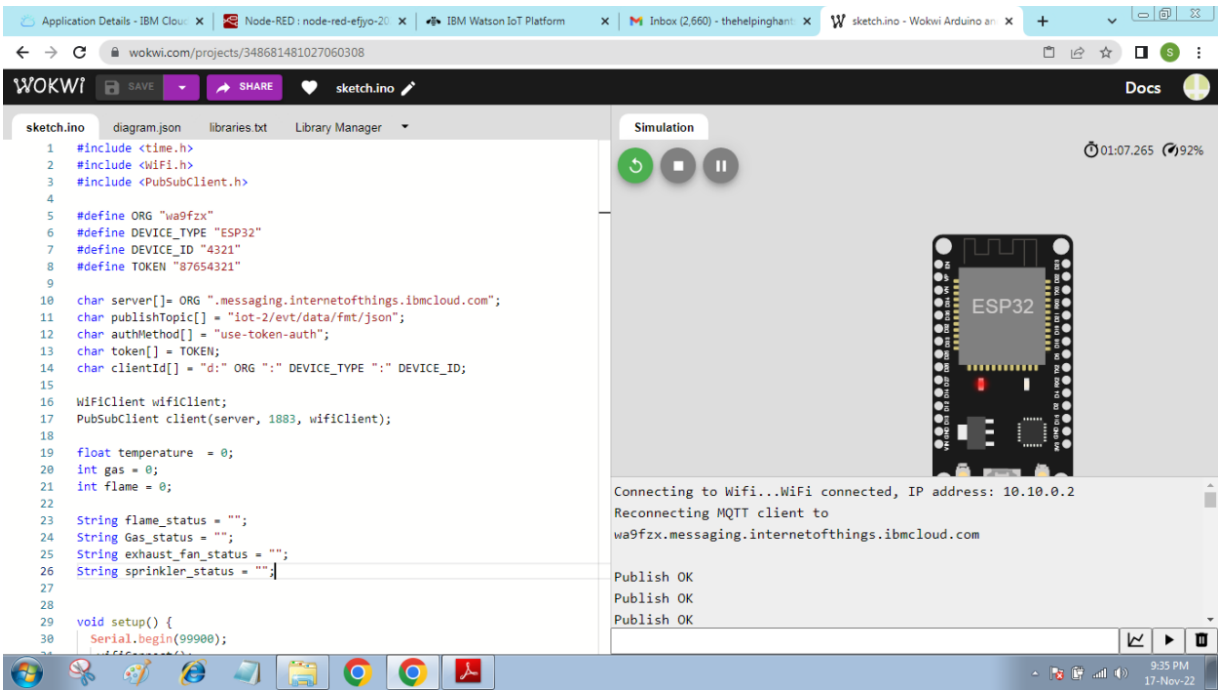
Project Development Phase

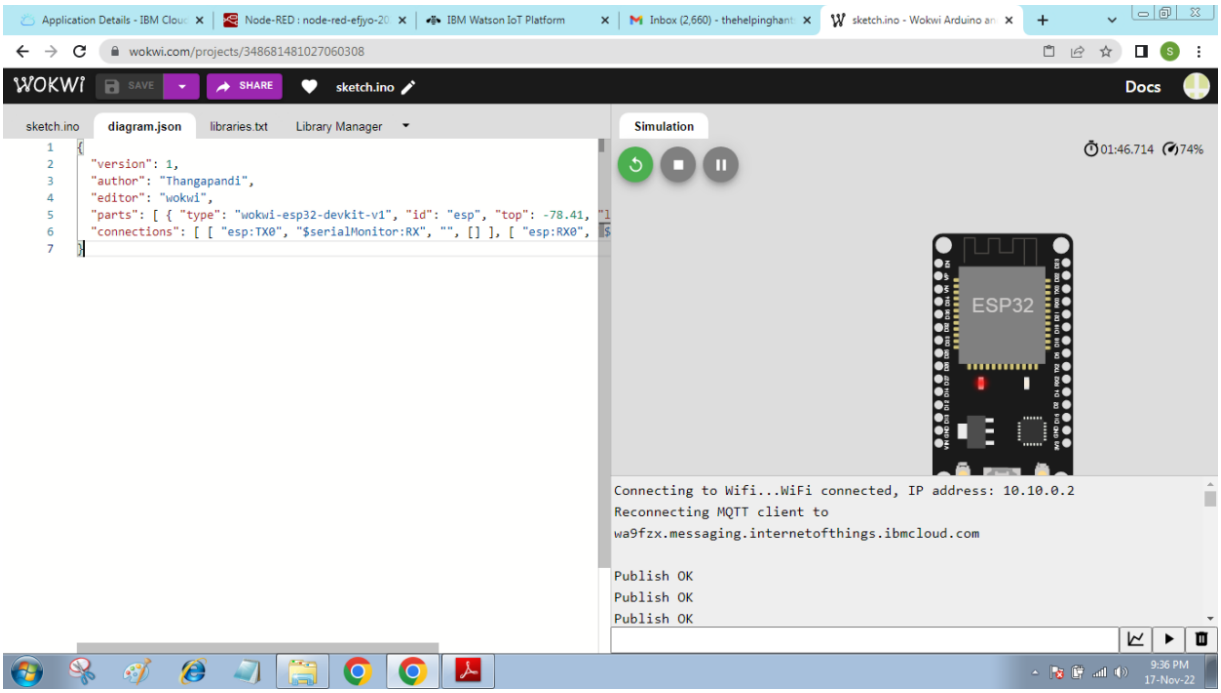
Sprint – 3

Date	10 - 11 - 2022
Team ID	PNT2022TMID06114
Project Name	Industry Specific Intelligent Fire Management System

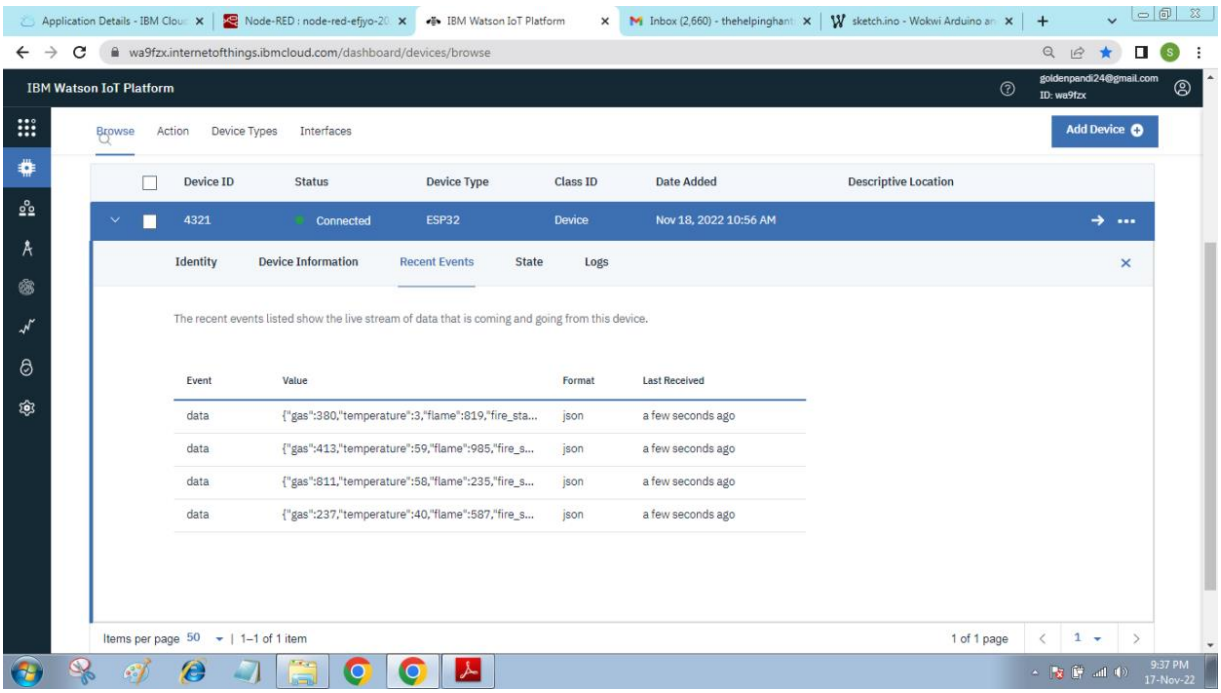
Send Wokwi Simulation to IBM Watson IOT Platform:

1. Wokwi Siulation:

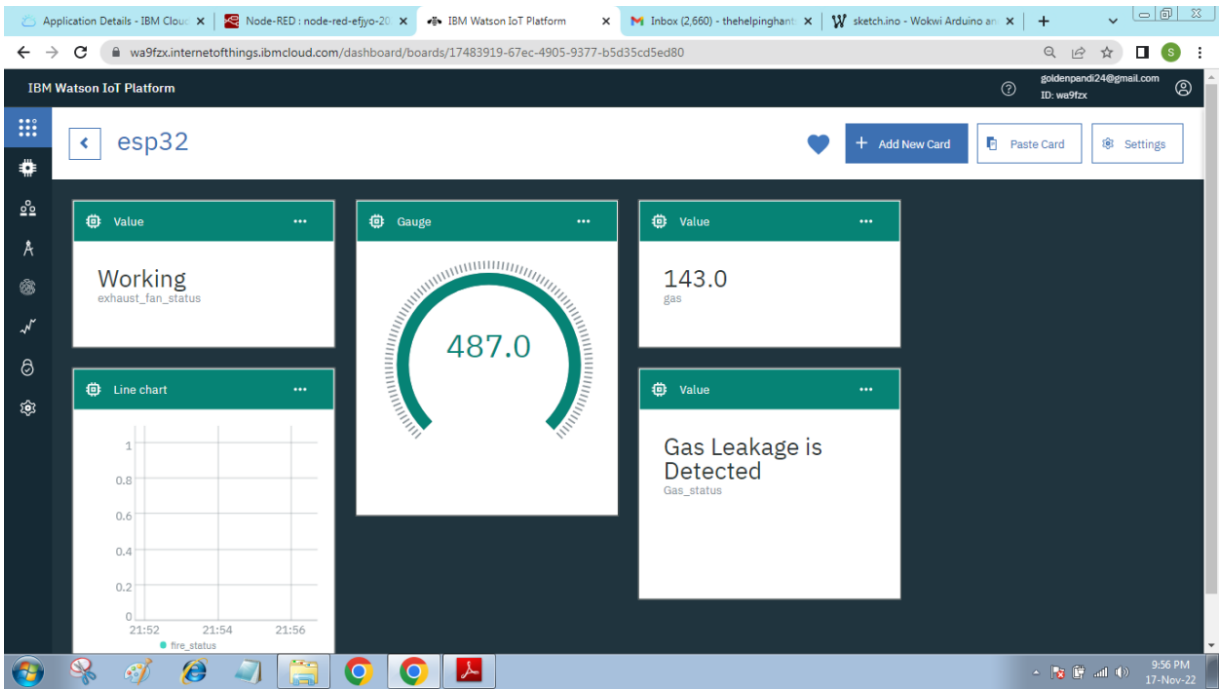




2. Watson IOT output:



3. Watson Dashboard:



Code:

```
#include <time.h>
#include <WiFi.h>
#include <PubSubClient.h>
#define ORG "wa9fzx"
#define DEVICE_TYPE "ESP32"
#define DEVICE_ID "4321"
#define TOKEN "87654321"
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/data/fmt/json"; char authMethod[] = "use-token-auth";
char token[] = TOKEN; char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, wifiClient);
float temperature = 0; int gas = 0;
```

```
int flame = 0;

String flame_status = "";

String Gas_status = "";
String exhaust_fan_status = "";
String sprinkler_status = "";
void setup() { Serial.begin(99900); wifiConnect();
mqttConnect();
}
void loop() {
srand(time(0));
//initial variables and random generated data
temperature = random(-20,125); gas = random(0,1000);
int flamereading = random(200,1024); flame = map(flamereading,200,1024,0,2); //set a flame
status

switch (flame) { case 0: flame_status = "No Fire"; break; case 1: flame_status = "Fire is
Detected";
break;
}
//send the sprinkler status
if(flame==1){ sprinkler_status = "Working";
} else{ sprinkler_status = "Not Working";
}
//toggle the fan according to gas reading
if(gas > 100){
Gas_status = "Gas Leakage is Detected"; exhaust_fan_status = "Working";
}
else{
Gas_status = "No Gas Leakage is Detected";
exhaust_fan_status = "Not Working";
}
```

```
//json format for IBM Watson
String payload = "{"; payload+="\"gas\":"; payload+=gas; payload+=",";
payload+="\"temperature\":"; payload+=(int)temperature; payload+=",";
payload+="\"flame\":"; payload+=flamereading; payload+=",";
payload+="\"fire_status\":\""+flame_status+"\",";
payload+="\"sprinkler_status\":\""+sprinkler_status+"\",";
payload+="\"Gas_status\":\""+Gas_status+"\",";
payload+="\"exhaust_fan_status\":\""+exhaust_fan_status+"\"}";
if(client.publish(publishTopic, (char*) payload.c_str()))
{
Serial.println("Publish OK");
} else{
Serial.println("Publish failed");
}
delay(1000);
if (!client.loop())

{
mqttConnect();
}
}
void wifiConnect()
{
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())

{
Serial.print("Reconnecting MQTT client to "); Serial.println(server); while
(!client.connect(clientId, authMethod, token))
{
Serial.print(".");
delay(500);
}
Serial.println();
}
}
```

Wokwi Link: *https://wokwi.com/projects/348681481027060308*