ASSIGNMENT -3

QUESTION:

Build wowki product, use ultrasonic sensor and detect the distance from the object.whenever distance is less than 100cms upload the value to the ibm cloud.in recent device events upload the data from wowki.

CODE :

```
#include <WiFi.h>// library for WIFI

#include <PubSubClient.h>              // library for MQTT

//------- credentials of IBM Accounts ---------

#define ORG "rwazv5"  // IBM organisation id
#define DEVICE_TYPE "NodeRed" // Device type mentioned in
ibm watson iot platform#define DEVICE_ID "12345"    // Device
ID mentioned in ibm watson iot platform #define TOKEN
"vC@S3TBre6(97jAOJ_"              // Token
#define    speed
0.034    #define
led   14   String
data3;
int LED = 4;

//.....customise above values .....

char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // server name
char publishTopic[] = "iot-2/evt/sreedhar/fmt/json";       // topic name and type
of event perform andformat in which data to be send
char topic[] = "iot-2/cmd/led/fmt/String";    // cmd Represent type and
command is test format ofstrings
char authMethod[] = "use-token-auth";       //
authentication method chartoken[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //Client id

//.....

WiFiClient wifiClient; // creating instance for wificlient
PubSubClient client(server, 1883, wifiClient); // calling the predefined client id by
passing parameter like server id,port and wificredential
```

```
const int
trigpin=5; const
int echopin=18;
String
command;
String
data="";

long
duration;
float dist;

void setup()
{
 Serial.begin(11520
0); pinMode(led,
OUTPUT);
pinMode(trigpin,
OUTPUT);
pinMode(echopin,
INPUT);
wifiConnect();
mqttConnect();
}

void loop() { bool isNearby
=    dist   <
      100;
digitalWrite(led,
isNearby);

 publishD
ata();
delay(50
0);
```

```
if (!client.loop())
{
mqttConnect();        // function call to connect to ibm
}
}

/*.....retrieving to cloud

.....*/void wifiConnect()
{
 Serial.print("Connecti
ng 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);
 }
 initManagedDevice();
 Serial.println();
 }
}

void
 initManagedDevice
 () {if
 (client.subscribe(to
 pic))
 {
 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(dist<100)
 {
 digitalWrite(LED,HIG
H); String payload =
"{\"Alert Distance\":";
payload += dist;
 payload += "}";

 Serial.print("\n");
 Serial.print("Sending payload: "); Serial.println(payload); if
(client.publish(publishTopic, (char*) payload.c_str()))  // if data is uploaded to
cloud successfully,prints publish ok else prints publish failed
```

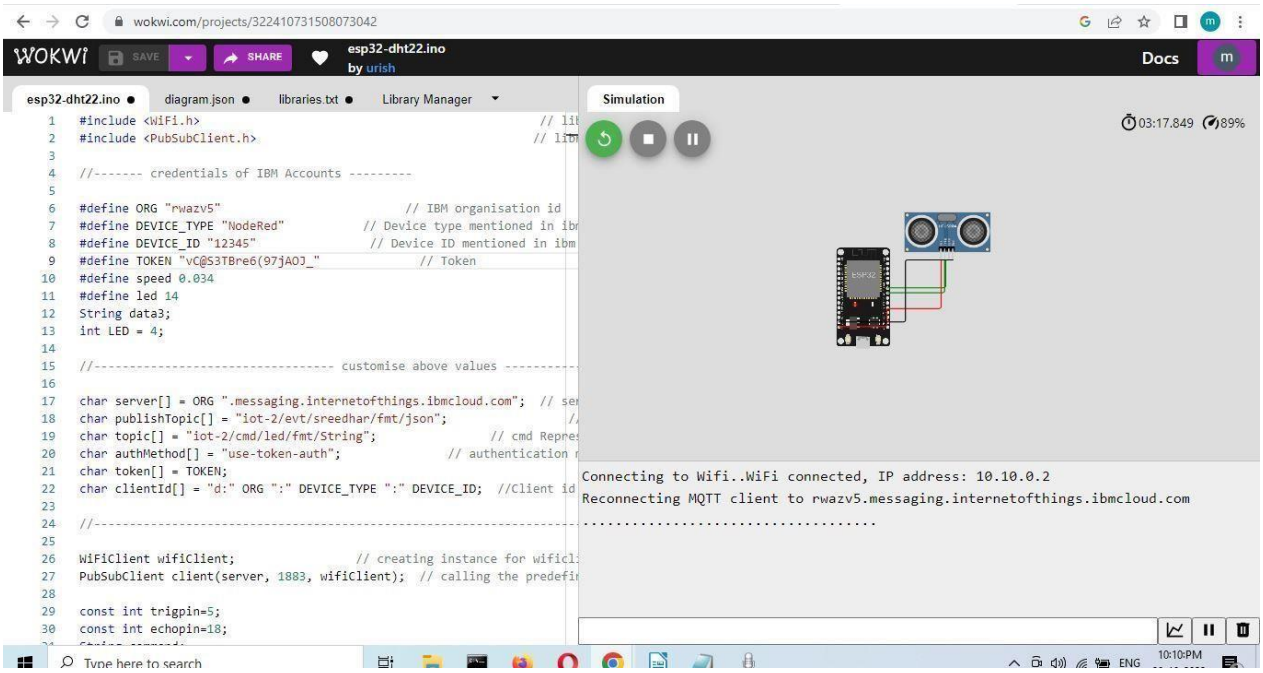
```
{
Serial.println("Publish OK");
}
}
if(dist>100)
{
digitalWrite(LED,HIGH);
String payload =
"{\"Distance\":";payload
+= dist;
payload += "}";

Serial.print("\n");
Serial.print("Sending
payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str()))
{
Serial.println("Publish OK");
}
else
{
digitalWrite(LED,LOW);
Serial.println("Publish FAILED");
        }

    }
}
```

OUTPUT :

Code simulation on wokwi



Data sent to IBM Cloud with distance