# SMARTBRIDGE: PROJECT

## Predictive Maintenance Of Industrial Motors Using IBM Cloud


### TEAM MEMBERS:

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## INTRODUCTION:

### OVERVIEW:

To predict the industrial motor will work or won't, we can achieve this by measuring the values of the motors.

### OBJECTIVE:

We have to measure the values of current, voltage, temperature. We can measure this characters by using ML, a machine learning model can be developed by using IBM CLOUD. To develop it we are using AUTO AI mode of IBM cloud.

## SURVEY:

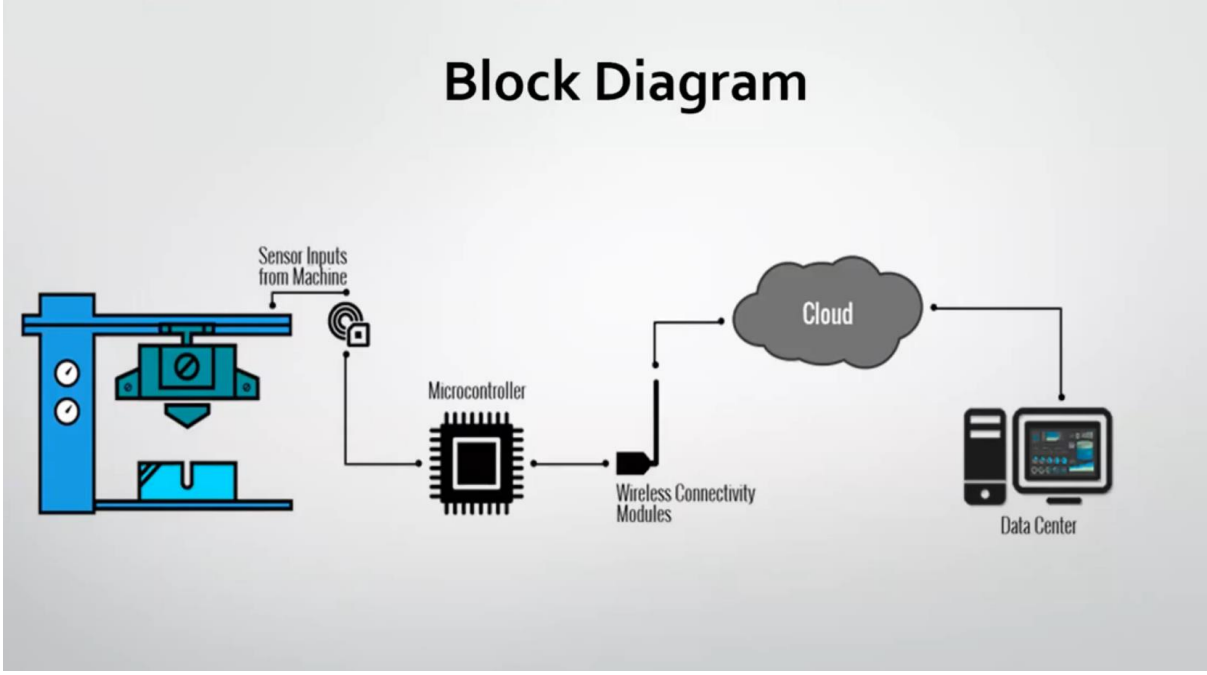
### a. Existing model:

General model which can detect without proper data.

b. Solution:

We can integrate this model with IBM cloud with introducing to AUTO AI .to get the data correctly

## BLOCK DIAGRAM:




## REQUIREMENTS:

Python IDLE

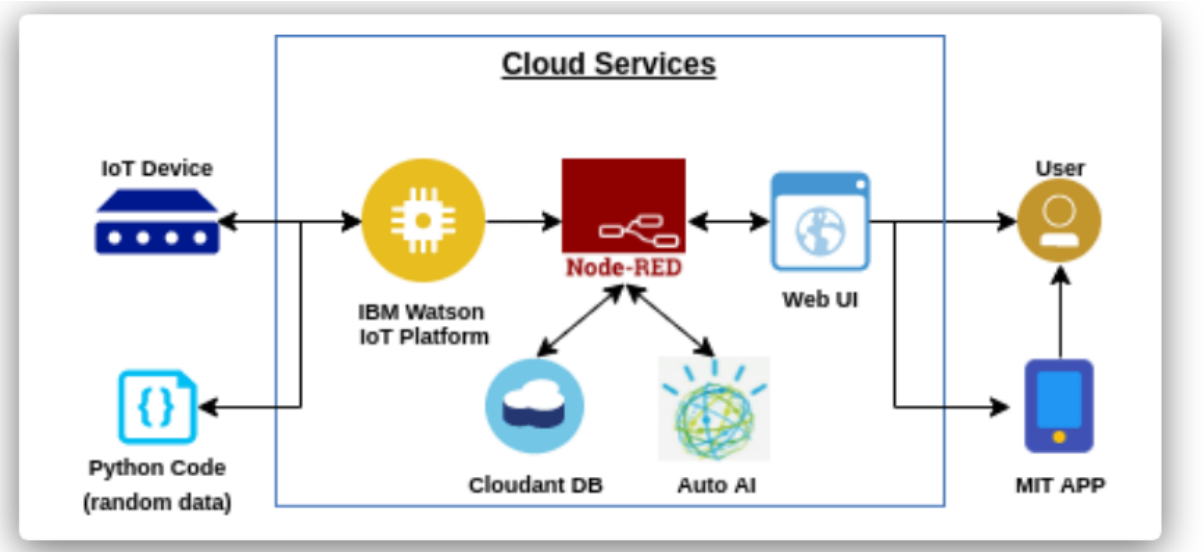
IBM ACCOUNT

Node-red

AUTO AI

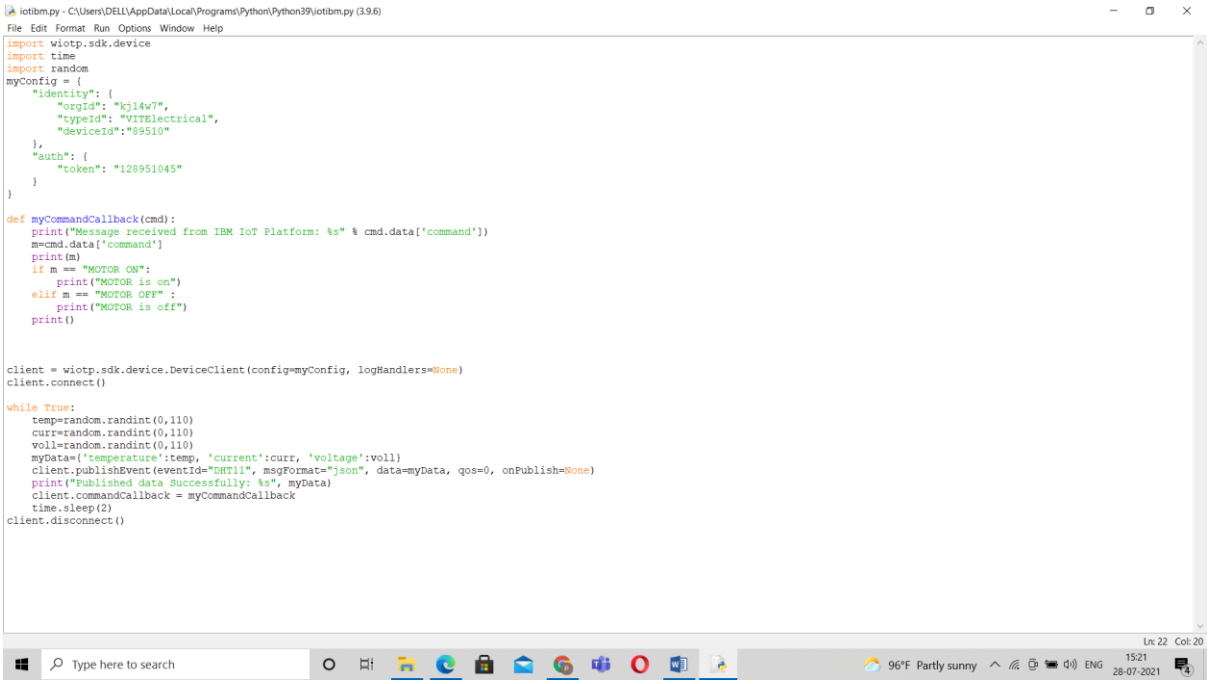
MIT APP

# FLOW CHART:




# PROCEDURE:

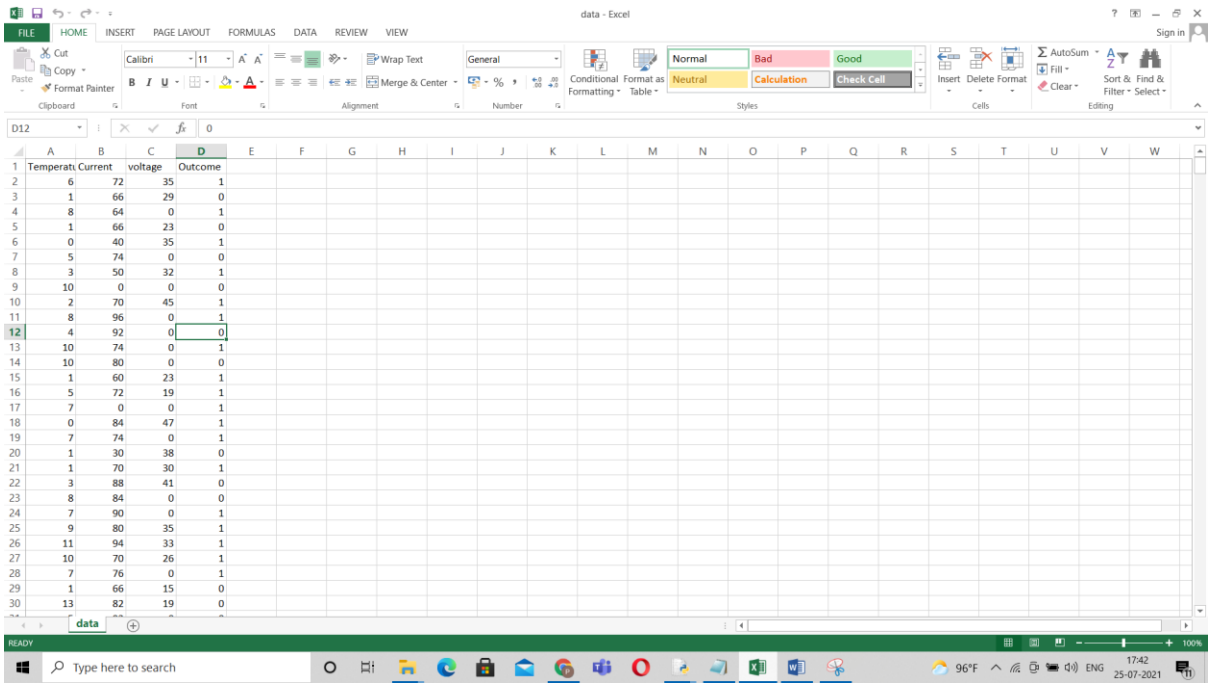
Develop the code



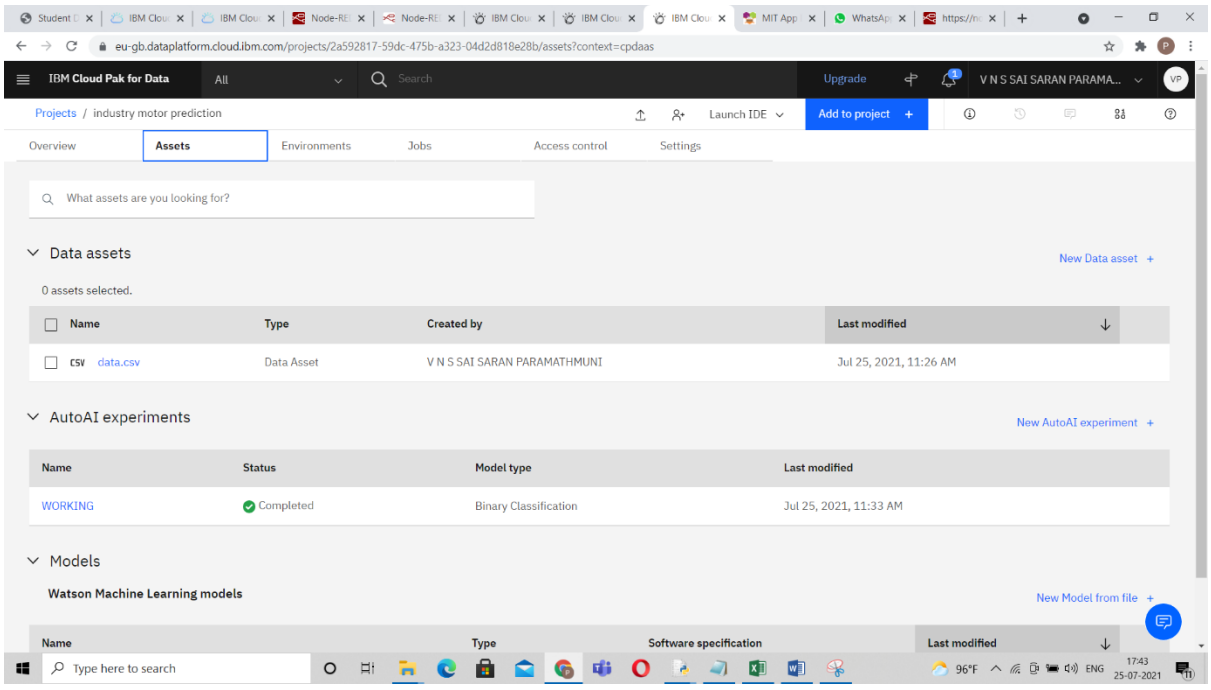
```
import wiotp.sdk.device
import time
import random
myConfig = {
    "identity": {
        "orgId": "kj14w7",
        "typeId": "VITElectrical",
        "deviceId":"89510"
    },
    "auth": {
        "token": "128951045"
    }
}

def myCommandCallback(cmd):
    print("Message received from IBM IoT Platform: %s" % cmd.data['command'])
    m=cmd.data['command']
    print(m)
    if m == "MOTOR ON":
        print("MOTOR is on")
    elif m == "MOTOR OFF" :
        print("MOTOR is off")
    print()


client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

while True:
    temp=random.randint(0,110)
    curr=random.randint(0,110)
    voll=random.randint(0,110)
    myData={'temperature':temp, 'current':curr, 'voltage':voll}
    client.publishEvent(eventId="DHT11", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Published data Successfully: %s", myData)
    client.commandCallback = myCommandCallback
    time.sleep(2)
client.disconnect()
```

Creating the AUTO-AI application

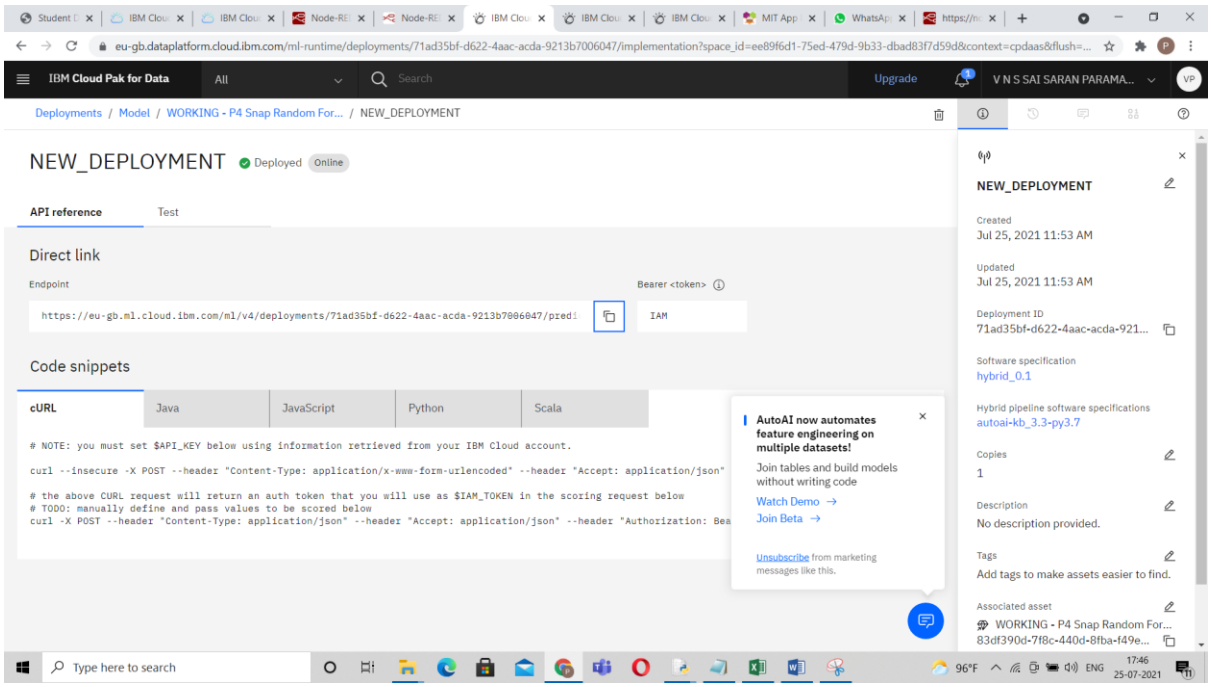
To get the application we need to add a dataset of the motor



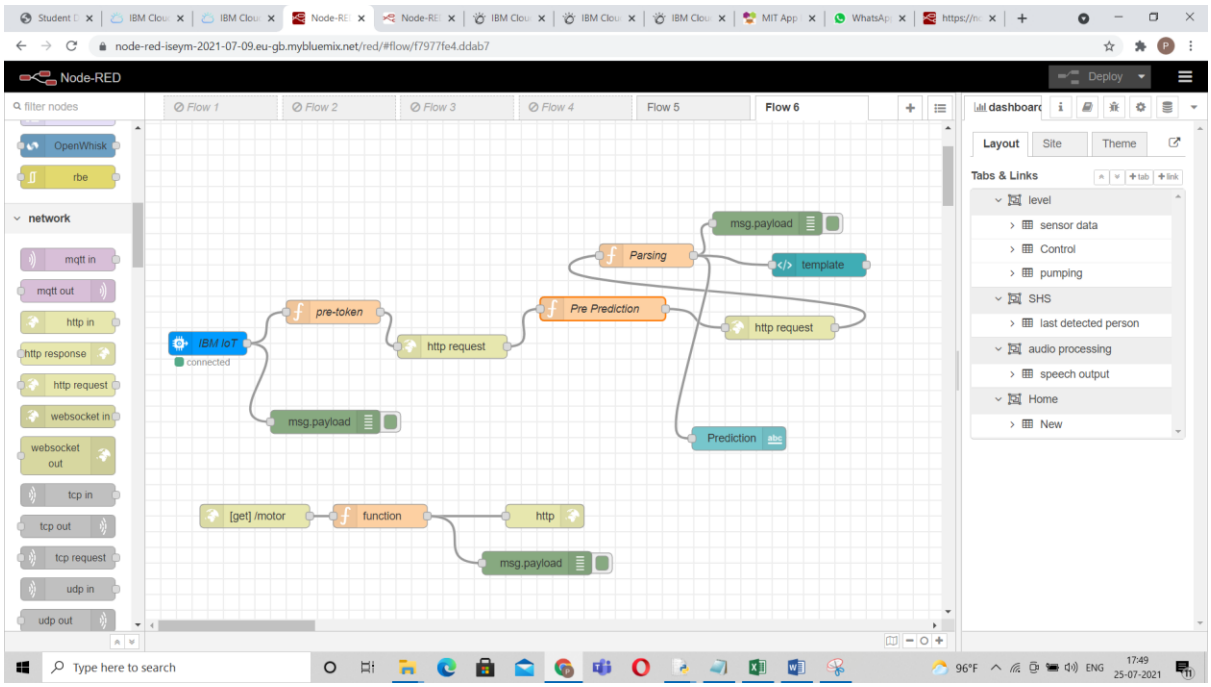

After giving the data set we will get our ML page in IBM Cloud

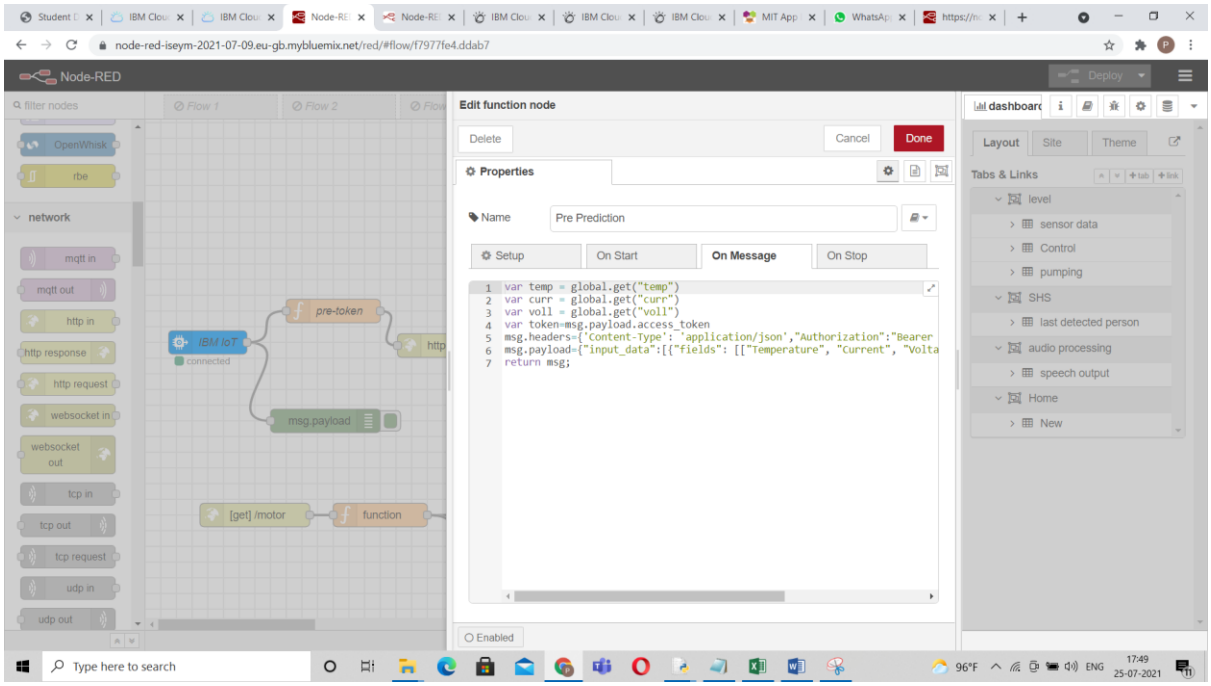


We need to select the model from the created pipelines, after that we need to get the end point URL for the model which we have deployed

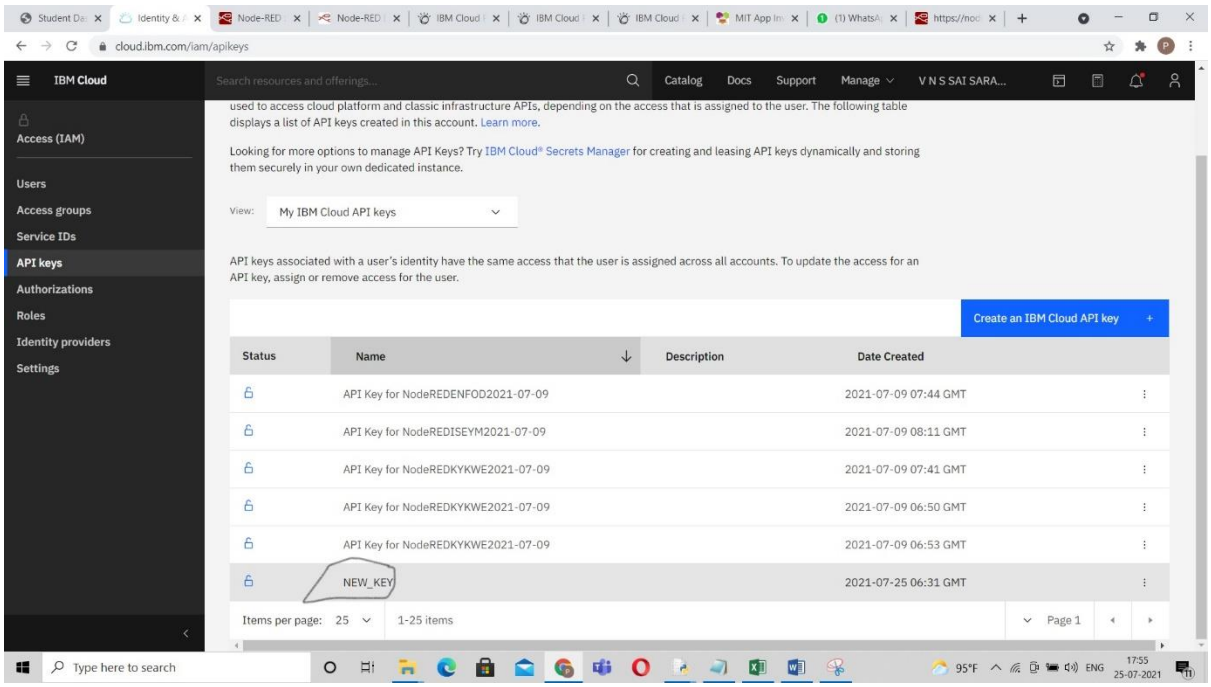



To develop a node-red application we need to get an “JSON” file to run after getting that json file into the node red, just fill the required details which are needed

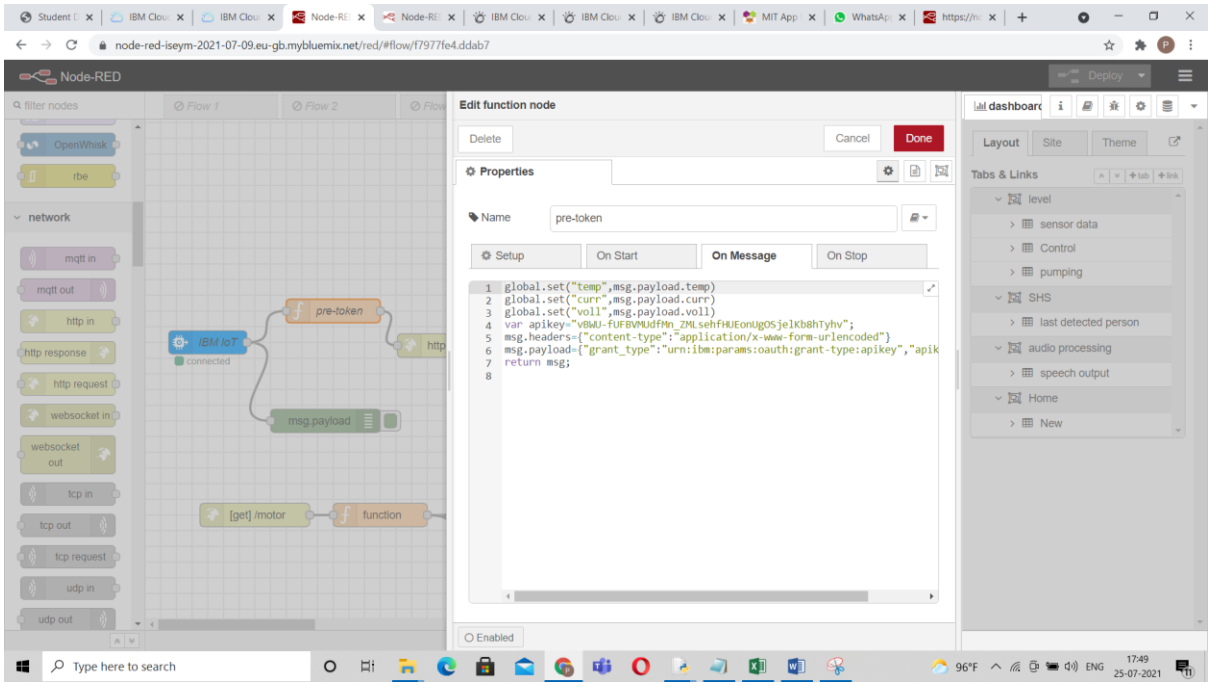




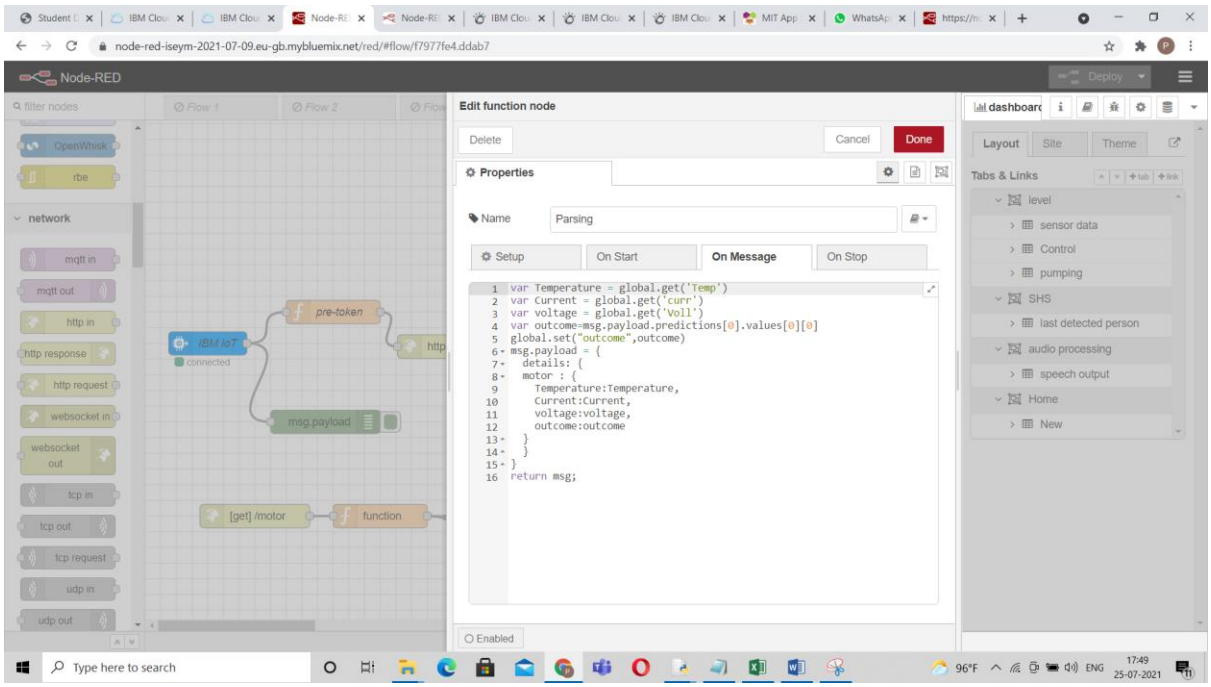

After setting the function we need to generate API-KEY

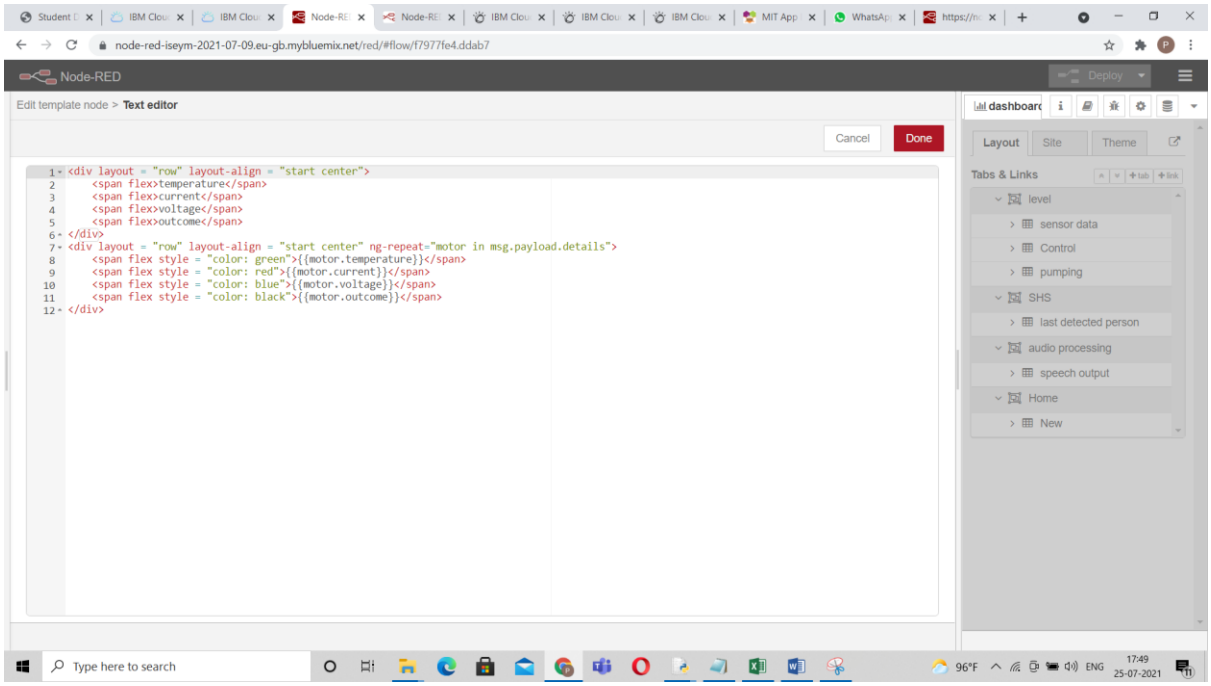



Giving that API-KEY in the function and create that function

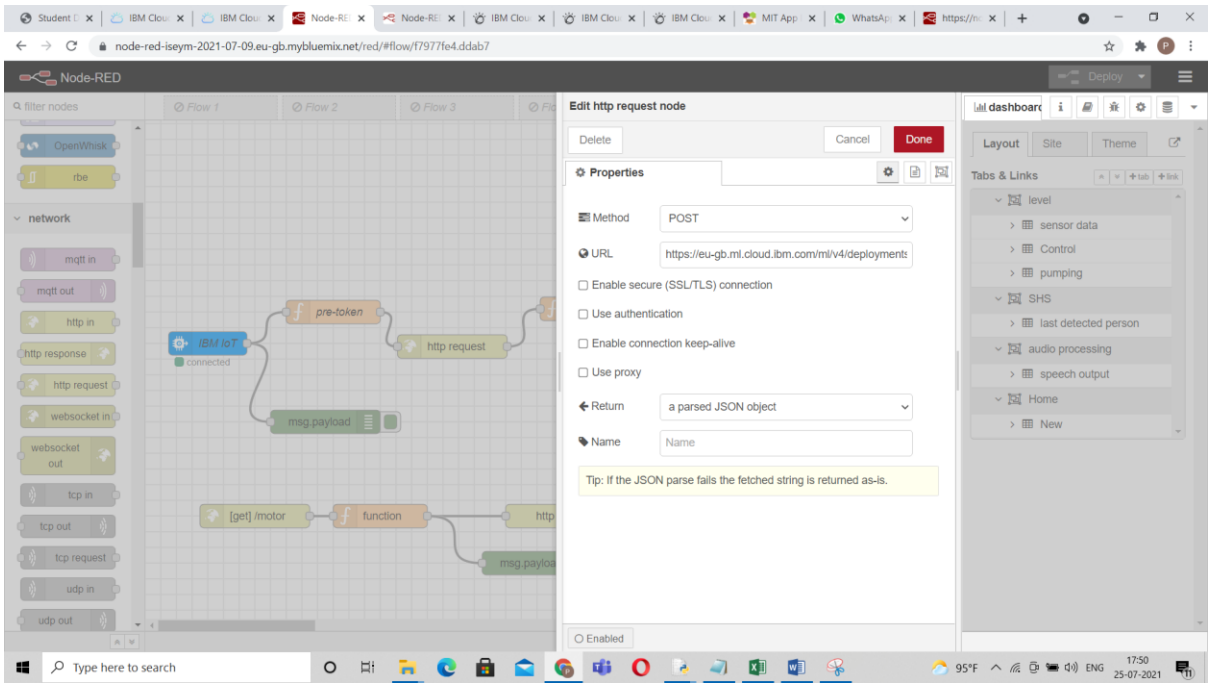



Giving some commands in the functions:

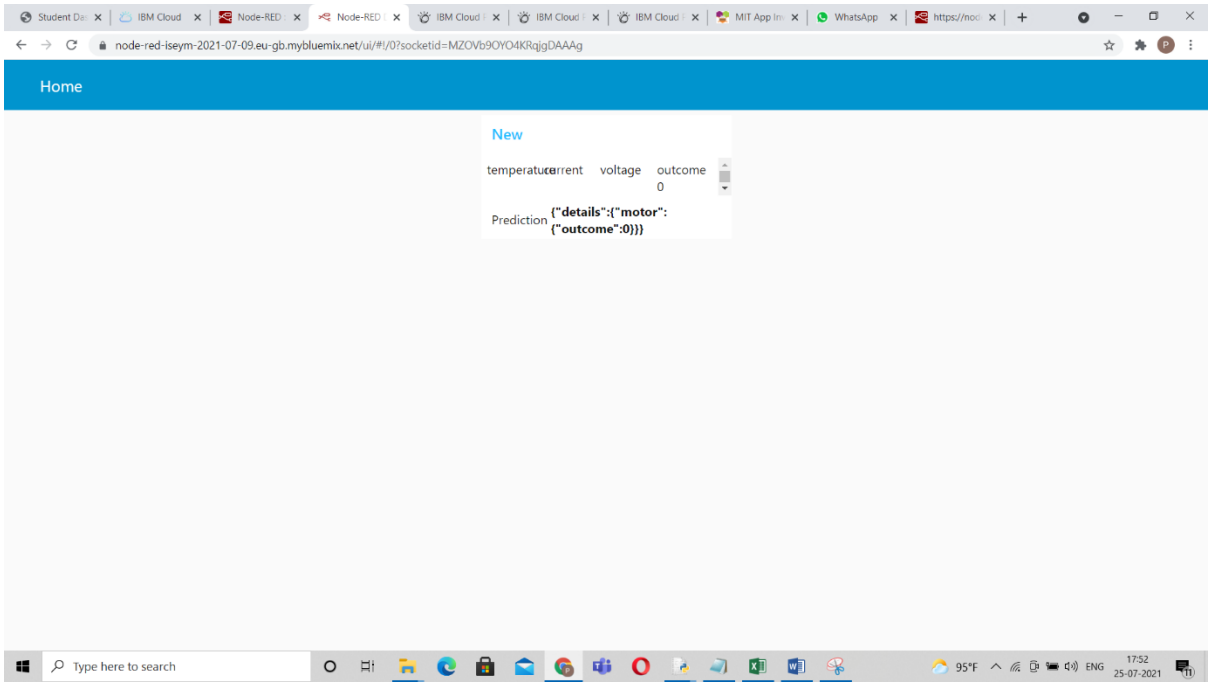




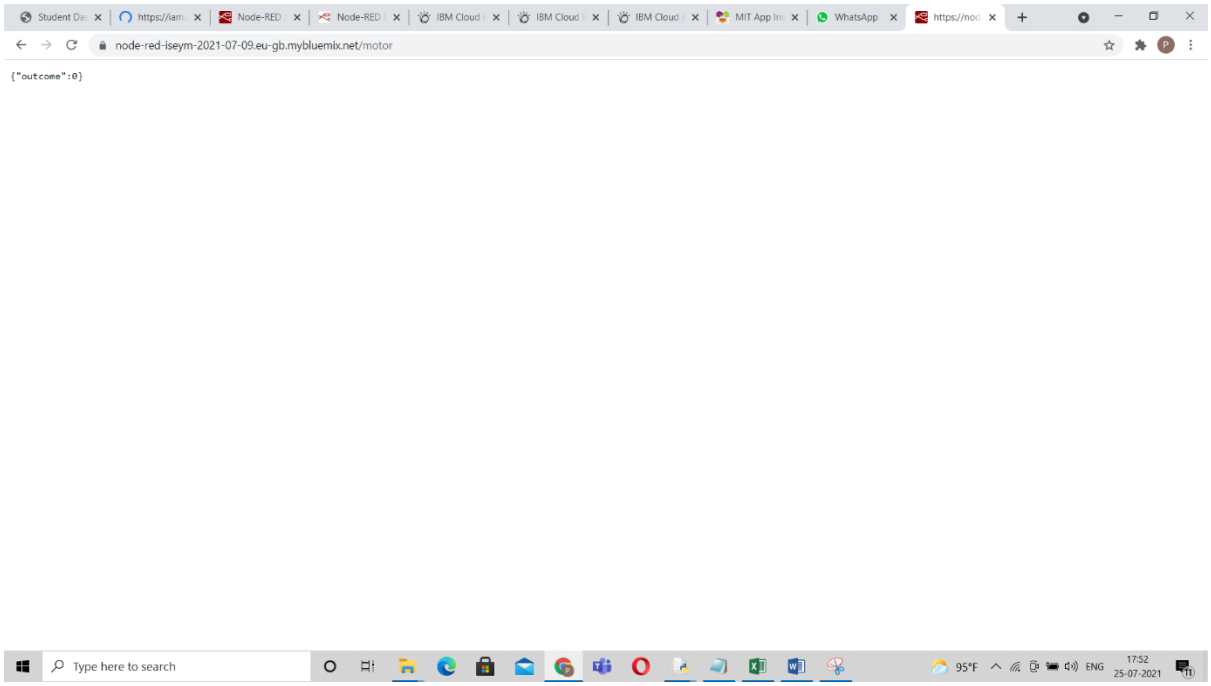

We need to give that end point URL at the one http request node

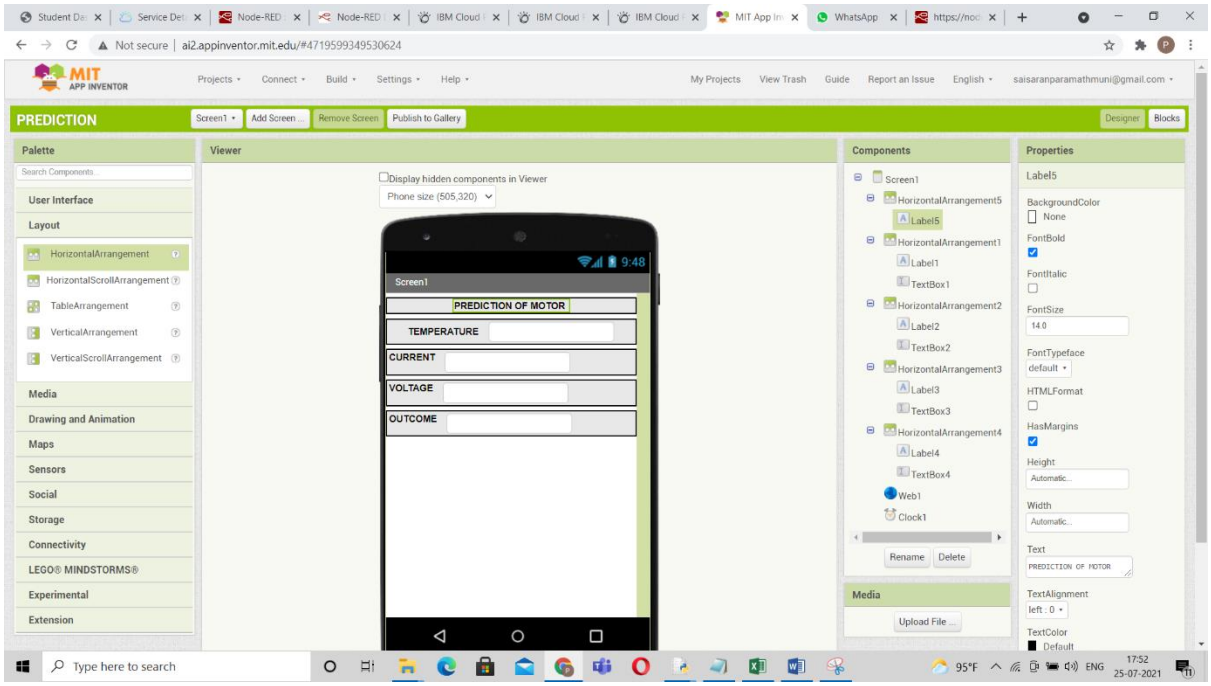


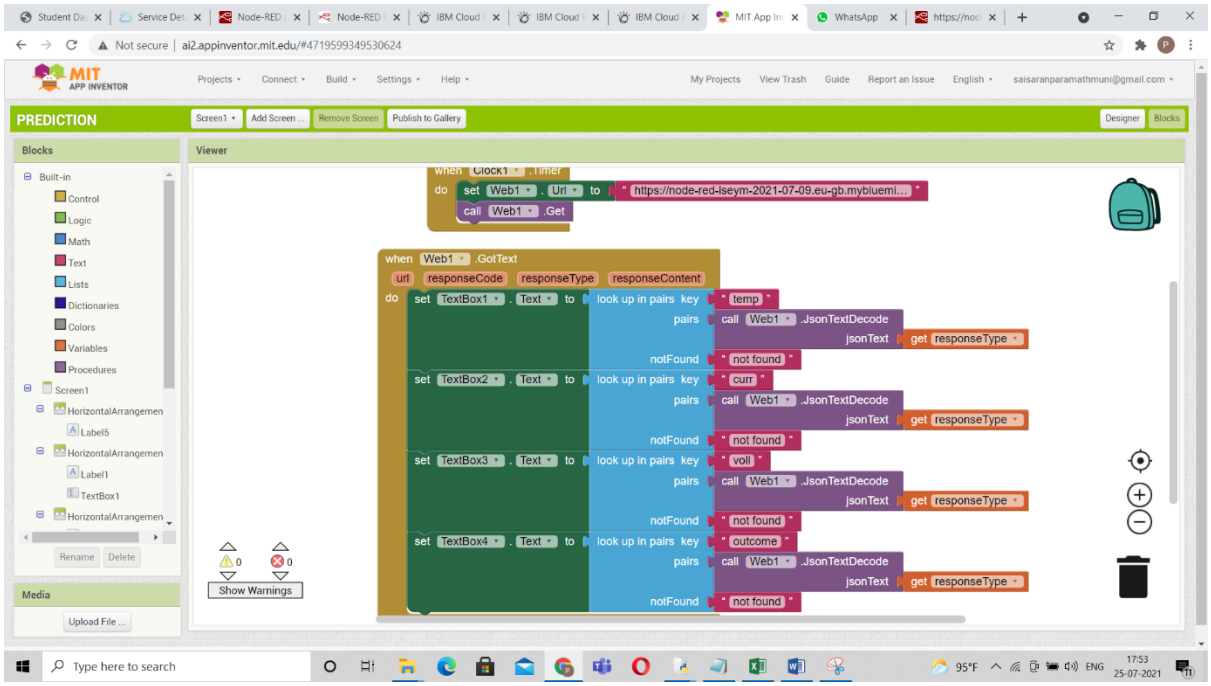

Before deploying the schematic we need to run the python code and after that deploy the schematic we need to view (user interface) the web view of the application



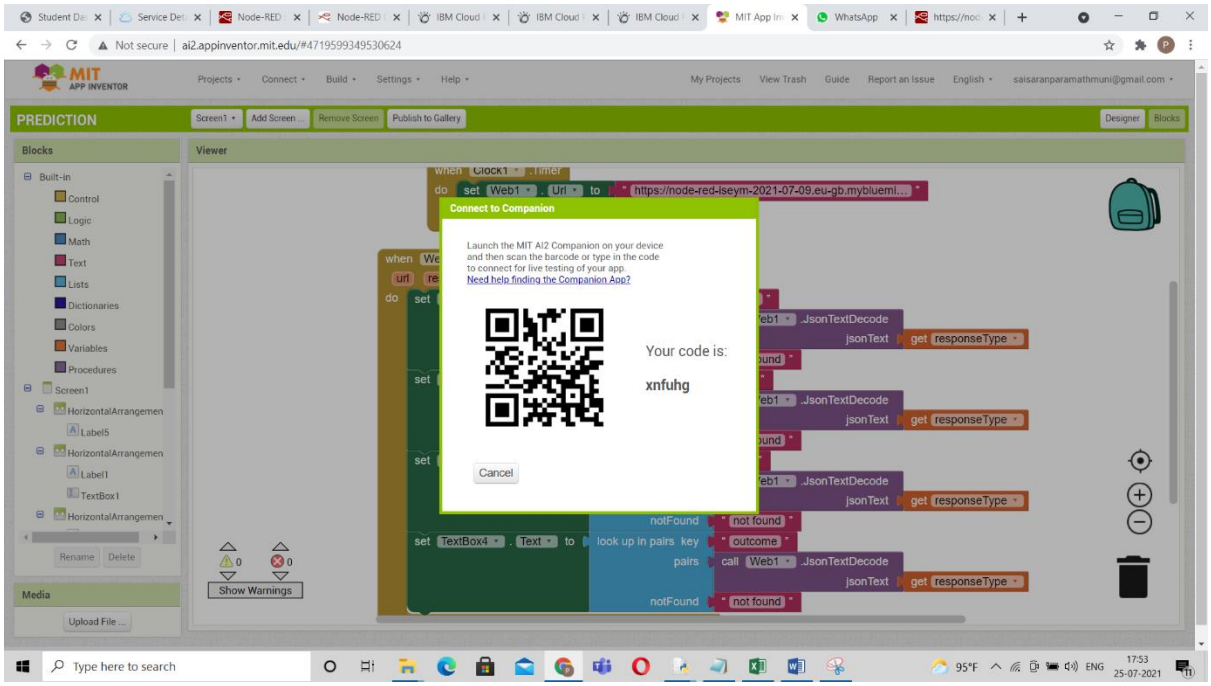

After setting this we need to develop for the app view for that we need get some connections with the same “http/in “ & “http/response” node with including some functions and to develop an app we are using the help of MIT APP INVERTER






After creating the interface and back-end of the app we need to scan and view it in the app in the phone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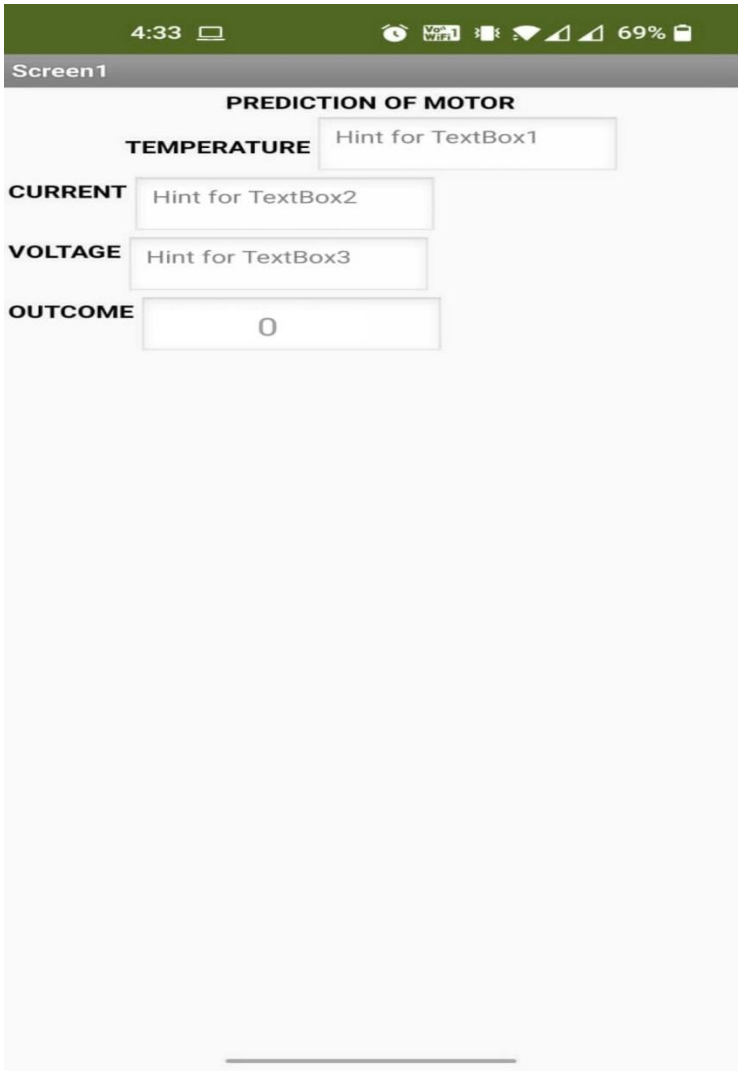
MIT APP INVENTOR
Projects
Connect
Build
Settings
Help
My Projects
View Trash
Guide
Report an Issue
English
saisaranparamathmuni@gmail.com
PREDICTION
Screen1
Add Screen ...
Remove Screen
Publish to Gallery
Designer
Blocks
Blocks
Viewer
Built-in
Control
Logic
Math
Text
Lists
Dictionaries
Colors
Variables
Procedures
Screen1
HorizontalArrangemen
Label5
HorizontalArrangemen
Label1
TextBox1
HorizontalArrangemen
Rename
Delete
Media
Upload File ...
Show Warnings
Connect to Companion
Launch the MIT AI2 Companion on your device and then scan the barcode or type in the code to connect for live testing of your app.
Need help finding the Companion App?
Your code is:
xnfuhg
Cancel
when Clock1 .Timer
do set Web1 . Url to https://node-red-iseym-2021-07-09.eu-gb.mybluemi...
set TextBox4 . Text to look up in pairs key outcome
pairs call Web1 .JsonTextDecode
jsonText get responseType
notFound not found
Type here to search
95°F
ENG
17:53
25-07-2021

https://github.com/gnaneshwarbandari/IOT/blob/main/ibm_code.p




The user will have a connection to this app so he can view it

## ADVANTAGES & DISADVANTAGES:

Reduction in maintenance costs

Reduction in machine failures

Life time of service parts will increase

Safety operator

Increases investment in diagnostic equipment

Savings potential is readily seen by management

Increases investment in staff training

## CONCLUSION:

This project is mainly focused on the problem of carrying out predictive maintenance in a industrial motors and presented the results of the preliminary data analysis and feature selection that were performed on a sample of the collected data sheet. The derived data from IOT device gives the status of industrial motors about temperature, current & voltage from the equipment is continuously monitored to avoid any short circuits and line breakage. So predictive maintenance of industrial motors plays a major roll in maintaining it. In order to reduce the risk factor in this the process has to be carefully planned and carried out by well trained workers

0 – it won't work

1 – it will work

## BIBLIOGRAPHY:


Smart bridge lecture videos

IBM platform videos

https://drive.google.com/file/d/1W4skAVwWkVhKBbSMAMXtnrvP6MbdqvtG/view?usp=sharing

https://drive.google.com/file/d/1tX2MhuhqvMfHpirDlRhpSODV1gFtXqL9/view?usp=sharing

https://drive.google.com/file/d/1oL_KpIKNeSuwVNnsJhQ6rgY3MlRogHvS/view?usp=sharing


## SOURCE CODE:

https://github.com/gnaneshwarbandari/IOT/blob/main/ibm_code.py