Assignment -4

Python Programming

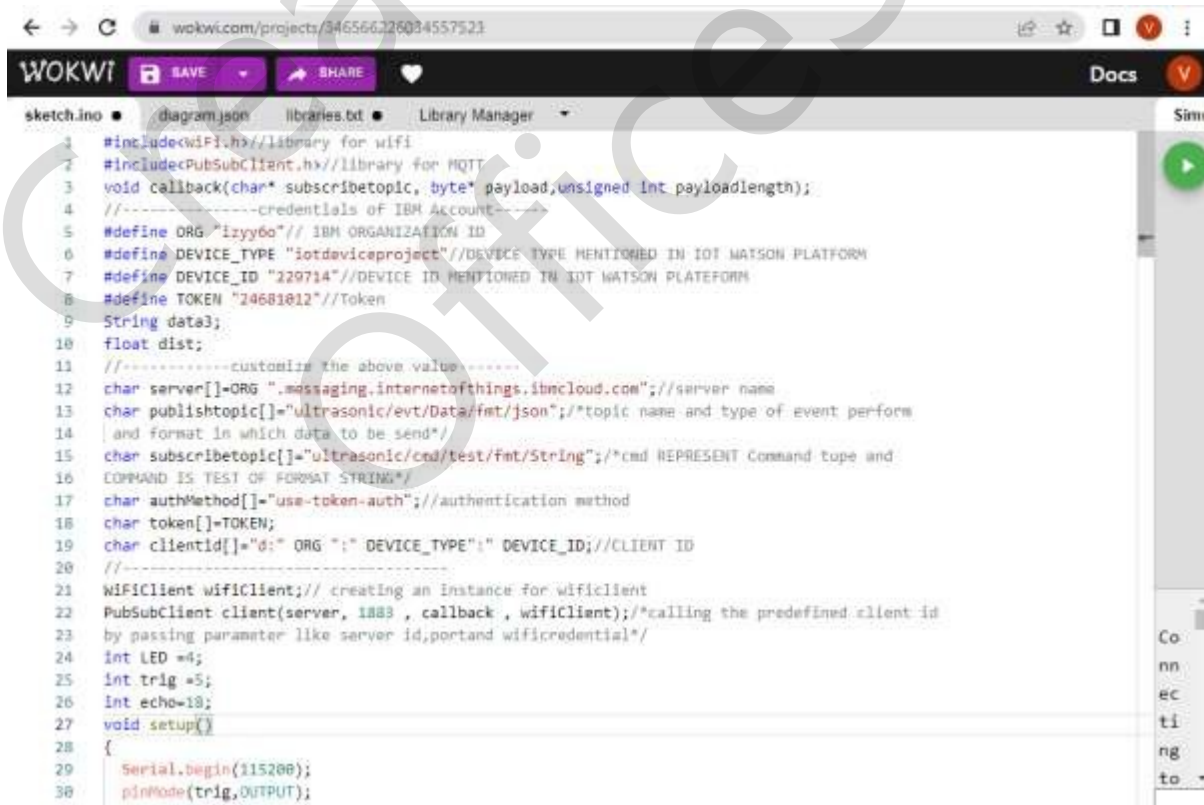| Assignment Date	26 October 2022
Student Name	Mr. Aakash
Student Roll Number	310619205001
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for ultrasonic sensor.
Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.
Upload document with wokwi share link and images of ibm cloud.

Solution:


```
#include<wiFi.h>//library for wifi
#include<PubSubClient.h>//library for MQTT
void callback(char* subscribetopic, byte* payload,unsigned int payloadlength);
//--------------credentials of IBM Account---->
#define ORG "izyy6o"// IBM ORGANIZATION ID
#define DEVICE_TYPE "iotdeviceproject"//DEVICE TYPE MENTIONED IN IOT WATSON PLATFORM
#define DEVICE_ID "229714"//DEVICE ID MENTIONED IN IOT WATSON PLATEFORM
#define TOKEN "24681012"//Token
String data3;
float dist;
//-----------customize the above value------
char server[]=ORG ".messaging.internetofthings.ibmcloud.com";//server name
char publishtopic[]="ultrasonic/evt/Data/fmt/json";/*topic name and type of event perform
and format in which data to be send*/
char subscribetopic[]="ultrasonic/cmd/test/fmt/String";/*cmd REPRESENT Command type and
COMMAND IS TEST OF FORMAT STRING*/
char authMethod[]="use-token-auth";//authentication method
char token[]=TOKEN;
char clientId[]="d:" ORG ":" DEVICE_TYPE":" DEVICE_ID;//CLIENT ID
//------------------------------------
WiFiClient wifiClient;// creating an instance for wificlient
PubSubClient client(server, 1883 , callback , wifiClient);/*calling the predefined client id
by passing parameter like server id,portand wificredential*/
int LED =4;
int trig =5;
int echo=18;
void setup()
{
  Serial.begin(115200);
  pinMode(trig,OUTPUT);
```

WOKWI 🖫 SAVE ▼   ➔ SHARE ♥   Docs V

sketch.ino ●   diagram.json   libraries.txt ●   Library Manager ▼   Simu

```
92        }
93          initManagedDevice();
94          Serial.println();
95        }
96      }
97      void wificonnect()//function defenition for wificonnect
98      {
99        Serial.println();
100       Serial.print("Connecting to ");
101       WIFI.begin("Wokwi.GUEST", "",6);//PASSING THE WIFI CREDIDENTIALS TO ESTABLISH CONNECTION
102       while (WiFi.status() !=WL_CONNECTED){
103         delay(500);
104         Serial.print(".");
105       }
106       Serial.println("");
107       Serial.println("WiFi connected");
108       Serial.println("IP address");
109       Serial.println(WiFi.localIP());
110     }
111     void initManagedDevice(){
112       if(client.subscribe(subscribetopic)){
113         Serial.println((subscribetopic));
114         Serial.println("subscribe to cmd OK");
115       }else{
116         Serial.println("subscribe to cmd failed");
117       }
118     }
119     void callback(char* subscribetopic,byte*payload,unsigned int payloadLength)
120     {
121       Serial.print("callback invoked for topic: ");
122       Serial.println(subscribetopic);
```

```
123  for(int i=0; i< payloadLength; i++){
124    //Serial.print((char)payload[i]);
125    data3 +=(char)payload[i];
126  }
127  //Serial.println("dta: "+ data3);
128  //if(data3=="Near")
129  //{
130  //Serial.println(data3);
131  //digitalWrite(LED,HIGH);
132  //}
133  //else
134  //{
135  //Serial.println(data3);
136  //digitalWrite(LED,LOW);
137  //}
138  data3="";
139  }
```

OUTPUT:
DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

When no object is detected

When object is detected in ultrasonic detector


```
object is near
Sending payload: {"distance":97.82,"object":"Near"}
Publish ok
Distancein cm97.82
object is near
Sending payload: {"distance":97.82,"object":"Near"}
Publish ok
```