Assignment -4

SmartFarmer - IoT Enabled Smart Farming Application

CODE 1:

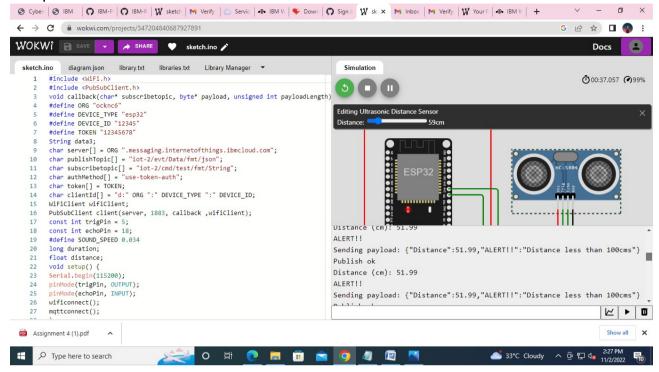
```
#include <WiFi.h> #include
<PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
#define ORG "ocknc6" #define
DEVICE_TYPE "esp32"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
String data3;
char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/test/fmt/String"; char
authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback, wifiClient); const int
trigPin = 5;
const int echoPin = 18;
#define SOUND_SPEED 0.034
long duration;
float distance;
void setup() {
Serial.begin(115200);
pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT);
wificonnect(); mqttconnect();
}
void loop()
digitalWrite(trigPin, LOW);
delayMicroseconds(2); digitalWrite(trigPin,
HIGH); delayMicroseconds(10);
digitalWrite(trigPin, LOW); duration =
pulseIn(echoPin, HIGH); distance = duration
* SOUND_SPEED/2; Serial.print("Distance
(cm): "); Serial.println(distance);
if(distance<100)
Serial.println("ALERT!!");
delay(1000);
PublishData(distance);
```

```
delay(1000);
if (!client.loop())
{ mqttconnect();
}
delay(1000);
}
void PublishData(float dist)
{ mqttconnect();
String payload = "{\"Distance\":"; payload
+= dist:
payload += ",\"ALERT!!\":""\"Distance less than 100cms\""; payload +=
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish ok");
} else {
Serial.println("Publish failed");
}
}
void mqttconnect() {
if (!client.connected())
{ Serial.print("Reconnecting client to ");
Serial.println(server);
while (!!!client.connect(clientId, authMethod, token)) {
Serial.print("."); delay(500);
initManagedDevice();
Serial.println();
}
}
void wificonnect()
Serial.println(); Serial.print("Connecting to ");
WiFi.begin("Wokwi-GUEST", "", 6); while
(WiFi.status() != WL_CONNECTED) { delay(500);
Serial.print(".");
}
Serial.println(""); Serial.println("WiFi
connected"); Serial.println("IP address:
"); Serial.println(WiFi.localIP());
void initManagedDevice() {
if (client.subscribe(subscribetopic))
{ Serial.println((subscribetopic));
Serial.println("subscribe to cmd OK");
Serial.println("subscribe to cmd FAILED");
}
}
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
Serial.print("callback invoked for topic: ");
Serial.println(subscribetopic);
for (int i = 0; i < payloadLength; i++)</pre>
data3 += (char)payload[i];
Serial.println("data: "+ data3); data3="";
```

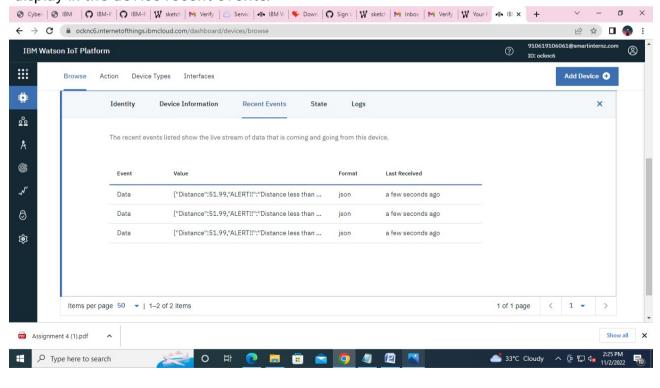
Wokwi Link:

https://wokwi.com/projects/347204840687927891

Output and Simulation:



Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.



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