Project report for Smart Agriculture system based on IoT - SB13826

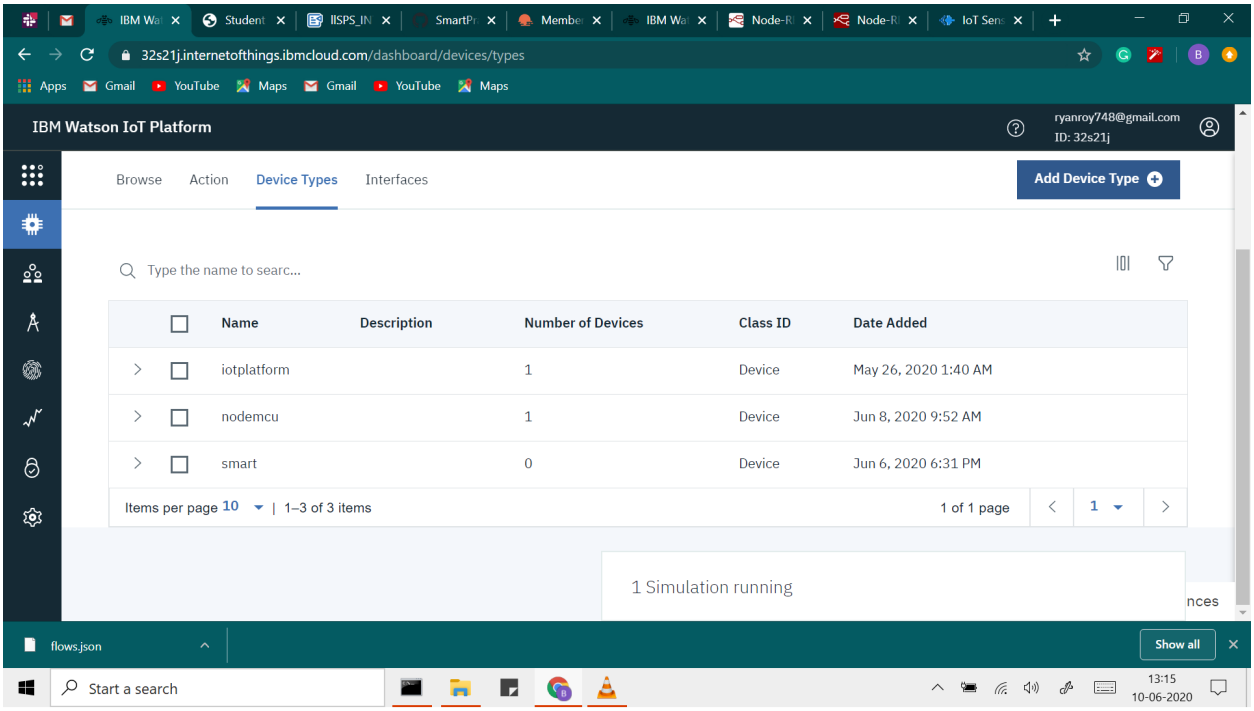
Project summary:

The project is based on the four technology stack mainly - IBM Watson platform, Node -red, a bit of python programming and Open weather map API. The main motive behind this project is to get information from the Openweather platform and IBM IoT simulator and import it to the node red which we will use to make a dashboard in UI that will show us the levels in gauges and also create buttons that will help us to control motors on the field. The idea is to create a simulation of the real world agricultural sector and how IoT can help in it.

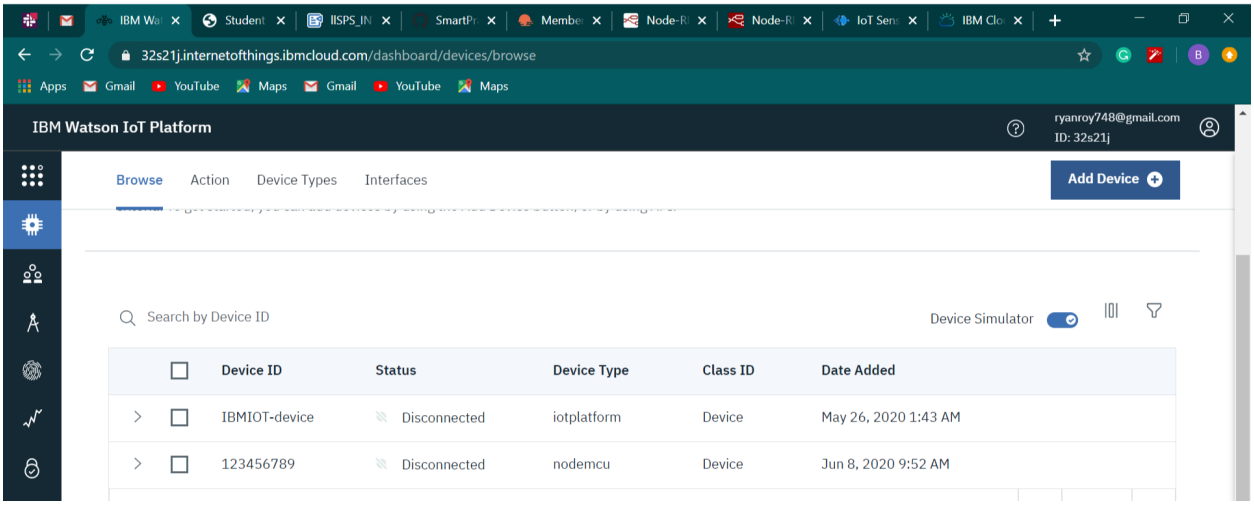
Steps taken to complete the internship:

First we create an Ibm Cloud account and install IoT platform in it. The IoT platform can be found by searching in the catalog section.

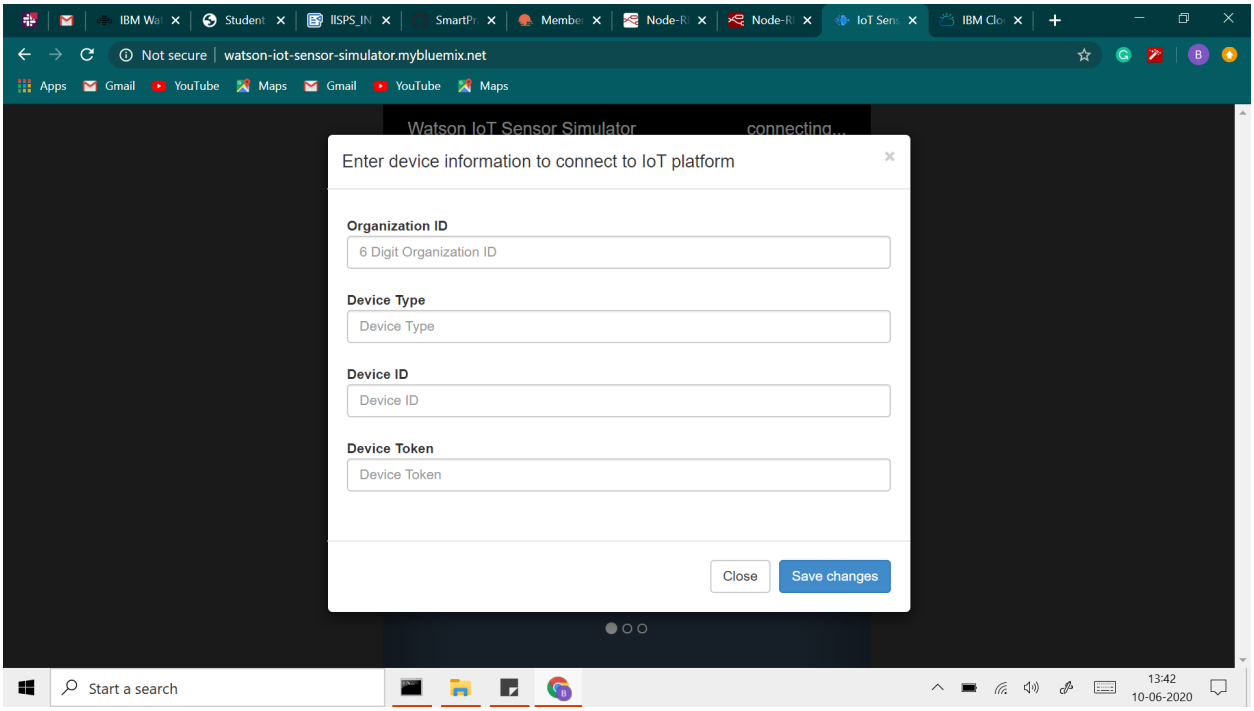
Next we log in the Internet of Things cloud account and add a device Type:



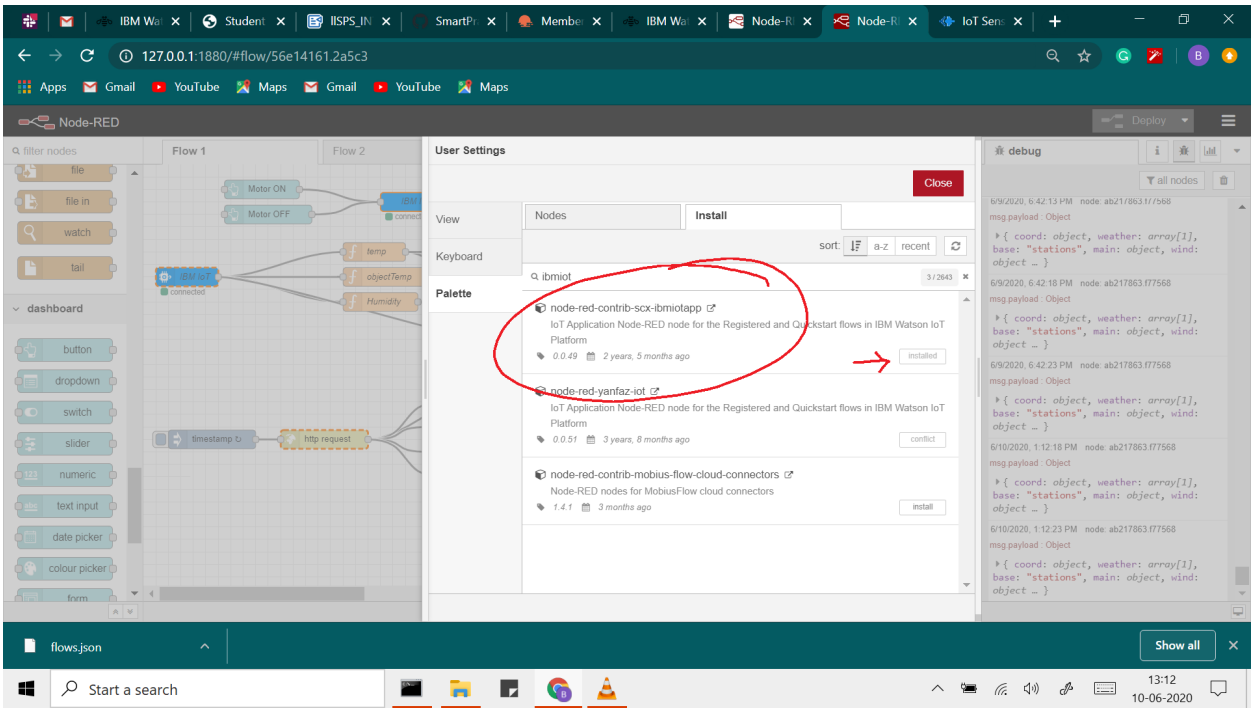
Next we add a device under the device type we just added and note down the device type, device id and authentication token which will be required to start the Iot simulator:



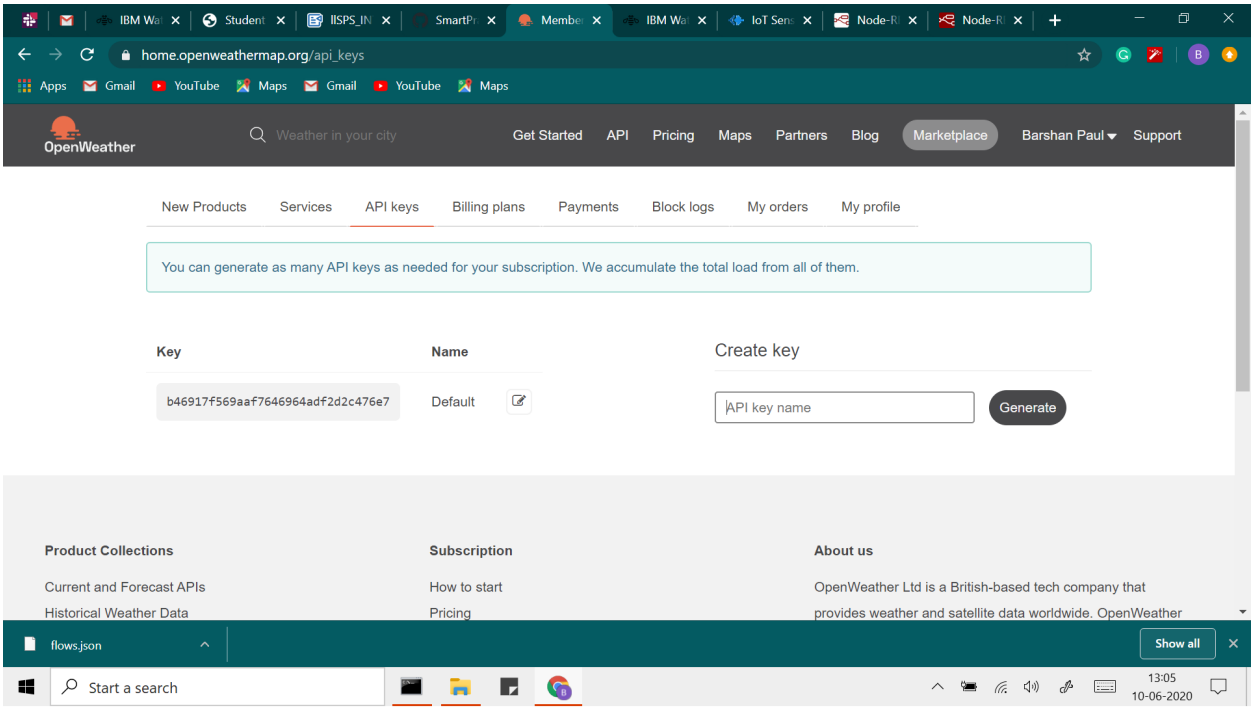
Next open IoT simulator and enter the simulator details:



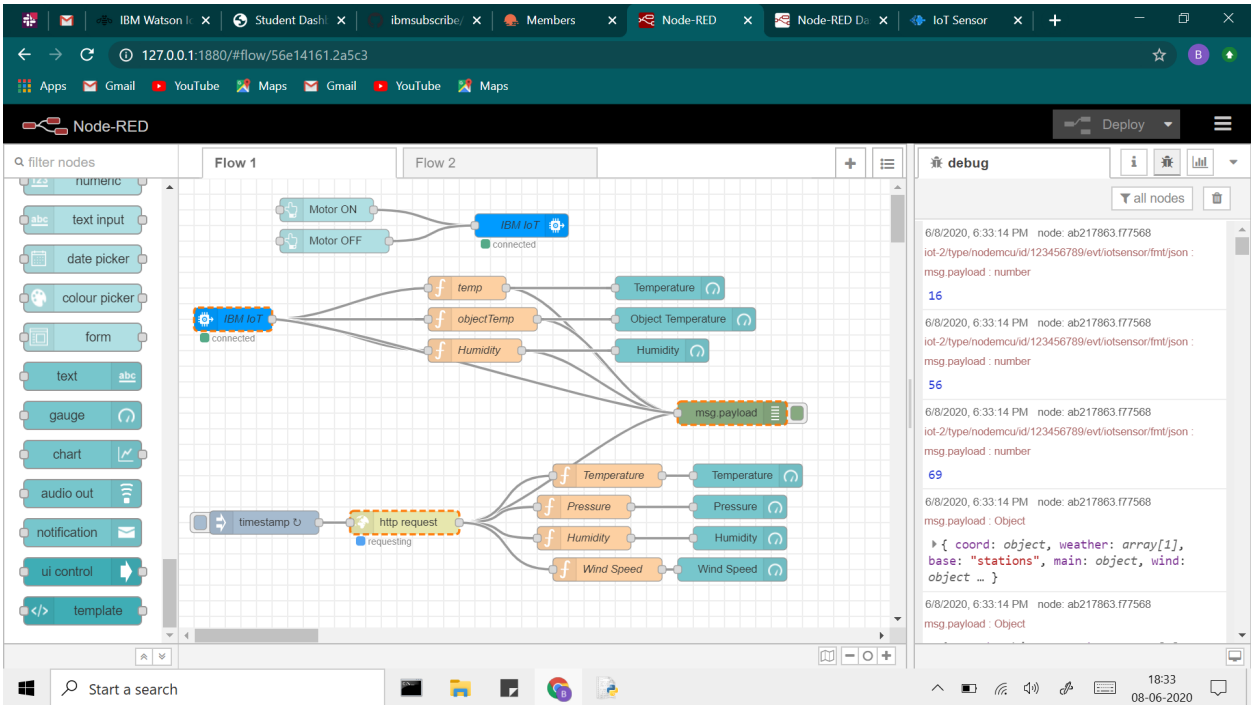
Next we install Node Red on our computer and start Node red, after starting node red we will install IBM Iot palette from the manage palette section:



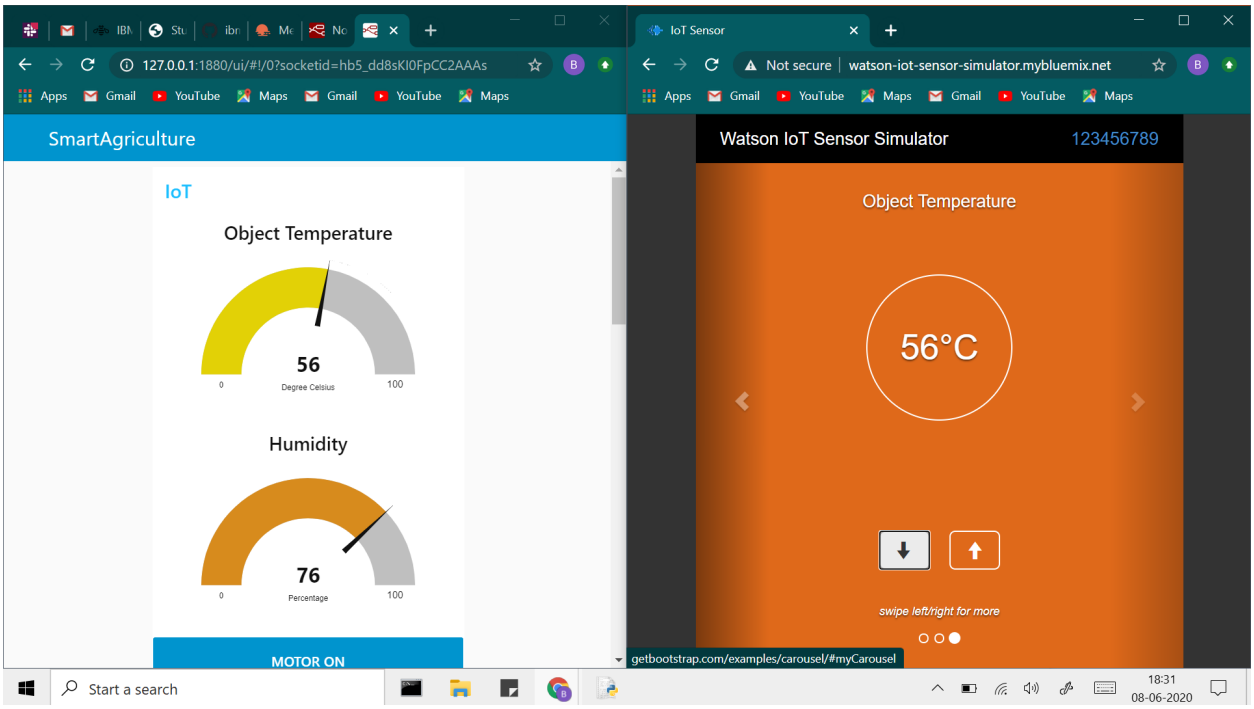
We then go to the Open Weather platform and open an account there and get the API key:

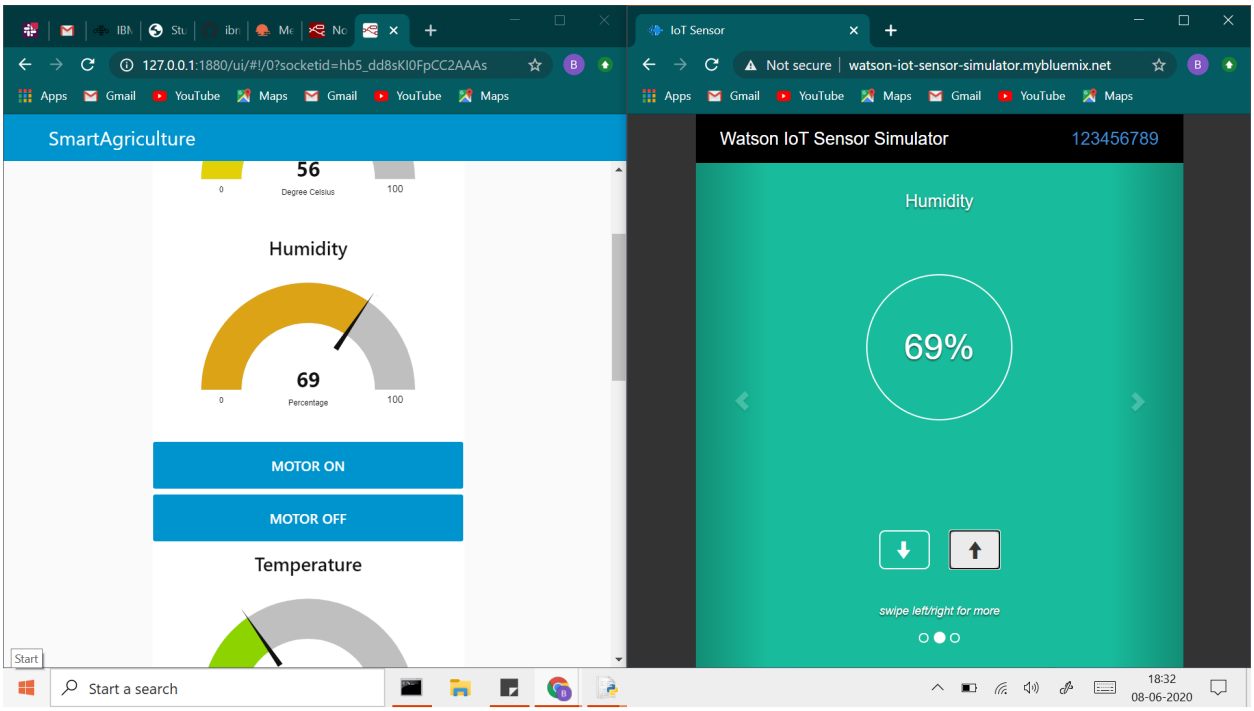


Next we arrange the node red flow as show to get from the IoT simulator and Open Weather API, the IBM Iot nodes have been configured with the same API key , device id and authentication token that we used in the IoT simulator and then we add the http request node and configure it with thee API key we got from Open Weather Platform to get the weather details:

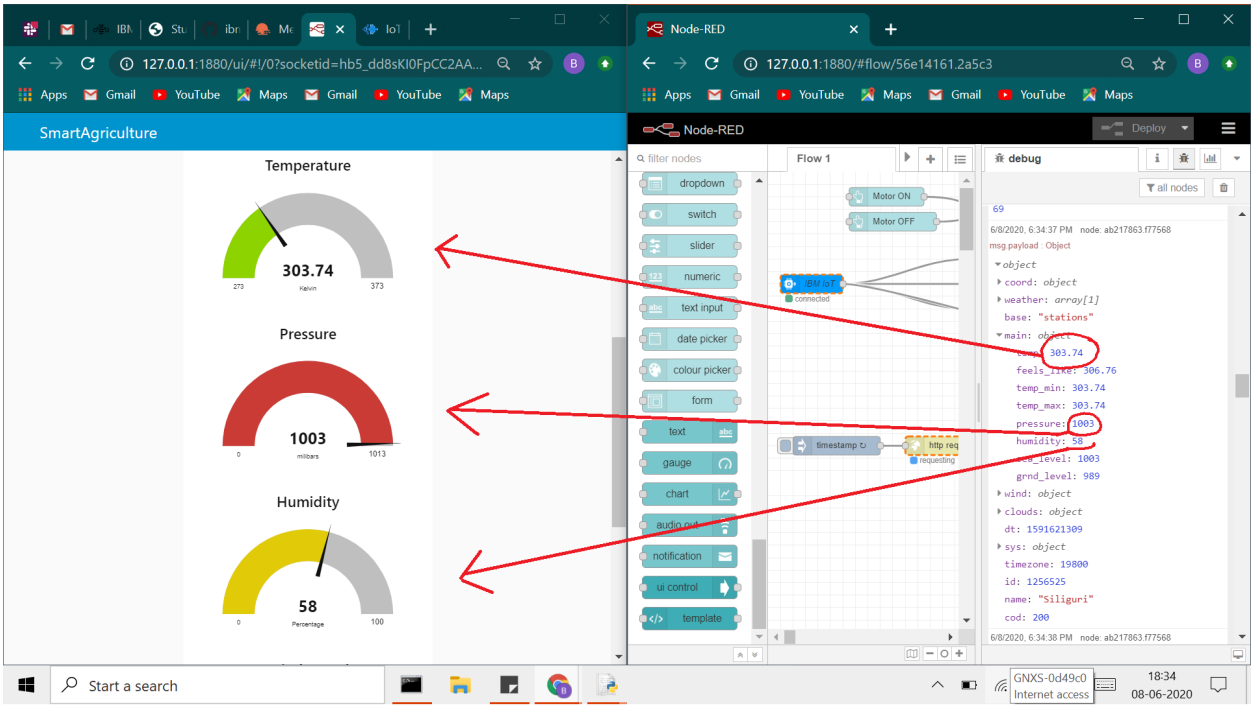


Next we deploy the entire flow in UI and get the following dashboard, here we can see the IoT simulator and Nodered side by side and the changes we make to the simulator gets reflected automatically in the Dashboard:

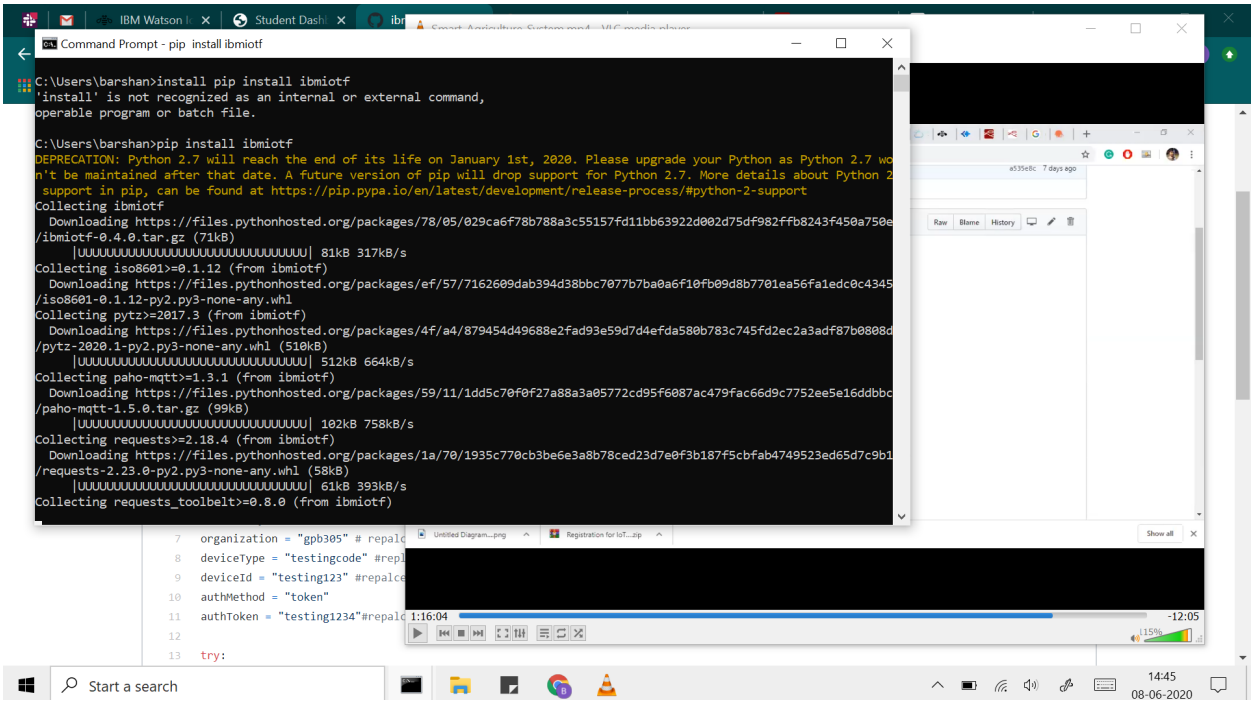




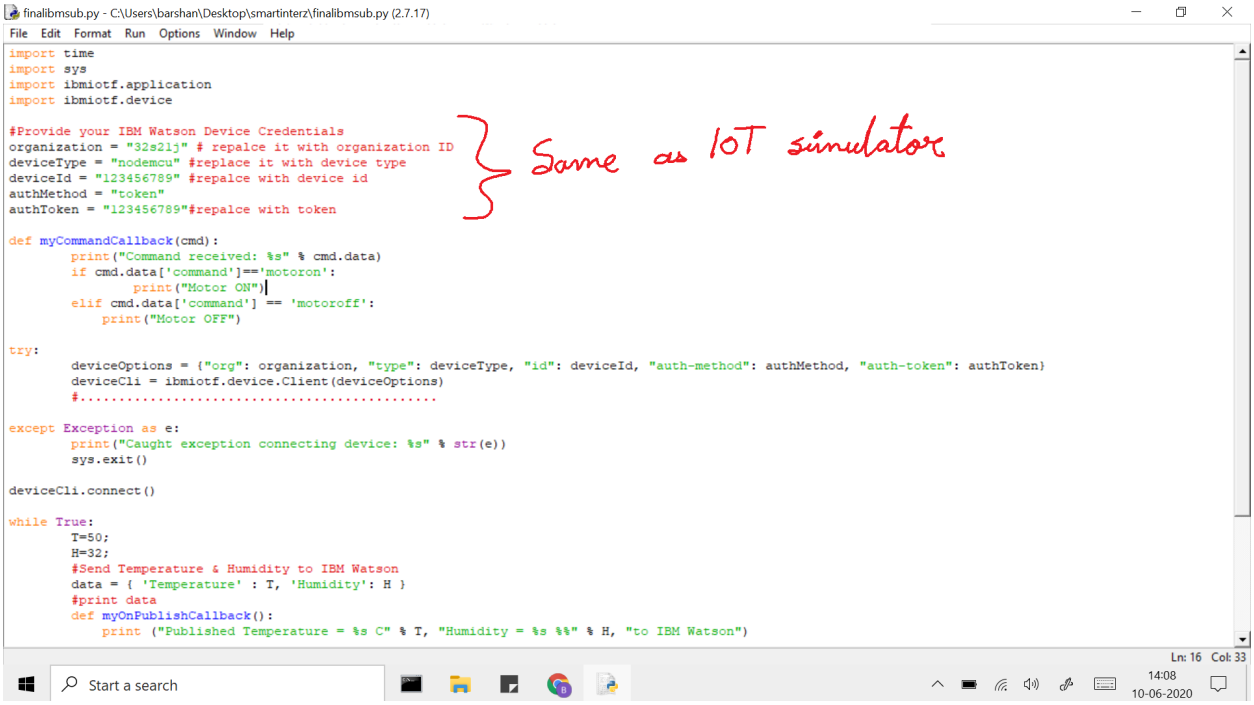
Next we can see the Open weather giving the weather details to the https request node and the results are getting reflected to the UI in real time:



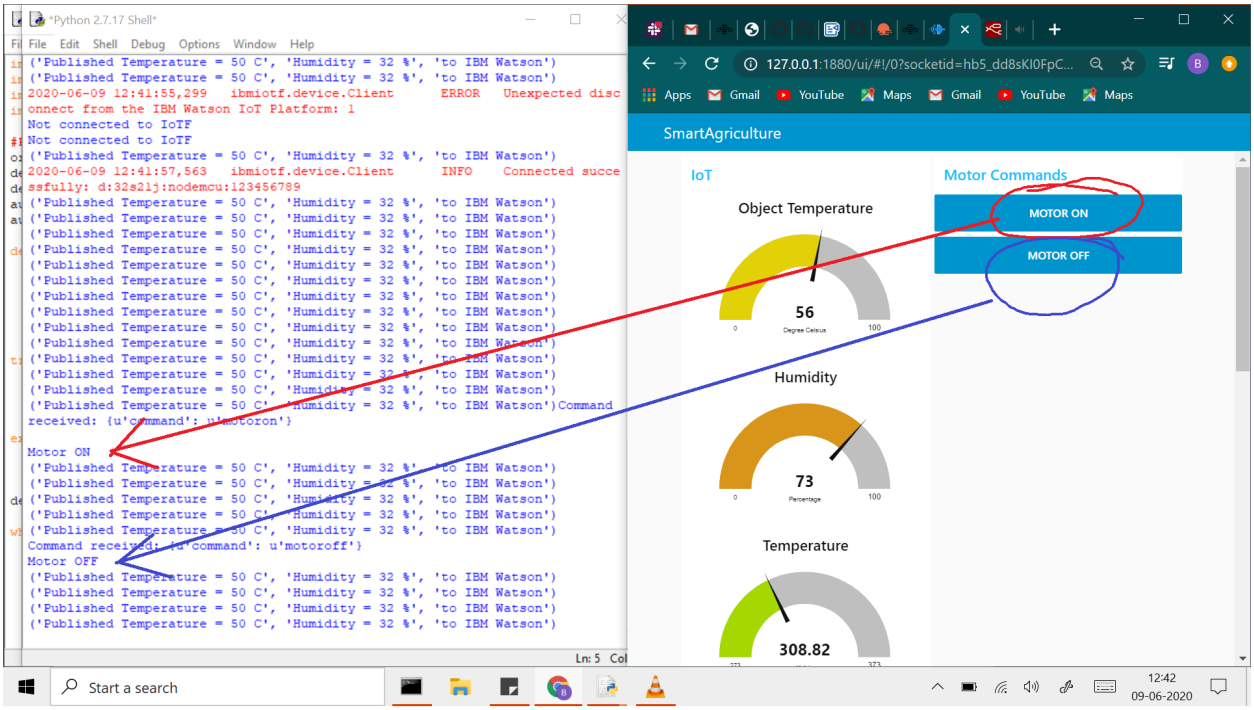
Next step we will have to control the motors using python commands so we install an IBM IoT library in python module by running "pip install ibmiotf" in Python shell:



Next we write a Python code(uploaded to the github repository) to get the motor commands from the Node red dashboard, note that the credentials in this python code is the same as your IoT simulator:



After running the code we see that the code responds to the buttons we added in the IBM IoT node and can turn the motor ON and OFF as directed:



Hence the tasks are updated and the internship has been completed. A big thanks to all the mentors for making this project so simple and easy to follow.