SPRINT DELIVERY – 1

Date	5 November 2022
Team ID	PNT2022TMID22430
Project Name	Smart Waste Management System for Metropolitan Cities

Functional Requirement – simulation creation(connect sensor arduino with python code).

User story : USN – 1

STEP 1: Type the given Python Code in Compiler.

PYTHON CODE :

```
import time
import sys
import ibmiotf.application
import ibmiotf.device
import random

#Provide your IBM Watson Device Credentials
organization = "32ws5h"
deviceType = "Ultrasonic_sensor"
deviceId = "554517"
authMethod = "token"
authToken = "12345678"

# Initialize GPIO
def myCommandCallback(cmd):
    print("Message received from IBM IOT Platform : %s" % cmd.data['ALERT'])
    status=cmd.data['ALERT']
    if status=="BIN FULL":
        print ("ALERT!! BIN IS FULL")
    else status=="NORMAL LEVEL":
        print ("BIN IS IN NORMAL LEVEL")
```

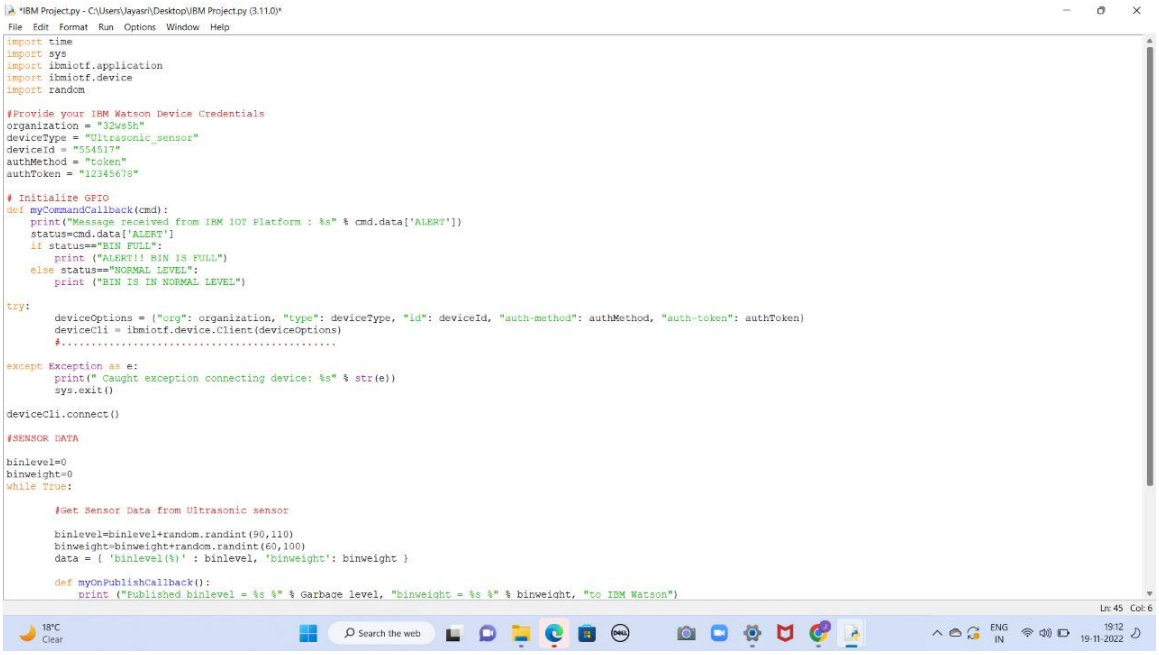
```
try:
deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod, "auth-token": authToken}
deviceCli = ibmiotf.device.Client(deviceOptions)
#.....


except Exception as e:
print(" Caught exception connecting device: %s" % str(e))
sys.exit()

deviceCli.connect()

#SENSOR DATA

binlevel=0
binweight=0
while True:

    #Get Sensor Data from Ultrasonic sensor


    binlevel=binlevel+random.randint(90,110)
    binweight=binweight+random.randint(60,100)
    data = { 'binlevel(%)' : binlevel, 'binweight': binweight }


    def myOnPublishCallback():
        print ("Published binlevel = %s %" % Garbage_level, "binweight = %s %" % binweight, "to IBM Watson")


    success = deviceCli.publishEvent("Ultrasonic_sensor", "json", data, qos=0, on_publish=myOnPublishCallback)
    if not success:
        print("Not connected to IoTF")
    time.sleep(10)
```

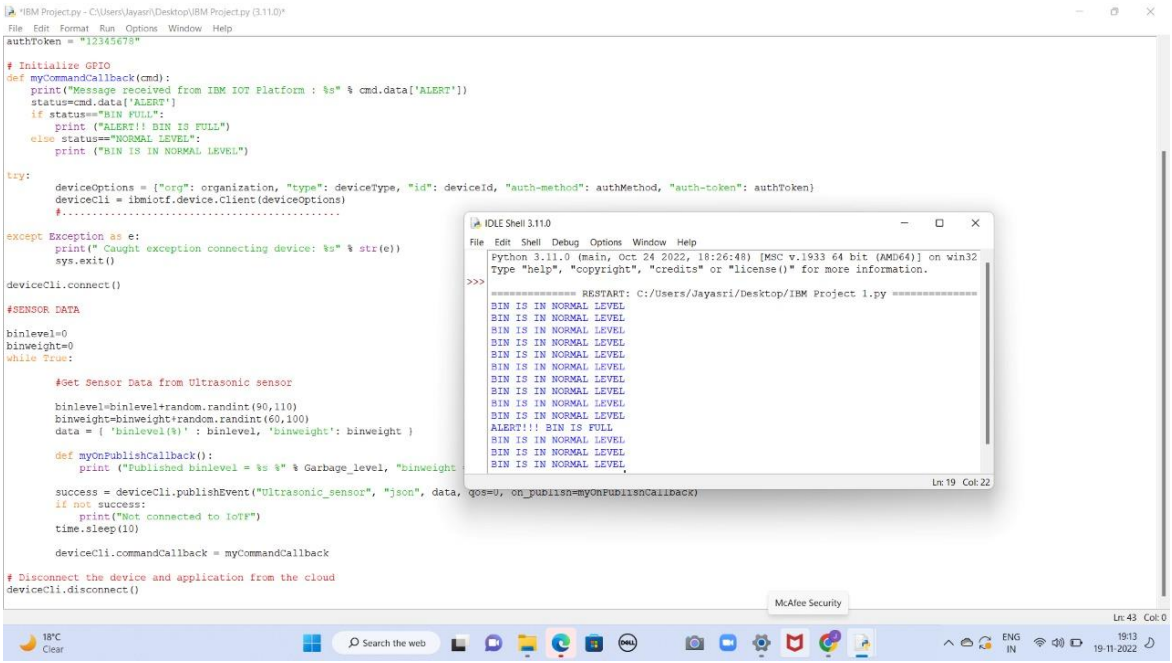
deviceCli.commandCallback = myCommandCallback

Disconnect the device and application from the cloud

deviceCli.disconnect()

STEP 2- Now Compile the code in Python Compiler.





STEP 3- Type the given Wokwi Code in Compiler.

WOKWI CODE-

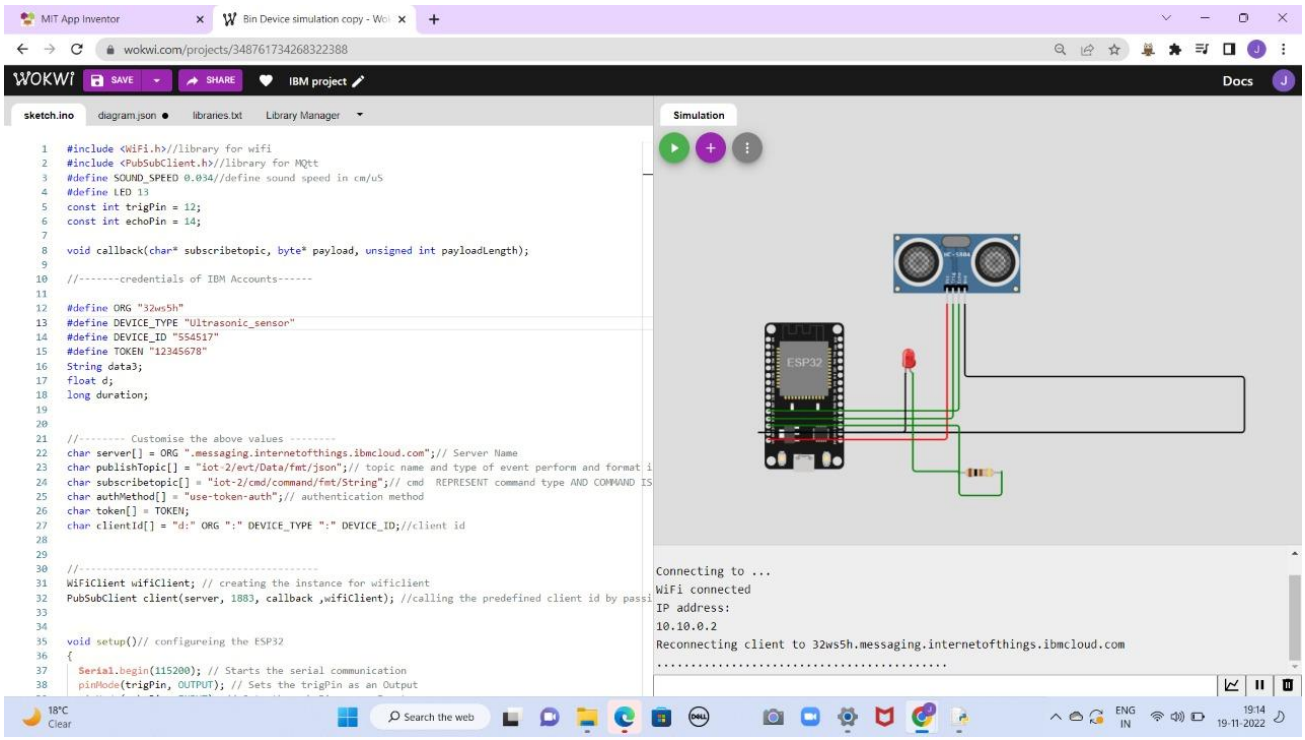
```
 #include <WiFi.h>
#include<PubSubClient.h>

#define ORG "32ws5h"
#define DEVICE_TYPE "Ultrasonic_sensor"
#define DEVICE_ID "554517"
#define TOKEN "12345678"

#defne speed 0.034
#defne led 14
String data3;
float h,t;

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/554517/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server, 1883, wifClient);

const int trigpin=5;

const int echopin=18;

String command;
String          data="";


long duration;

foat   dist;

void setup()
 {
```

```
Serial.begin(115200);

pinMode(led, OUTPUT);

pinMode(trigpin, OUTPUT);

pinMode(echopin, INPUT);

wifConnect();

mqttConnect();

}


void loop() {

bool isNearby = dist < 100;

      digitalWrite(led, isNearby);


publishData();

      delay(500);


      if (!client.loop()) {
mqttConnect();
}
}


void wifConnect() {

Serial.print("Connecting to "); Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "", 6);

while (WiFi.status() != WL_CONNECTED)
{ delay(500);

Serial.print(".");

}
```

```
Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP()); }



void mqttConnect() {
      if (!client.connected()) {
}
}

void initManagedDevice() {

      if (client.subscribe(topic)) {
// Serial.println(client.subscribe(topic));
Serial.println("IBM subscribe to cmd OK");

} else {

      Serial.println("subscribe to cmd FAILED");
}
 }

void publishData()
 {

digitalWrite(trigpin,LOW);

digitalWrite(trigpin,HIGH);

delayMicroseconds(10);

digitalWrite(trigpin,LOW);

duration=pulseIn(echopin,HIGH);

dist=duration*speed/2;
      if(binlevel>95){
      String payload = "{\"Alert\":";          payload += binlevel; payload += "}";

      }
}
}
```

STEP 4- Now Compile the code in Wokwi Compiler and Simulate it for further.

OUTPUT :



STEP 5- The below link is regarding Code & Output.

https://wokwi.com/projects/348766899101762130