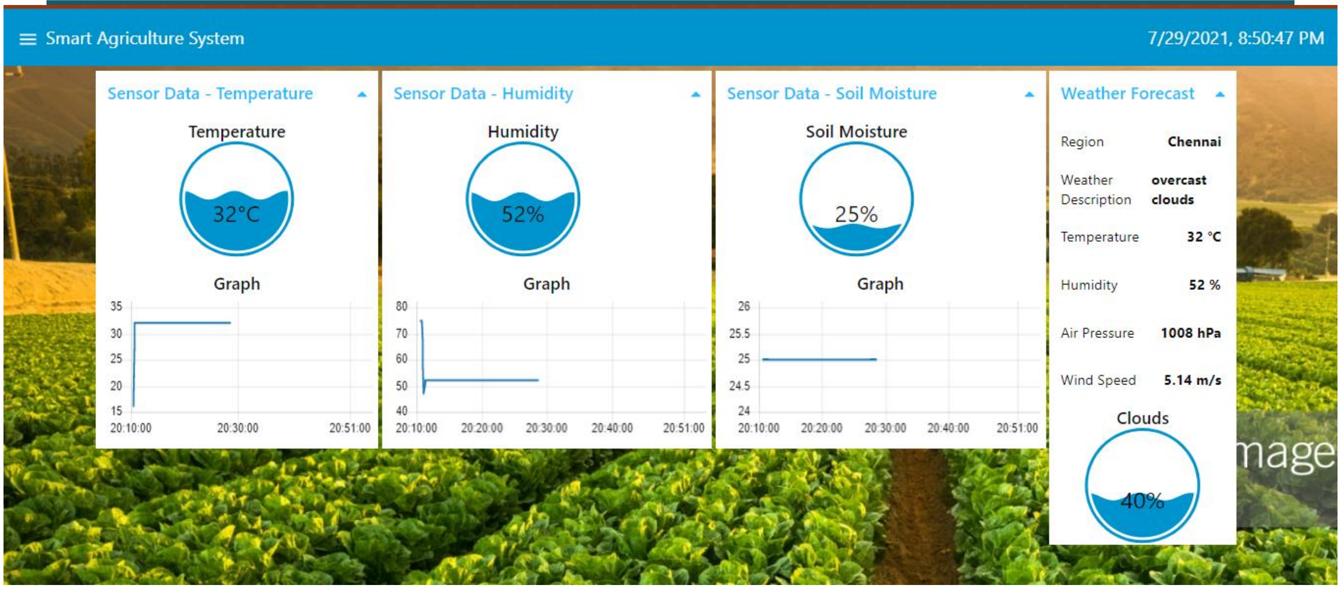
```
{"coord":{"lon":76.65,"lat":12.31},"weather":[{"id":802,"main":"Clouds","description":"scattered clouds","icon":"03n"}],"base":"stations","main":
{"temp":28,"feels_like":28.09,"temp_min":28,"temp_max":28,"pressure":1010,"humidity":65},"visibility":6000,"wind":{"speed":5.7,"deg":270},"clouds":{"all":40},"dt":1591622467,"sys":
{"type":1,"id":9212,"country":"IN","sunrise":1591576067,"sunset":1591622246},"timezone":19800,"id":1262321,"name":"Mysore","cod":200}
```

Building Web Application :

- A User Interface(UI) is developed using Node red dashboard nodes.
- Buttons are configured for sending commands to IoT platform.

UI WebApplication:





Smart Agriculture System

7/29/2021, 8:50:47 PM

Sensor Data - Temperature

Temperature: 32°C

Sensor Data - Humidity

Humidity: 52%

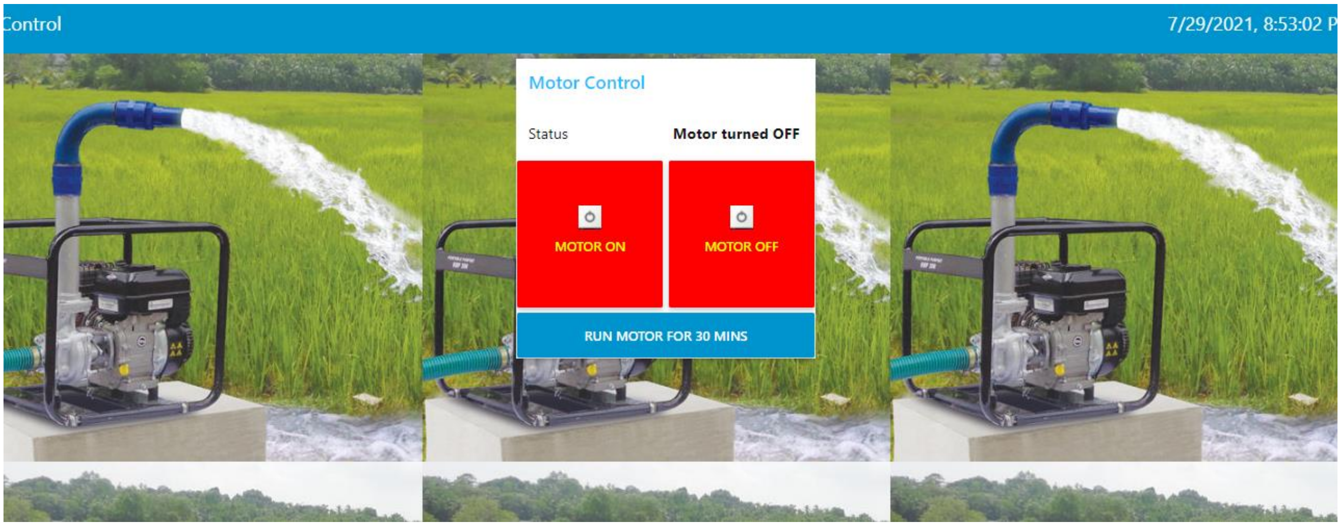
Sensor Data - Soil Moisture

Soil Moisture: 25%

Weather Forecast

Region	Chennai
Weather Description	overcast clouds
Temperature	32 °C
Humidity	52 %
Air Pressure	1008 hPa
Wind Speed	5.14 m/s

Clouds: 40%

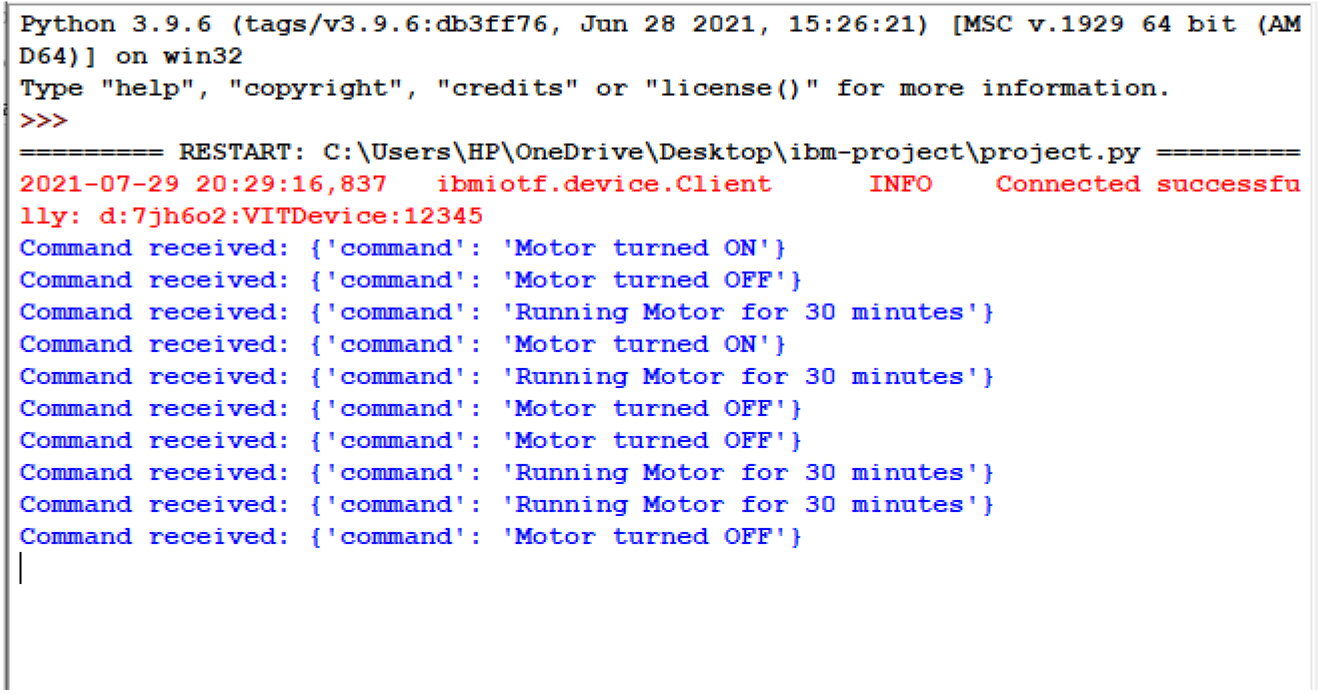


Control

7/29/2021, 8:53:02 P

Motor Control

Status Motor turned OFF



```
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AM
D64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========= RESTART: C:\Users\HP\OneDrive\Desktop\ibm-project\project.py =========
2021-07-29 20:29:16,837   ibmiotf.device.Client      INFO    Connected successfu
lly: d:7jh6o2:VITDevice:12345
Command received: {'command': 'Motor turned ON'}
Command received: {'command': 'Motor turned OFF'}
Command received: {'command': 'Running Motor for 30 minutes'}
Command received: {'command': 'Motor turned ON'}
Command received: {'command': 'Running Motor for 30 minutes'}
Command received: {'command': 'Motor turned OFF'}
Command received: {'command': 'Motor turned OFF'}
Command received: {'command': 'Running Motor for 30 minutes'}
Command received: {'command': 'Running Motor for 30 minutes'}
Command received: {'command': 'Motor turned OFF'}
```