

## **Task-1:**

### **Milestone-1:Project Scope, Schedule, Team & Deliverable**

#### **Project Summary:**

Agriculture plays a crucial role in the life of an economy. It is the backbone of our economic system, so improving the quality and way of production is crucial. Here comes the Smart Agriculture system.

Smart agriculture helps in automated farming, collection of data from the field and then analyses it so that the farmer can make accurate decision in order to grow high quality crop.

IoT based Smart Farming also improves the entire Agriculture system by monitoring the field in real-time. With the help of sensors and interconnectivity, the Internet of Things in Agriculture has not only saved the time of the farmers but has also reduced the extravagant use of resources such as Water and Electricity.

So in this project I have developed a mobile application using which a farmer can monitor the temperature, humidity and soil moisture parameters along with weather forecasting details. Based on these details he can water the crops by controlling the motors through the app.

#### **Project Requirements:**

- Github and slackAccount
- IBM Account
- Node-RED
- Python
- Open Weather API
- MIT app inventor

## **Functional Requirements:**

<b>Sno</b>	<b>Functional requirement description</b>
1.	Farmer must be able to receive the weather forecast every hour.
2.	The mobile app must be user friendly to the farmer
3.	Farmer must be able to monitor the temperature, humidity and soil moisture parameters along with weather forecasting details.
4.	Based on the forecast parameters he must be able to control the motor if needed.

## **Technical Requirements:**

- The farmer must have a mobile to use the app.
- He must have basic knowledge to operate the app.
- The app must be user friendly.
- The app must be reliable and efficient.

## **Software Requirements:**

- IBM cloud Account
- Node-RED
- Watson IoT platform
- python
- IoT simulator
- Open Weather API

## **Project Deliverables:**

An efficient and reliable app to monitor the temperature, humidity, soil moisture and control the motors to turn water on/off if needed.

## **Project Team:**

JEEVAK RAJ S-INTERNSHIP(SB15881)

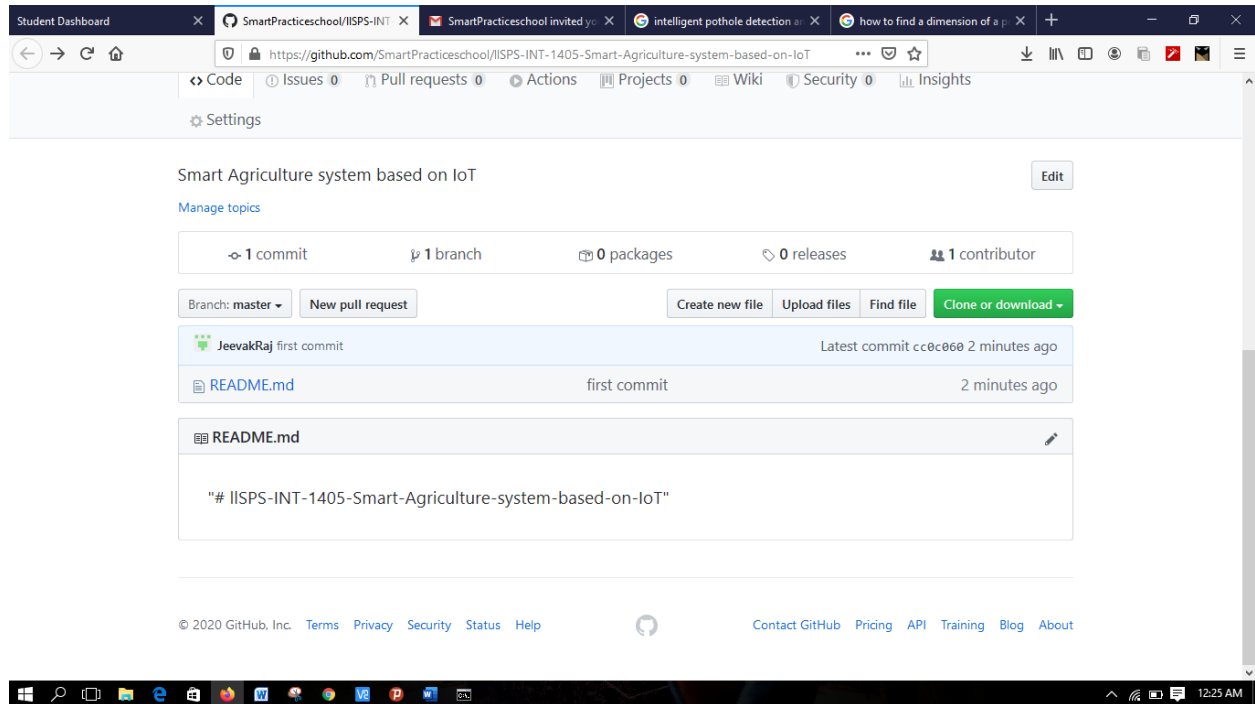
## **Project Schedule:**

- creating all the accounts needed - May 18
- installing required software - May 20
- connecting to IoT simulator and installing required nodes- May 22
- setting up Open Weather API - May24
- Building a Web App - May 30
- Configuring device and controlling motor - June 5
- remaining work -June 10
- Report making -everyday

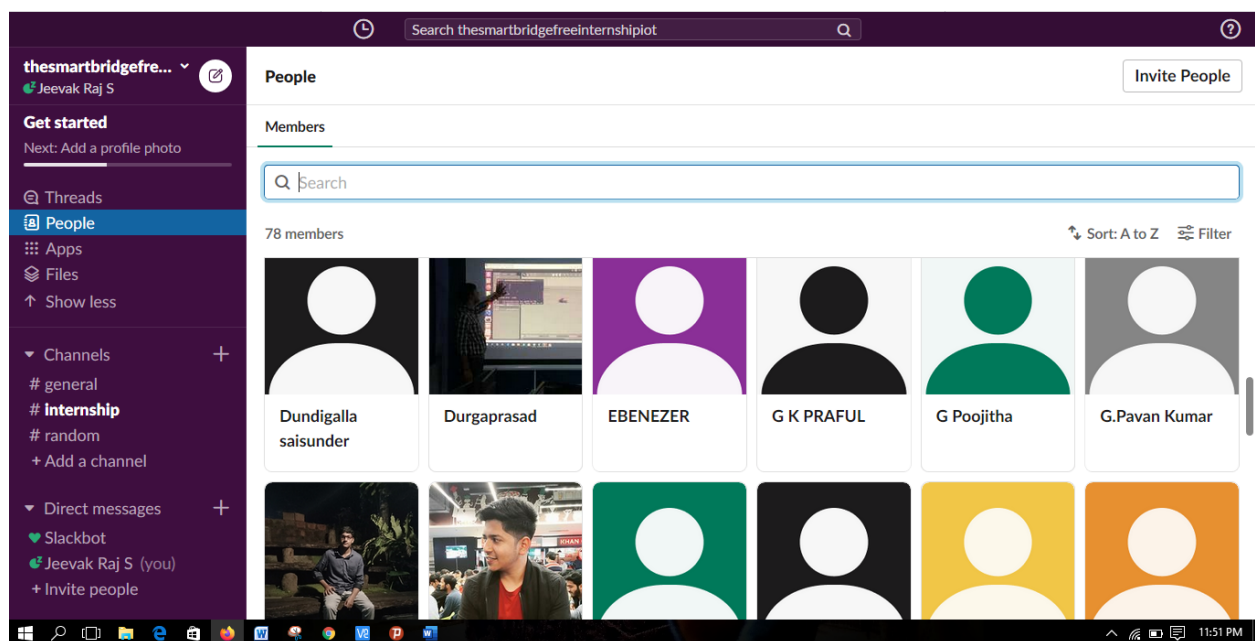
## Milestone-2:

Setup the development environment

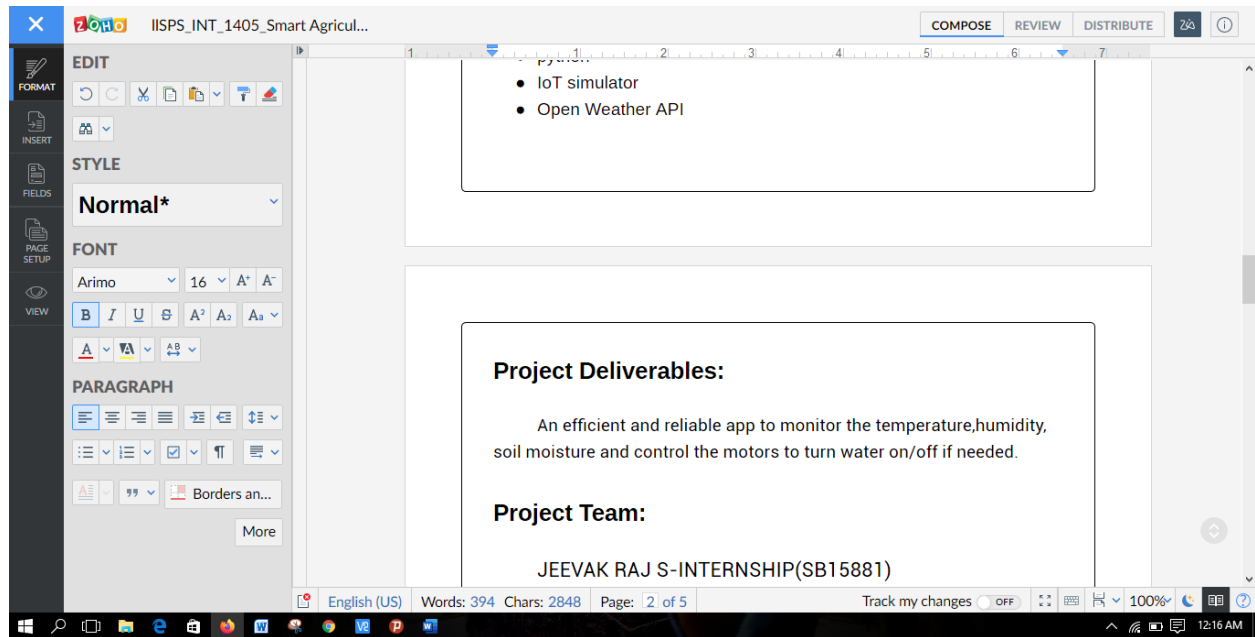
## GITHUB Account:



## Slack Account:



## Document writer:



## Task-2

Explore IBM Cloud Platform

### Milestone-1: Create IBM Cloud Account

#### IBM Academic Initiative Account :

IBM Academic Initiative

Technology Usage terms Additional Resources Support

sjeevak.raj2017@vitstudent.ac.in

Logout

### IBM Academic Initiative

Harness the power of IBM. Get easy no-charge access to the tools you need to develop the next great thing. Enjoy powerful technical and strategic resources from IBM. Jump right in with cloud access to powerful services and the most prominent open-source computer technologies, or take advantage of hands-on resources that will teach you about data and analytics, Internet of Things, and security.

IBM Academic Initiative understands the unique pressures faced by academic institutions in adapting to the COVID-19 virus while keeping their students, faculty, and community safe.

#### IBM cloud Account:

https://cloud.ibm.com/resources

IBM Cloud

Search resources and offerin...

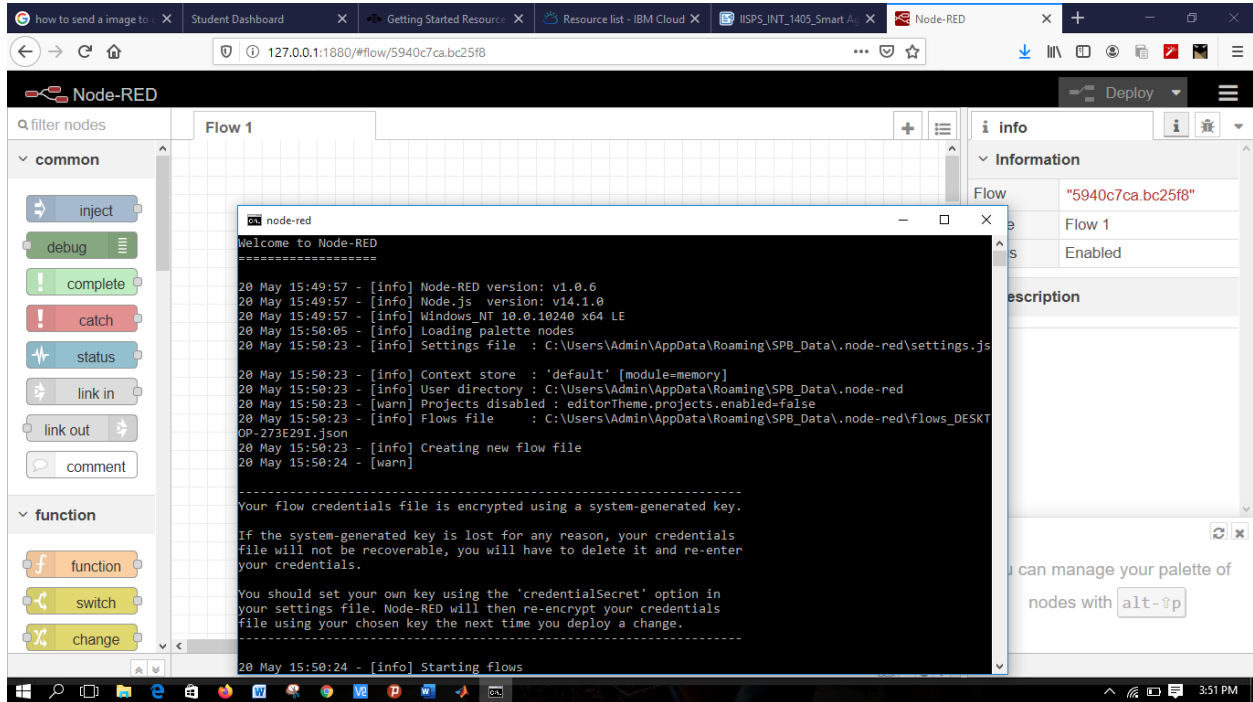
Catalog Docs Support Manage Jeev...

Name	Group	Location	Status	Tags
Filter by name or IP address...	Filter by group or org...	Filter...	Q Fil...	Filter...
Devices (0)				
VPC infrastructure (0)				
Clusters (0)				
Cloud Foundry apps (0)				
Cloud Foundry services (0)				
Services (0)				
Storage (0)				
Network (0)				
Cloud Foundry enterprise environments (0)				
Functions namespaces (0)				
Apps (0)				
Developer tools (0)				
VMware (0)				
Schematics workspaces (0)				

FEEDBACK

## Milestone-2: Install Node-RED locally

### Node-RED:



## Milestone-3: IBM Watson IoT platform:

IBM Watson IoT Platform

Search results - sje... Service Details - IBM... IBM Watson IoT Pla... Student Dashboard... IoT Sensor... GitHub - SmartPrac... soil moisture unit... +

https://ie8mpi.internetofthings.ibmcloud.com/dashboard/devices/browse

sjeevak.raj2017@vitstudent.ac.in ID: ie8mpi

Browse Action Device Types Interfaces Add Device +

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID Device Simulator

Device ID	Status	Device Type	Class ID	Date Added
> IoT_device_1	Connected	IoT_device	Device	May 21, 2020 10:52 PM

Items per page 50 | 1-1 of 1 item 1 of 1 page < 1 >

1 Simulation running

IBM Watson IoT Platform

Search results - sje... Service Details - IBM... IBM Watson IoT Pla... Student Dashboard... Password Prote... IoT Sensor... GitHub - SmartPrac... soil moisture unit... +

https://ie8mpi.internetofthings.ibmcloud.com/dashboard/boards/6db8a947-132b-48a9-ba22-c55e381

sjeevak.raj2017@vitstudent.ac.in ID: ie8mpi

monitor Add New Card Settings

monitoring chart sensor\_monitoring

Total 75 %

soilmois... 48.000000 %

humidity 19.0 %

temperature 8.0 °C

80 60 40 20 0

23:17 23:17:3

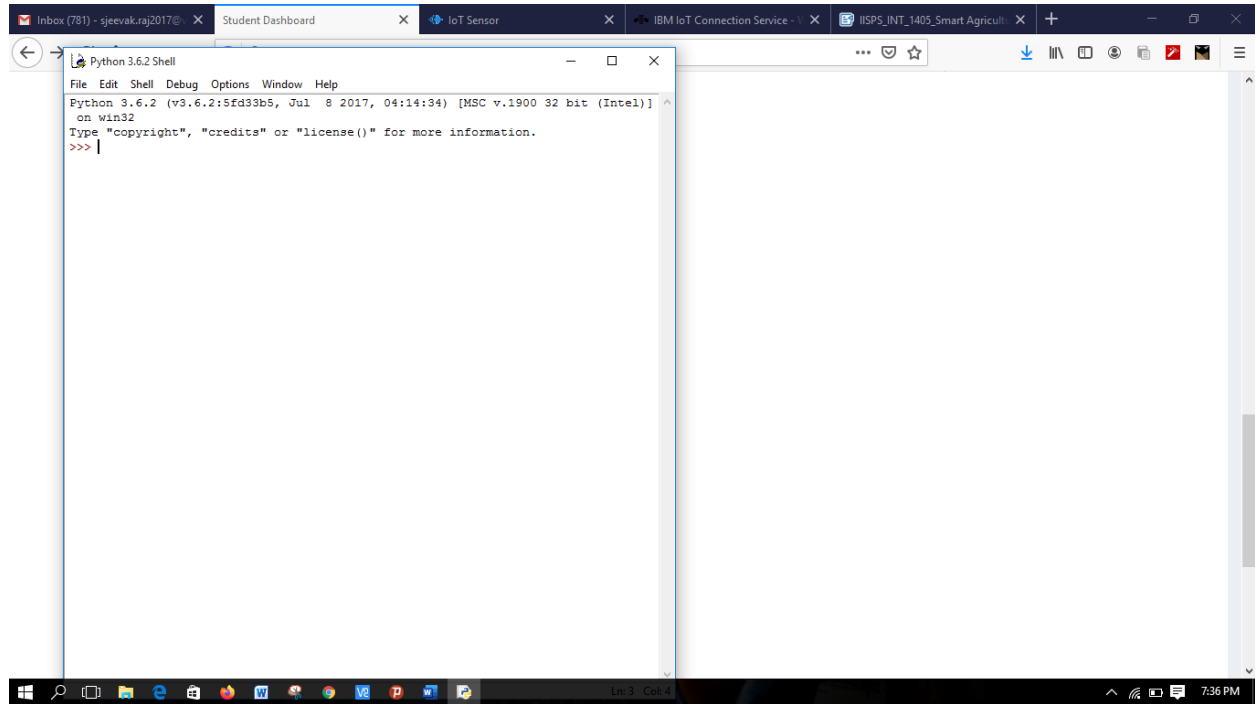
1 minute now

humidity temperature objectTemp

1 Simulation running



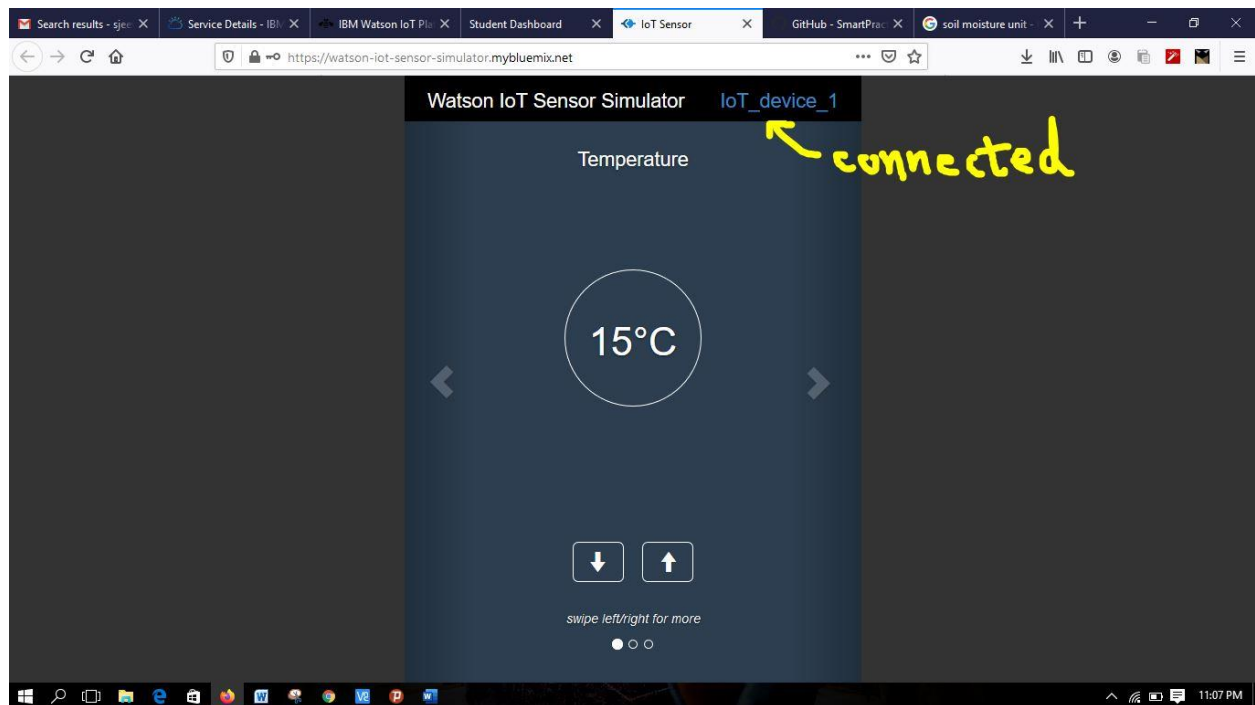
## Milestone-4: Python IDE:



## Task-3

Connect the IoT simulator to Watson IoT platform

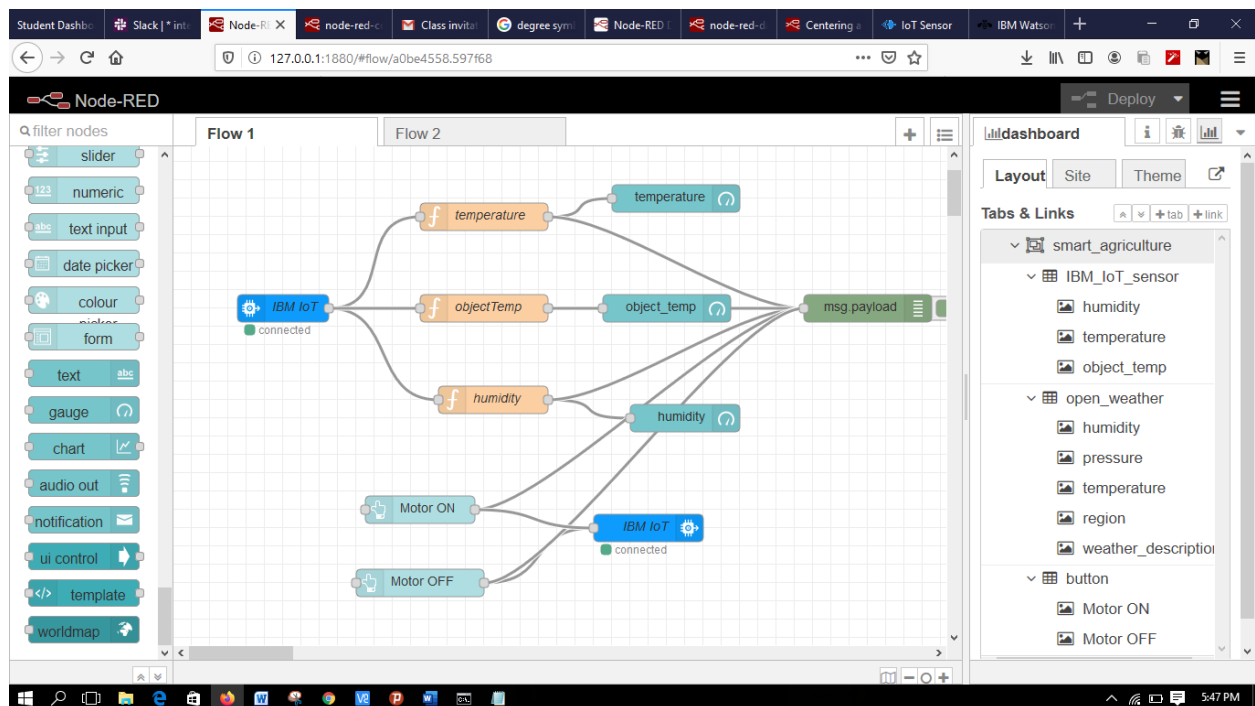
**Milestone-1:** screenshot of connection

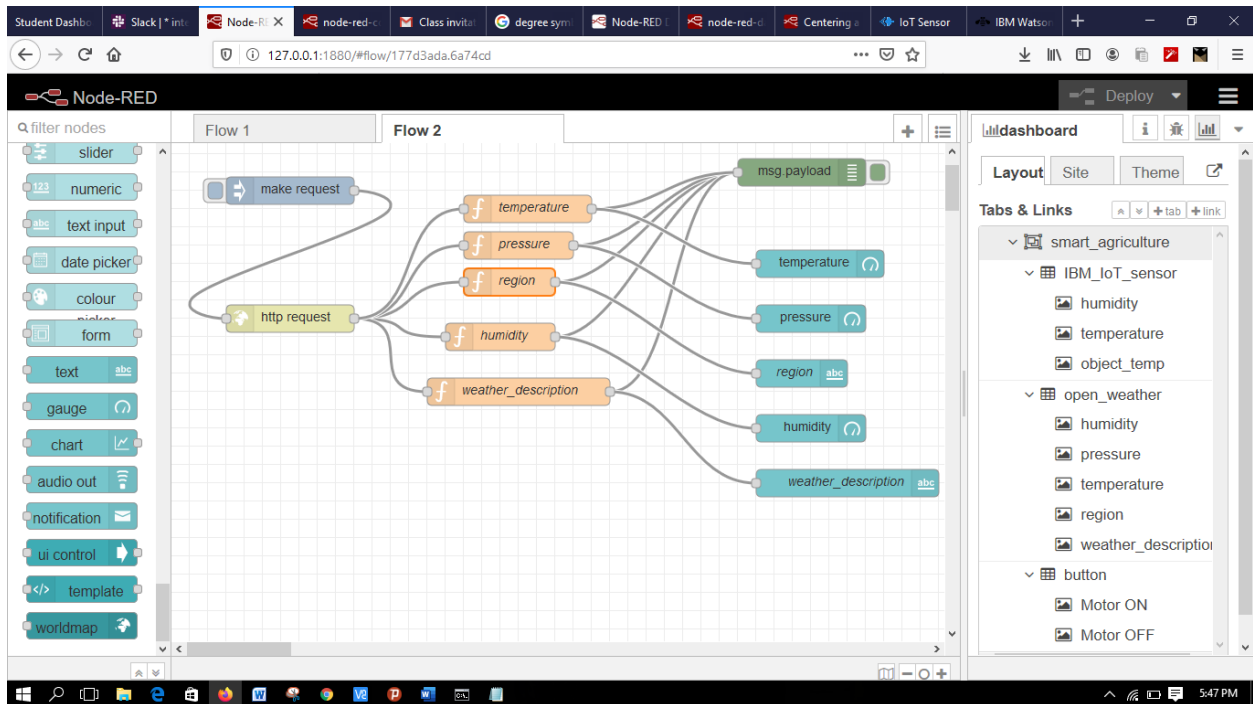


## Task-4

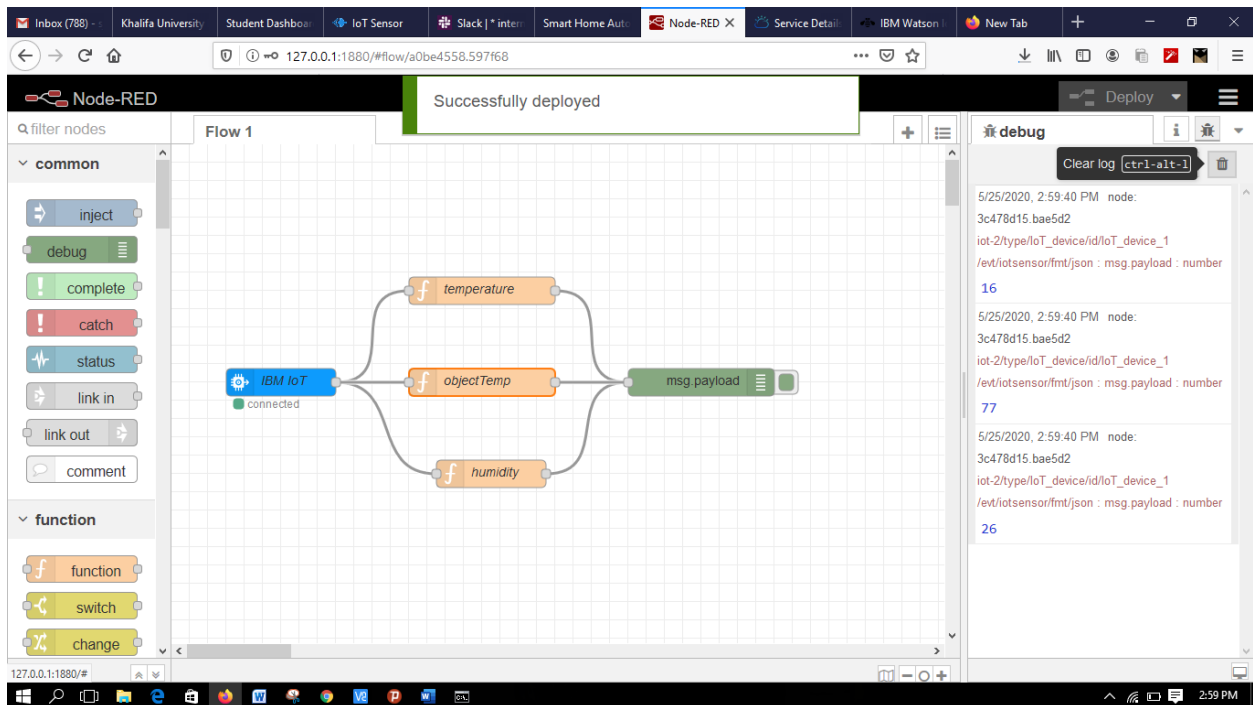
Configure the Nodered to get the Data from IBM IOT platform and Open Weather API

**Milestone-1:** Installing required nodes:





## Milestone-2: Connect to your IBM IOT device to get the Simulator Data



## Milestone-3:

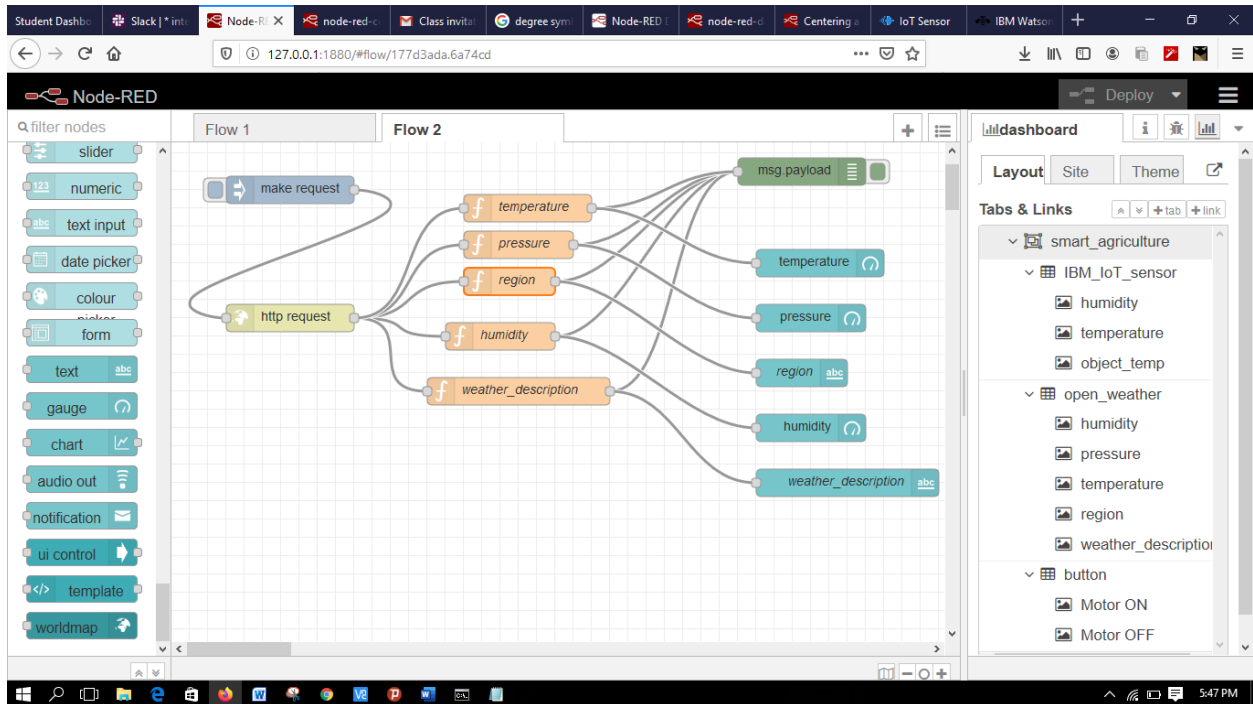
Create an account in Open Weather API and Configure your Open weather API Platform

The screenshot shows the OpenWeather API dashboard. The top navigation bar includes links for Weather in your city, Get Started, API, Pricing, Maps, Partners, Blog, Marketplace, and a user profile dropdown. Below the navigation bar, there's a section for API keys. A message states: "You can generate as many API keys as needed for your subscription. We accumulate the total load from all of them." Below this, there's a table with columns for Key, Name, and a Create key button. The table shows one key: 0eb955e0ad5904f6f3d1613978d5c613, with the name Default. To the right of the table, there's a form to create a new key with a Name input field and a Generate button. Below the table, there are three sections: Product Collections (Current and Forecast APIs, Historical Weather Data, Weather Maps), Subscription (How to start, Pricing, Subscribe for free), and 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 European and Japanese weather stations).

The screenshot shows the OpenWeather API data endpoint. The browser address bar shows the URL: api.openweathermap.org/data/2.5/weather?q=Salem,IN&appid=46fe77aea2a342134324a0e3a10ef950. The response is a JSON object containing weather data for Salem, IN. The JSON object is: {"coord":{"lon":78.17,"lat":11.65},"weather":[{"id":804,"main":"Clouds","description":"overcast clouds","icon":"04n"}],"base":{"stations":"","main":{"temp":302.48,"feels\_like":306.61,"temp\_min":302.48,"temp\_max":302.48,"pressure":1009,"humidity":62,"sea\_level":1009,"grnd\_level":977},"wind":{"speed":0.28,"deg":260},"clouds":{"all":100},"dt":1590519649,"sys":{"country":"IN","sunrise":1590538952,"sunset":1590584808,"timezone":19800,"id":1257629,"name":"Salem","cod":200}}}

## Milestone-4:

Configure your nodered to get the weather forecasting data using http requests

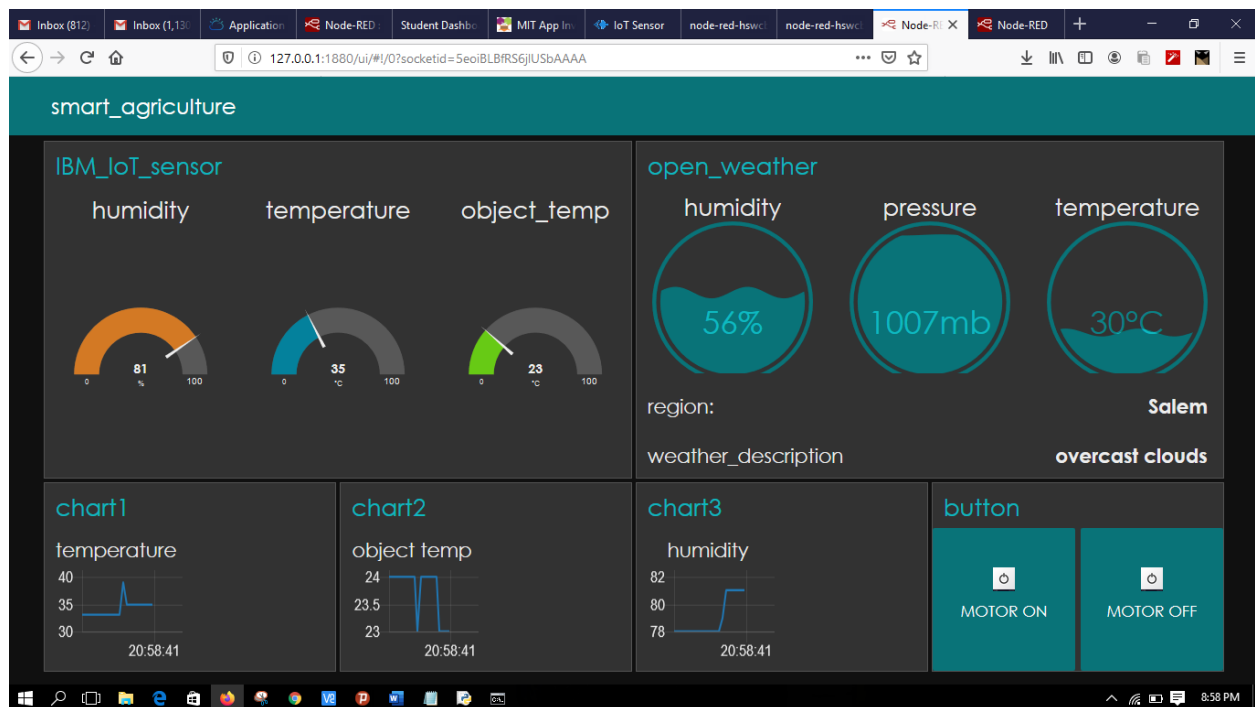


## Task-5

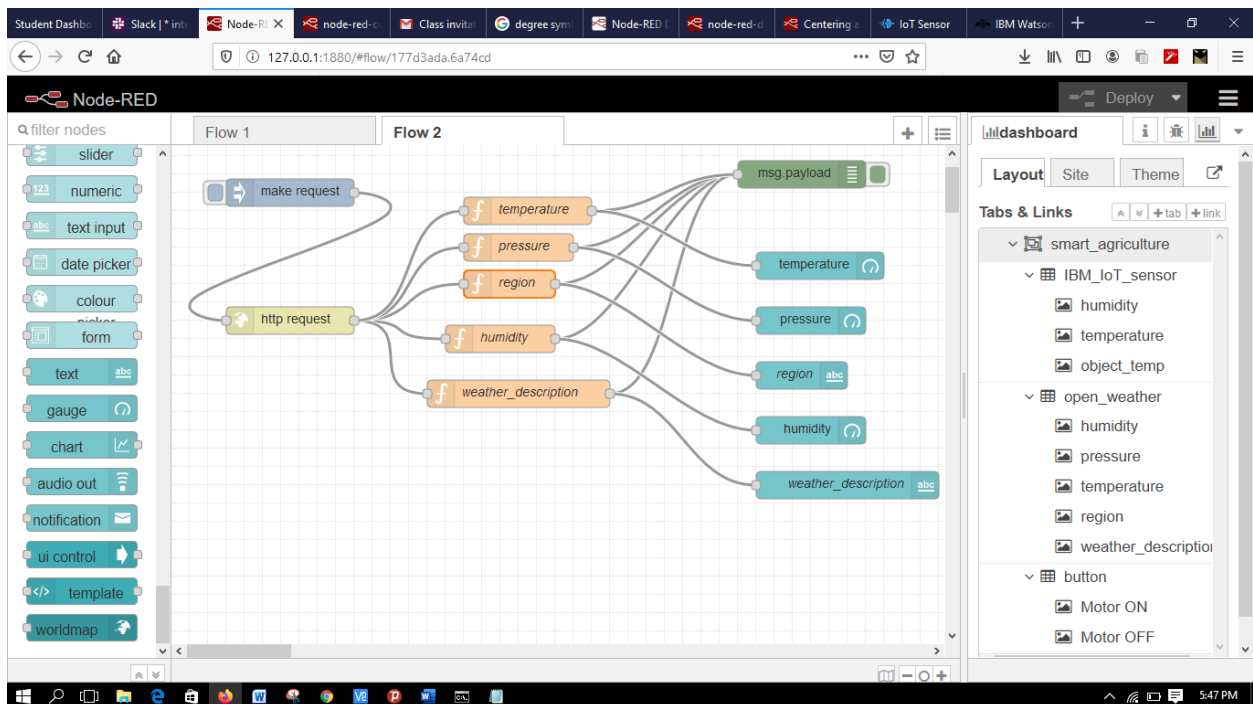
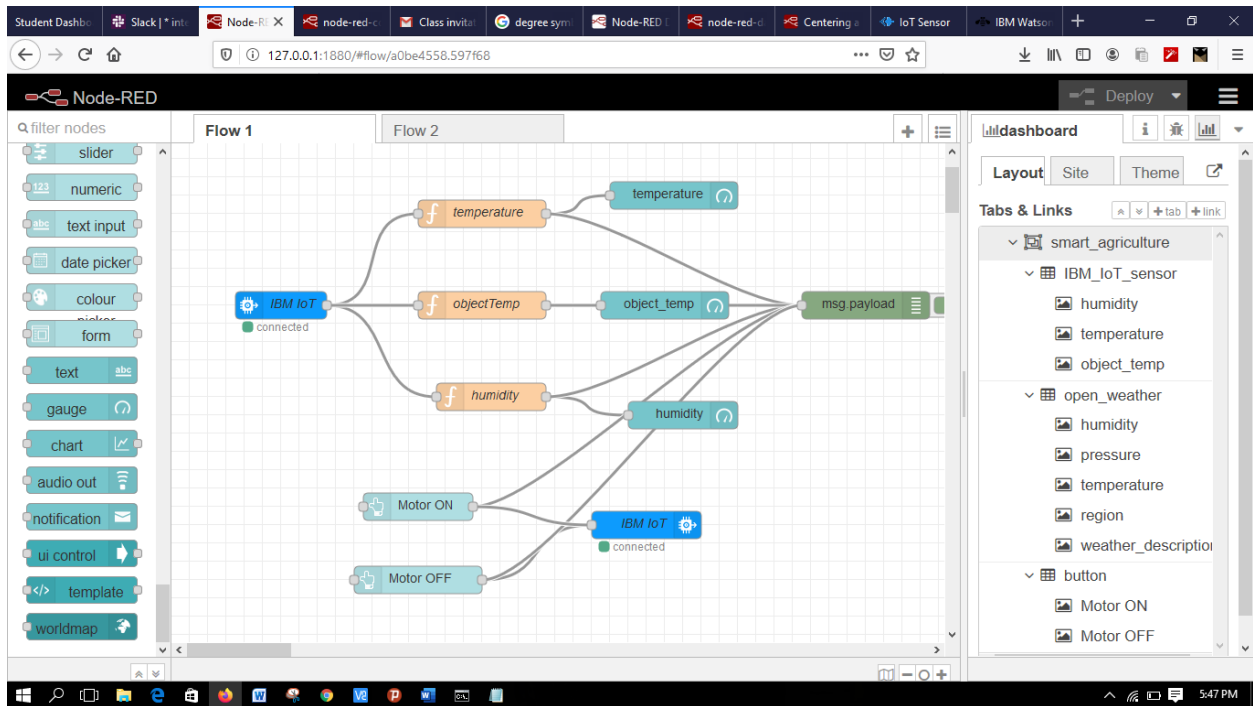
Building a Web App

### Milestone-1:

To display in UI :



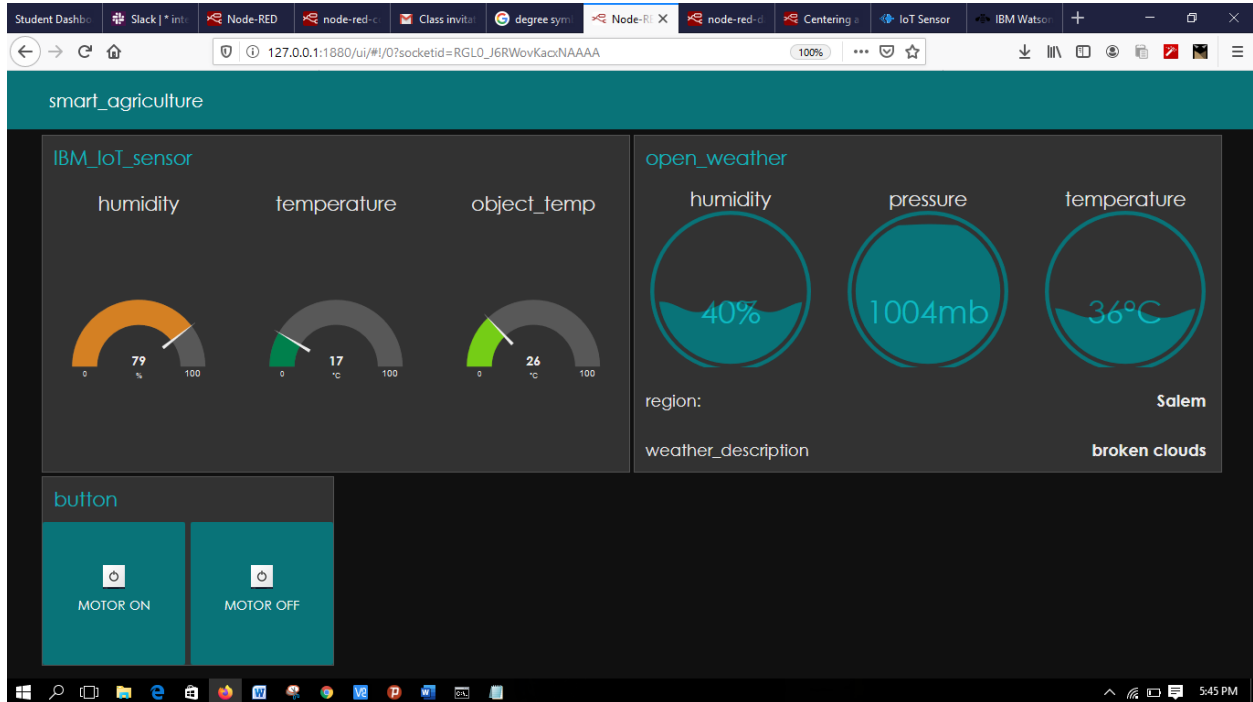
## FLOW:



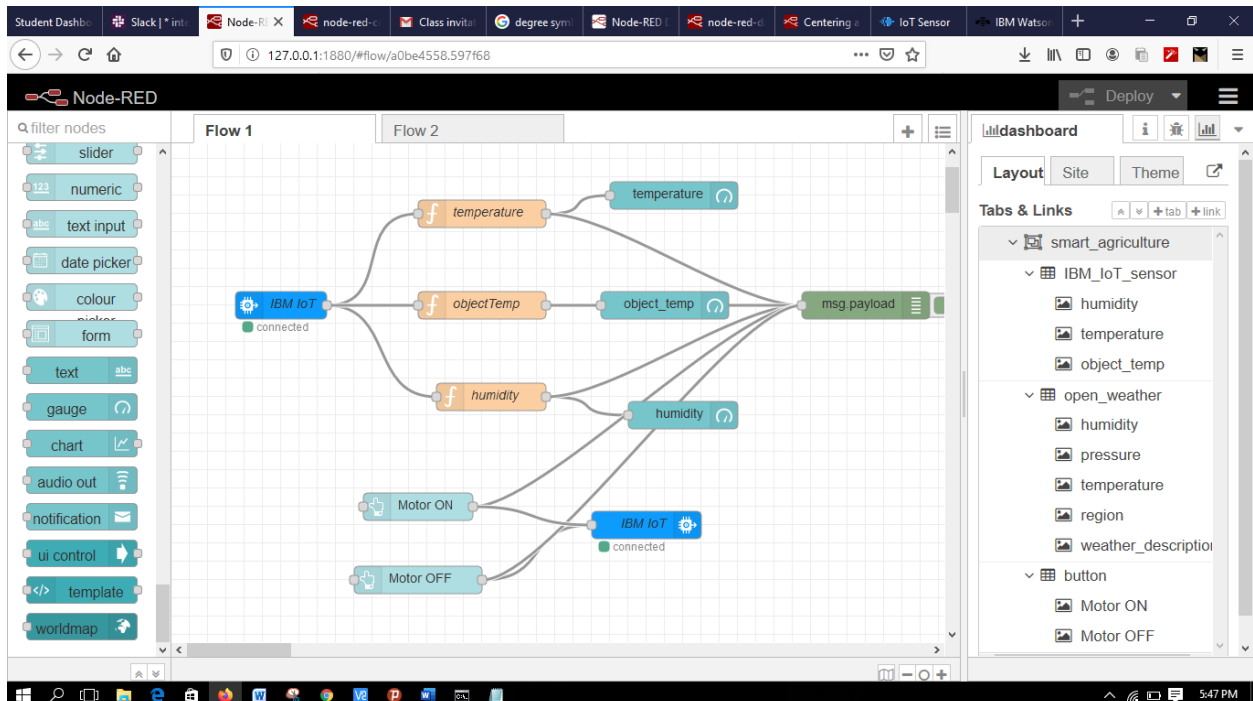


## Milestone-2:

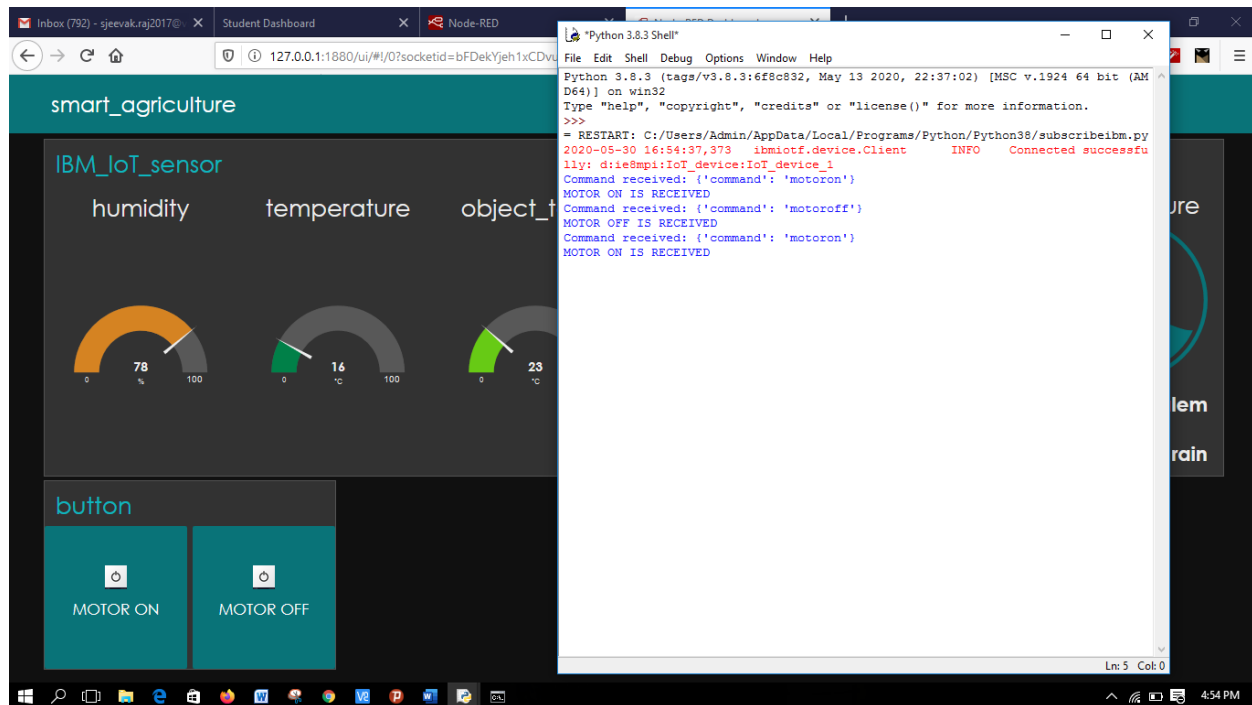
Configure the buttons:



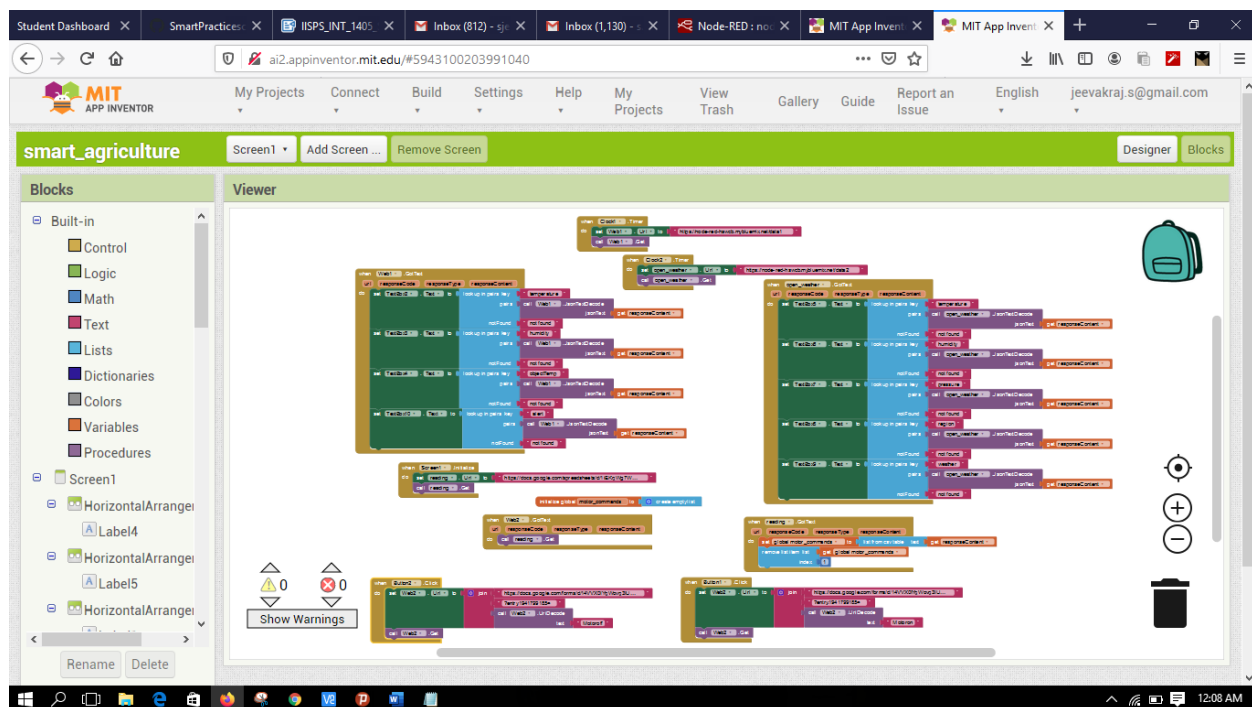
## Flow:



## Motor ON/OFF in python:



## MIT APP INVENTOR:



## NODERED CLIPBOARD:

### Flow-1:

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c":"flow.set('temperature',Math.ceil(msg.payload.main.temp-
273))\nglobal.set('pressure',msg.payload.main.pressure)\nflow.set('humid
ity',msg.payload.main.humidity)\nglobal.set('weather',msg.payload.weath
er[0].description)\nglobal.set('region',msg.payload.name)\nreturn
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