

PROJECT ID :SPS_PRO_101

STUDENT ID : SB45404

Intern Title -> Smart Agriculture System based on IOT -SB45404

Project Summary :

Agricultural system based on IOT platform. The project includes making an app that get various aspect of our required data through APIs (like temperature , Humidity and Soil moisture) required in farm. So , API used would be open weather API. This is an Individual person handled project which would be handled by me(kaushal batra) via Smartbridge resources. This can be a ground-breaking invention for people still using ancient agricultural techniques.

Project Requirements:

IBM cloud account,IOT Application Development ,IOT cloud platform , Basic python requirements,Node-Red.

Functional Requirements:

Open Weather API that could deleiver real time weather forecastion and Online lot Simulator to get external factors like temperature , humidity and soil moisture

Technical Requirements:

The program is to be written in python and we will be using IBM cloud account too along with lot simulator to lot watson platform, Nodes to get data and make a web page.

Software Requirements:

IBM cloud , Python ,Open weather API, Nodered

Project Deliverables:

An App that can control watering in crops and other functions.

Project Team:

- i. Kaushal batra

Project Schedule:

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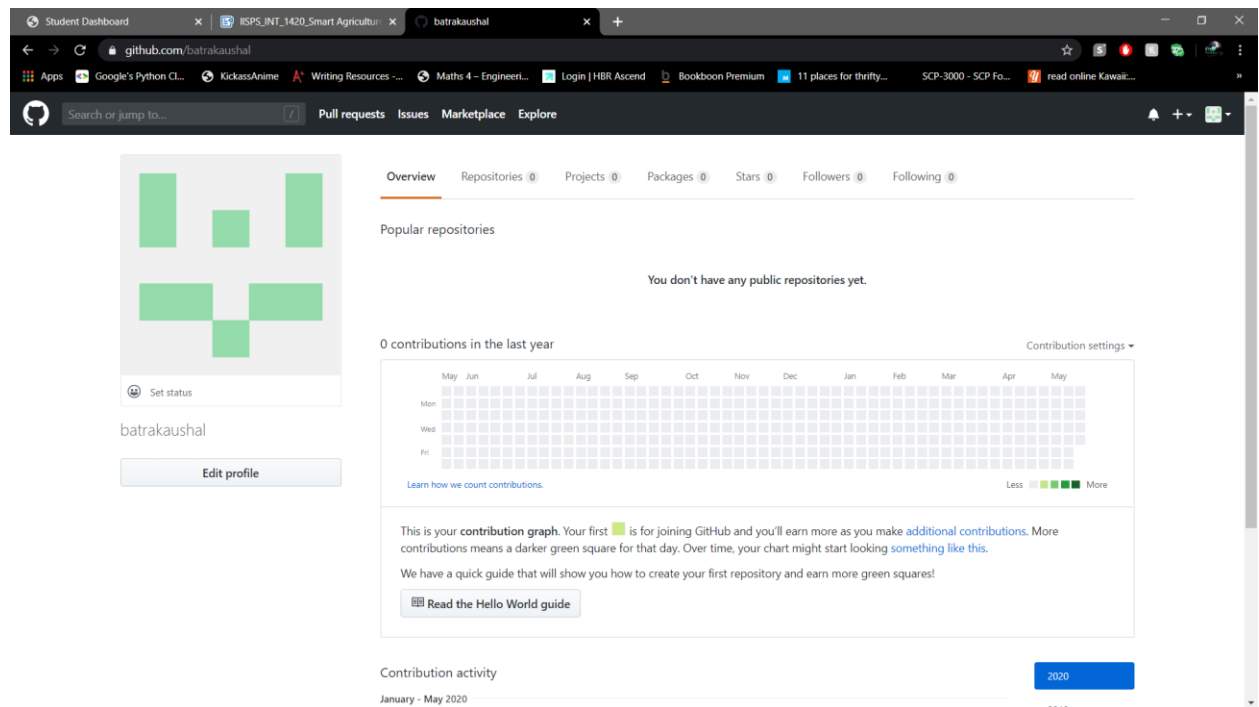
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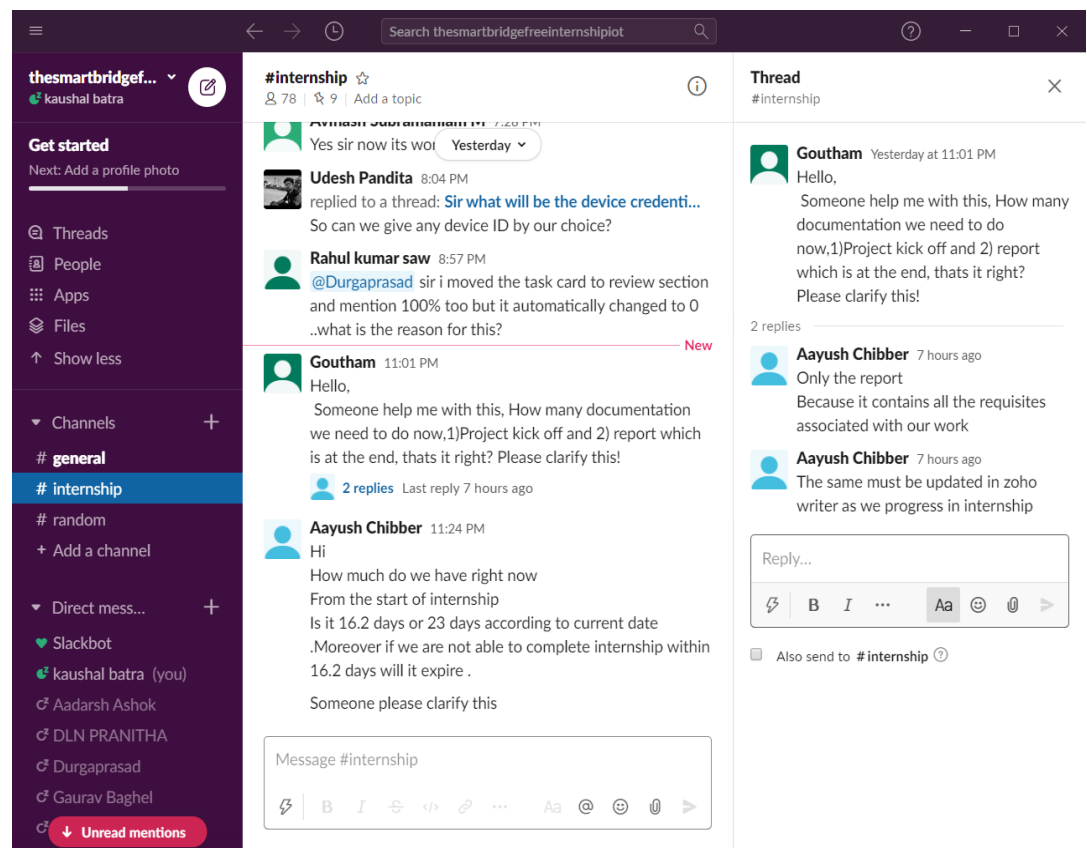
The project will be finished By 20 June 2020.

Setting up the Enviornment -:

1. Github:



2. Slack:

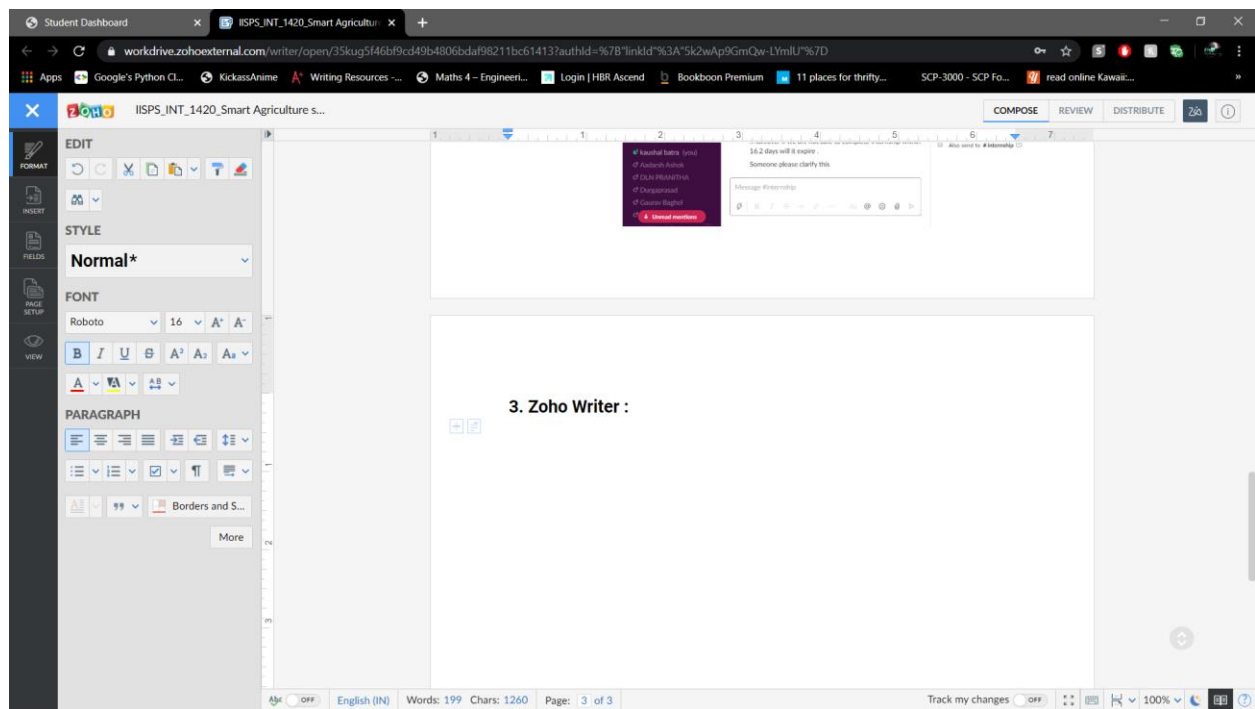


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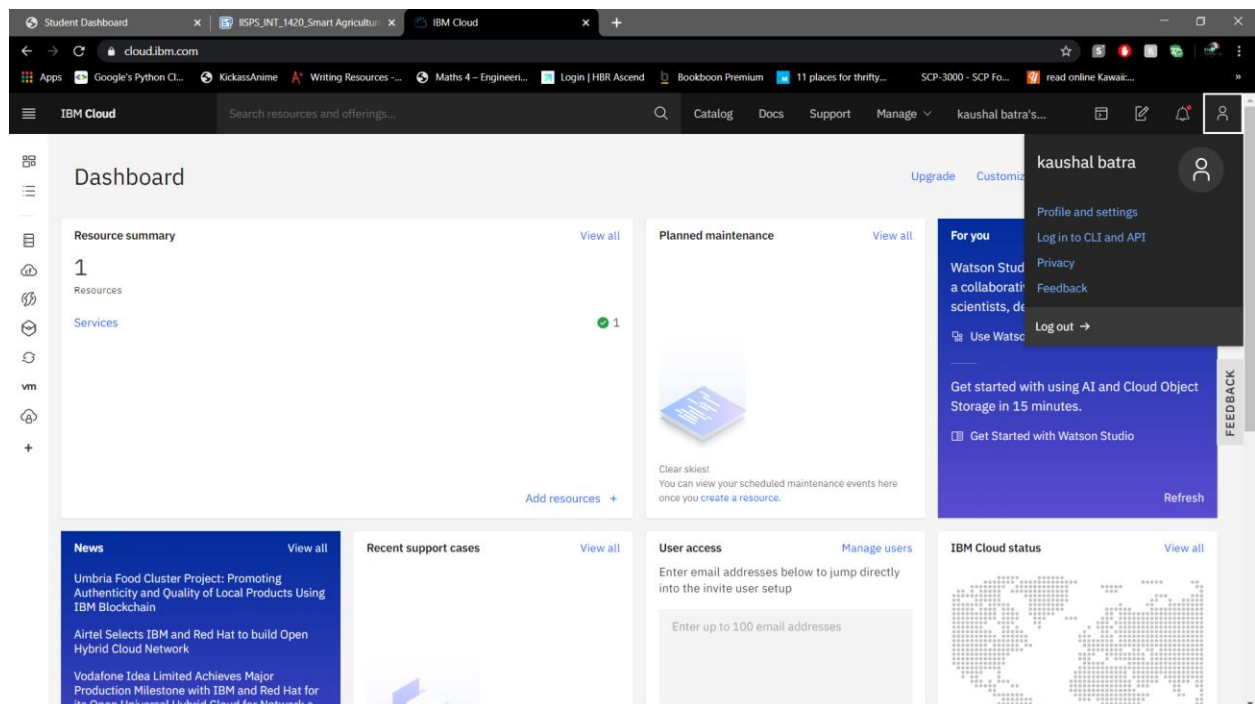
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3. Zoho Writer :



IBM CLOUD :



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Node-red Installation :

```
node-red
- C:\Users\batra\AppData\Roaming\npm\node_modules\node-red\lib\red.js
- C:\Users\batra\AppData\Roaming\npm\node_modules\node-red\red.js
21 May 06:22:48 - [warn] -----
21 May 06:22:48 - [info] Settings file : \Users\batra\node-red\settings.js
21 May 06:22:48 - [info] Context store : 'default' [module=memory]
21 May 06:22:48 - [info] User directory : \Users\batra\node-red
21 May 06:22:48 - [warn] Projects disabled : editorTheme.projects.enabled=false
21 May 06:22:48 - [info] Flows file : \Users\batra\node-red\flows_DESKTOP-K048IB5.json
21 May 06:22:48 - [info] Server now running at http://127.0.0.1:1880/
21 May 06:22:48 - [warn] -----

Your flow credentials file is encrypted using a system-generated key.

If the system-generated key is lost for any reason, your credentials
file will not be recoverable, you will have to delete it and re-enter
your credentials.

You should set your own key using the 'credentialSecret' option in
your settings file. Node-RED will then re-encrypt your credentials
file using your chosen key the next time you deploy a change.
-----

21 May 06:22:48 - [info] Starting flows
[BaseClient:connect] Connecting to IoTf with host : ssl://tm8dr6.messaging.internetofthings.ibmcloud.com:8883 and with c
lient id : d:tm8dr6:temp-data:256
[BaseClient:connect] Connecting to IoTf with host : ssl://tm8dr6.messaging.internetofthings.ibmcloud.com:8883 and with c
lient id : d:tm8dr6:motor:456
21 May 06:22:48 - [info] Started flows
```

IBM WATSON PLATFORM DEVICE CREATION :

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar is present with the text 'Search by Device ID'. The main content area shows a table of devices with columns: Device ID, Status, Device Type, Class ID, Date Added, and Descriptive Location. The table lists three devices: ID 1 (all, Device, May 16, 2020 3:18 PM), ID 256 (temp-data, Device, May 16, 2020 6:40 PM), and ID 456 (motor, Device, May 19, 2020 2:24 PM). A detailed view for device ID 1 is expanded, showing 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Device Information' tab is active, displaying details such as Device ID (1), Device Type (all), Date Added (May 16, 2020 3:18 PM), Added By (batrakaushal@gmail.com), and Connection Status (Disconnected). The 'Connection Status' section provides additional details: Last Connected (May 20, 2020 10:42 PM), Client Address (150.242.75.48), SecureToken, Duration (4 minutes), and Data Transferred (13.7 KB).

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
1	Disconnected	all	Device	May 16, 2020 3:18 PM	
256	Disconnected	temp-data	Device	May 16, 2020 6:40 PM	
456	Disconnected	motor	Device	May 19, 2020 2:24 PM	

Device Information for Device ID 1:

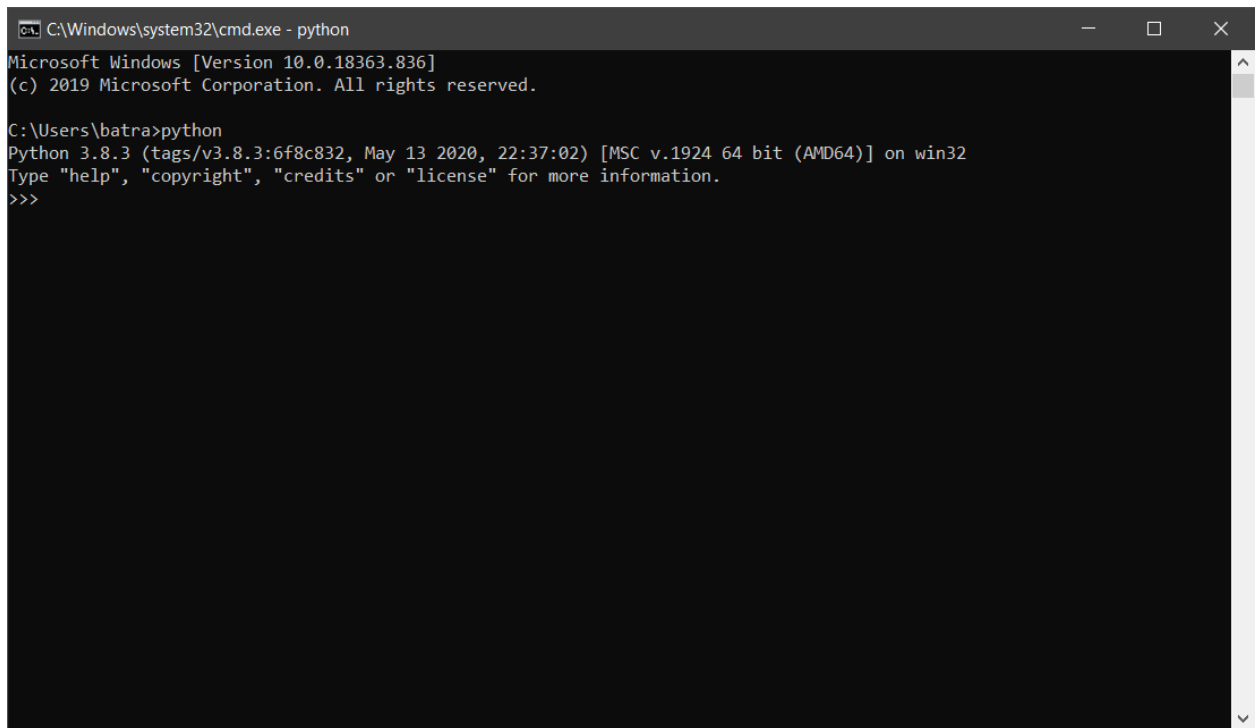
- Device ID: 1
- Device Type: all
- Date Added: May 16, 2020 3:18 PM
- Added By: batrakaushal@gmail.com
- Connection Status: Disconnected
- Last Connected: May 20, 2020 10:42 PM
- Client Address: 150.242.75.48
- SecureToken: [redacted]
- Duration: 4 minutes
- Data Transferred: 13.7 KB

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PYTHON 3 IDE :

A screenshot of a Windows command prompt window. The title bar reads 'C:\Windows\system32\cmd.exe - python'. The window content shows the following text: 'Microsoft Windows [Version 10.0.18363.836] (c) 2019 Microsoft Corporation. All rights reserved. C:\Users\batra>python Python 3.8.3 (tags/v3.8.3:6f8c832, May 13 2020, 22:37:02) [MSC v.1924 64 bit (AMD64)] on win32 Type "help", "copyright", "credits" or "license" for more information. >>>'. The prompt is currently at the '>>>' line.

```
C:\Windows\system32\cmd.exe - python
Microsoft Windows [Version 10.0.18363.836]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\batra>python
Python 3.8.3 (tags/v3.8.3:6f8c832, May 13 2020, 22:37:02) [MSC v.1924 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

PART 3

CONNECTION OF IOT SIMULATOR TO WATSON PLATFORM

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The top screenshot displays the 'Watson IoT Sensor Simulator' interface. It features a central circular display showing '16°C' under the heading 'Temperature'. Below the display, there are two buttons with downward and upward arrows, and a text prompt 'swipe left/right for more'. A red text overlay reads 'Data sent to Iot Watson Platform Device 1'.

The bottom screenshot shows the 'IBM Watson IoT Platform' dashboard. It includes a sidebar with navigation icons and a main content area with tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A table lists device events with columns for 'Device ID', 'Status', 'Device Type', 'Class ID', 'Date Added', and 'Descriptive Location'. The table shows multiple entries for 'iotsensor' with a status of 'Connected' and a date of 'May 16, 2020 3:18 PM'.

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
1	Connected	all	Device	May 16, 2020 3:18 PM	

Event	Value	Format	Last Rec	Last Received
iotsensor	{"d":{"name":"1","temperature":16,"humidity":7...	json	a few seconds ago	
iotsensor	{"d":{"name":"1","temperature":16,"humidity":7...	json	a few seconds ago	
iotsensor	{"d":{"name":"1","temperature":16,"humidity":7...	json	a few seconds ago	
iotsensor	{"d":{"name":"1","temperature":16,"humidity":7...	json	a few seconds ago	
iotsensor	{"d":{"name":"1","temperature":16,"humidity":7...	json	a few seconds ago	

Data recieved from lot Simulator

PART 4

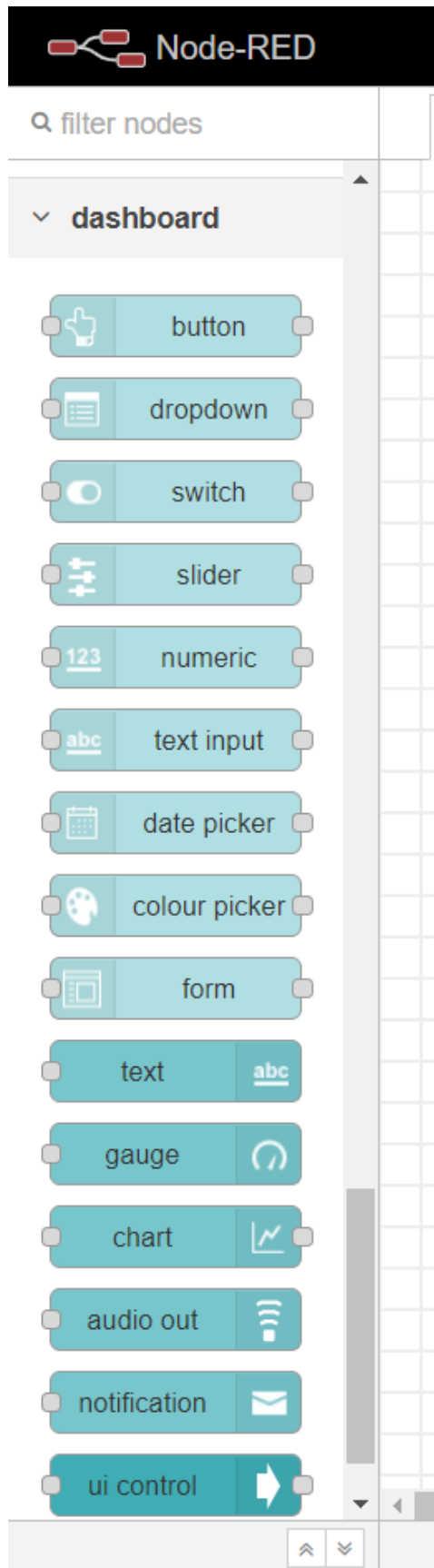
INSTALLING REQUIRED NODE-RED NODES

Required nodes were IOT node to send and receive data and http nodes as well as UI nodes

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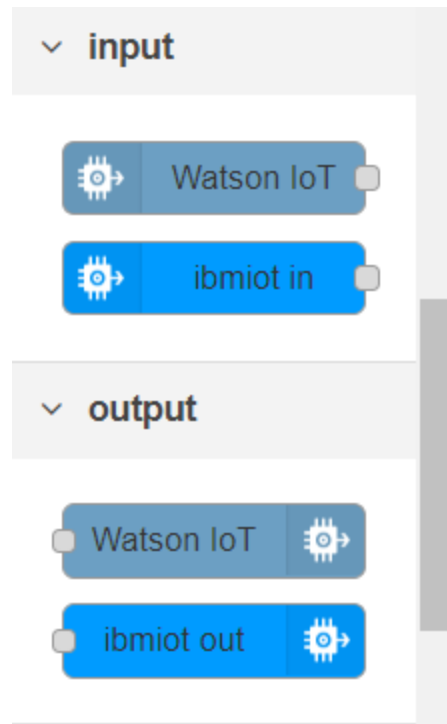
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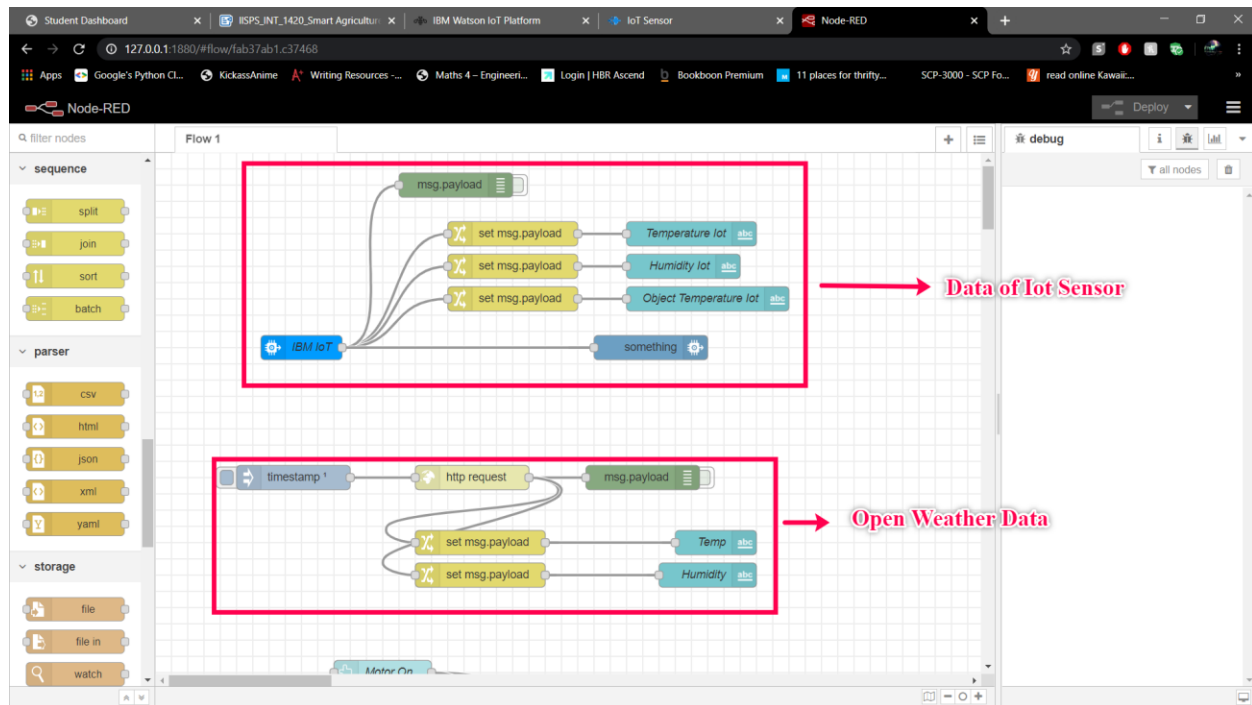
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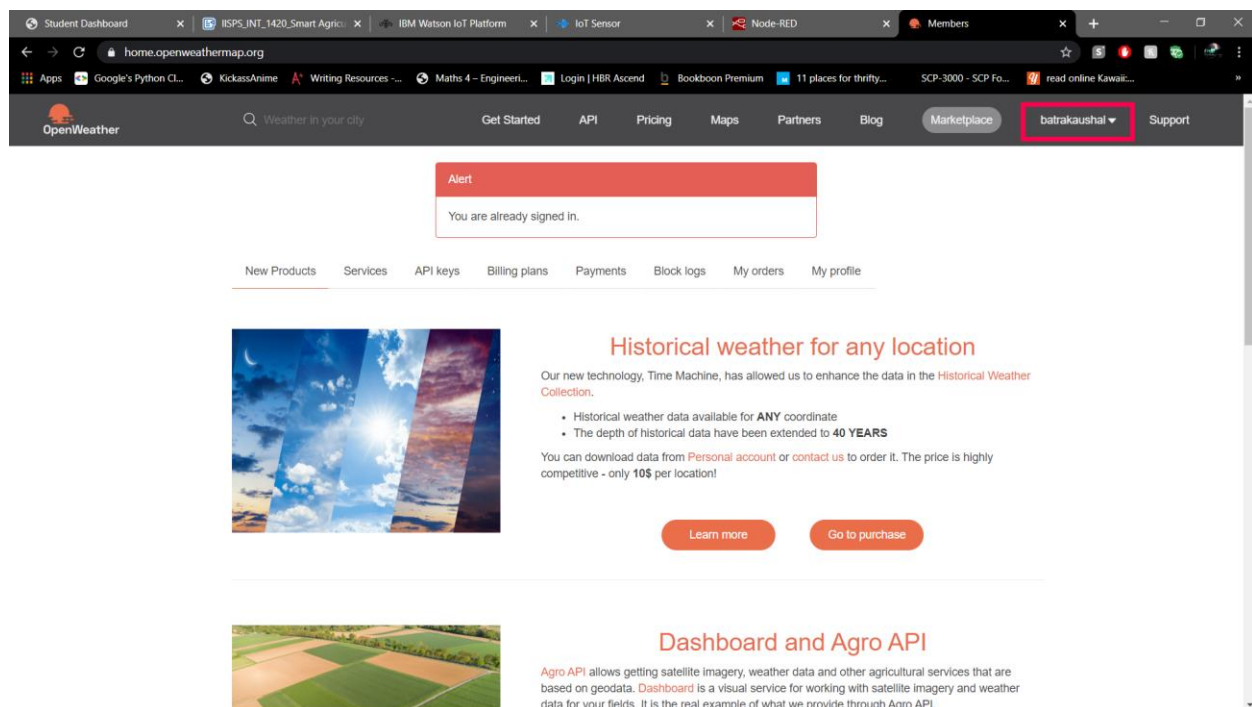
Making a Nodered Chart to get Data from lot platform and send it to device , also recieve data from Open Weather API using Http request :

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OPEN WEATHER API :



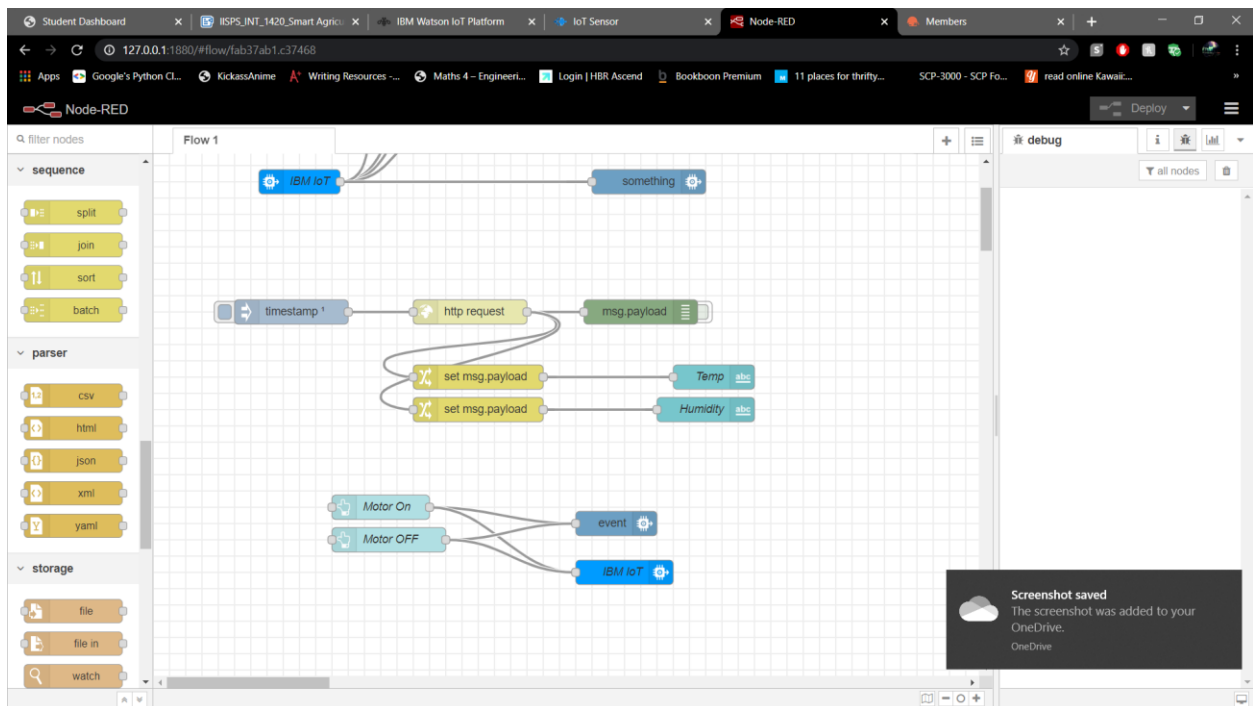
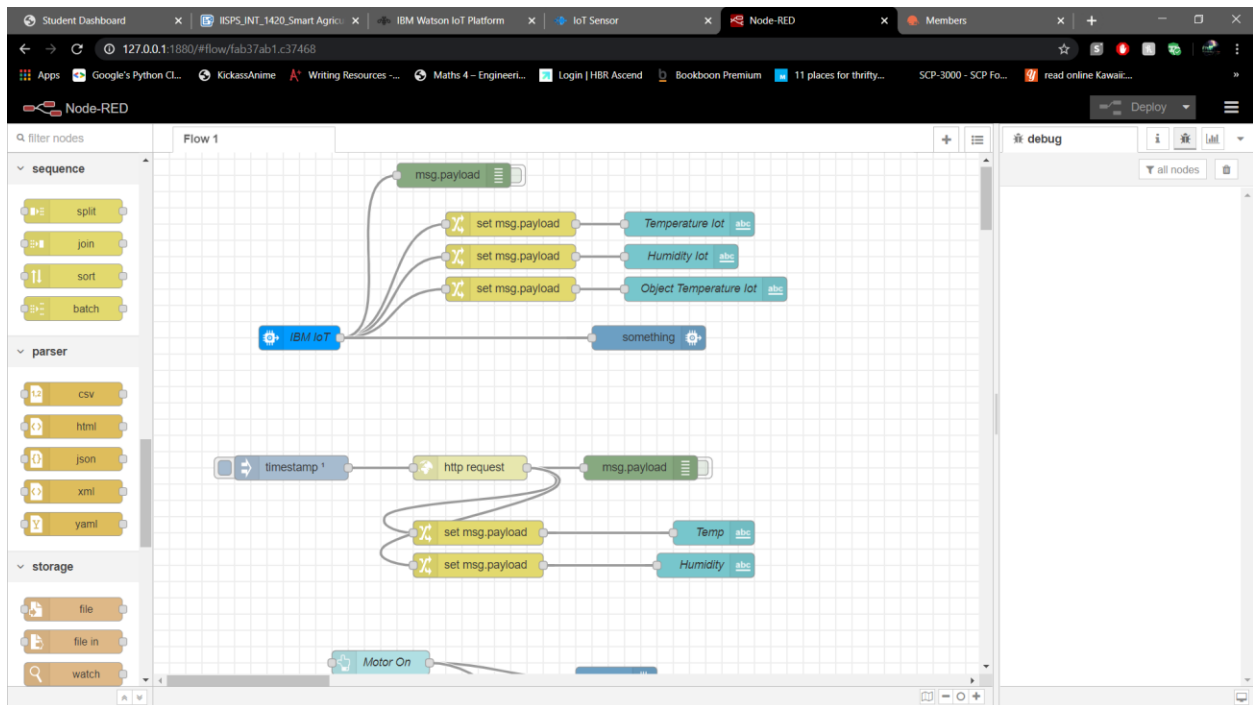
Part 5

MAKING AN WEB APP USING NODE-RED UI

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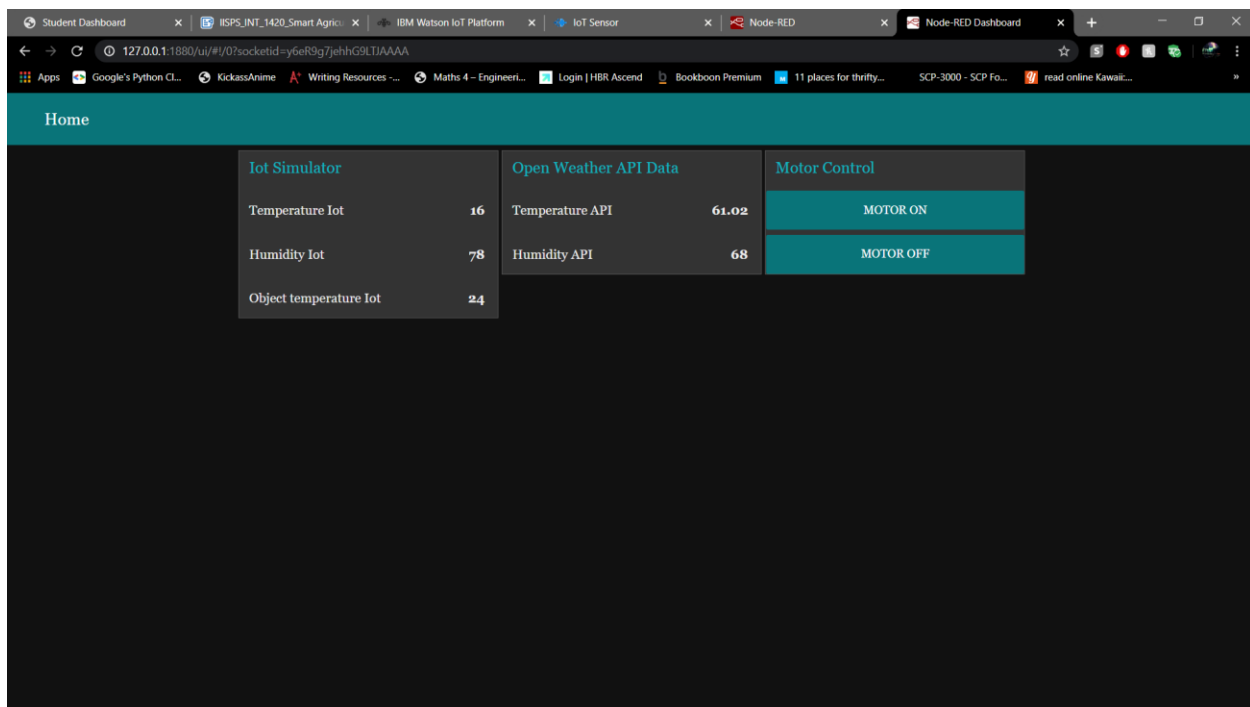
STUDENT ID : SB45404



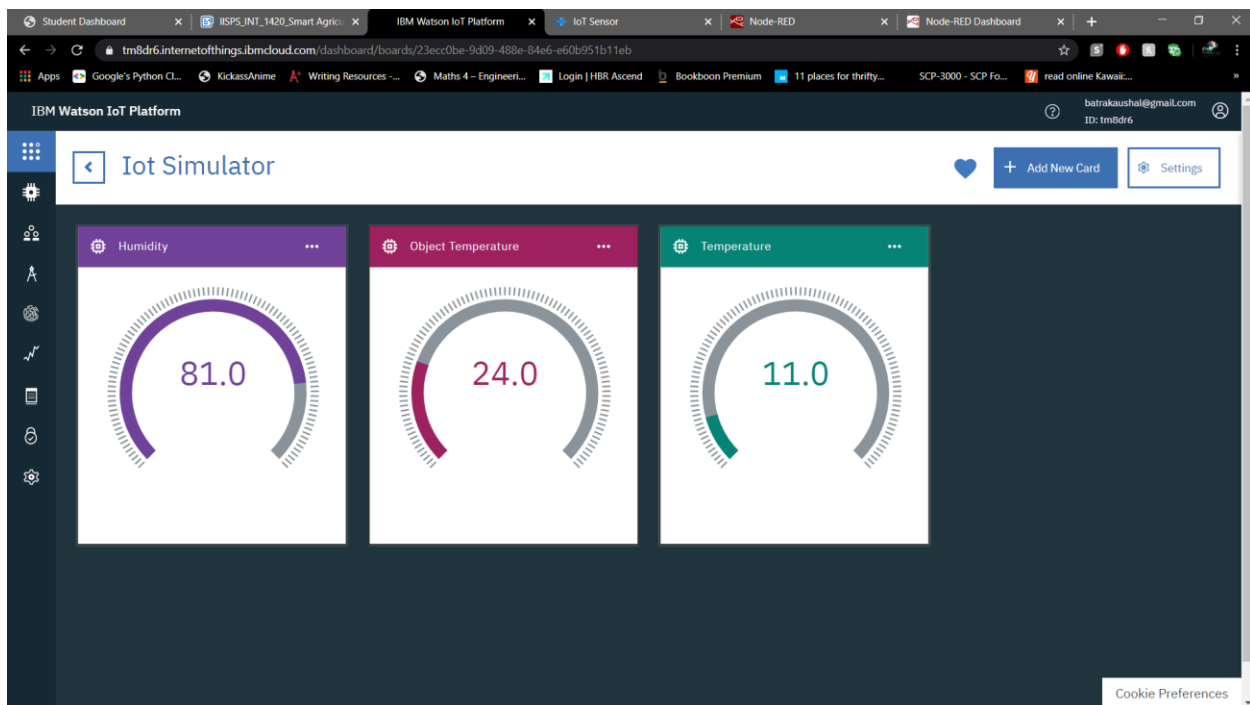
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Here all data Required is recieved and shown in Web App.



PART 5

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Configure your Device to recieve data from web application and control your motors :

Using the program written in python and making a few changes. we have now control over motors and now we can vontrol motor from a UI made in Node-red.The program in uploaded in Github repository.