**Assignment-4**

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| Assignment Date | 8 November 2022 |
| Student Name | SIVAKUMAR A |
| Student Roll Number | 920919106034 |
| Maximum Marks | 2Marks |

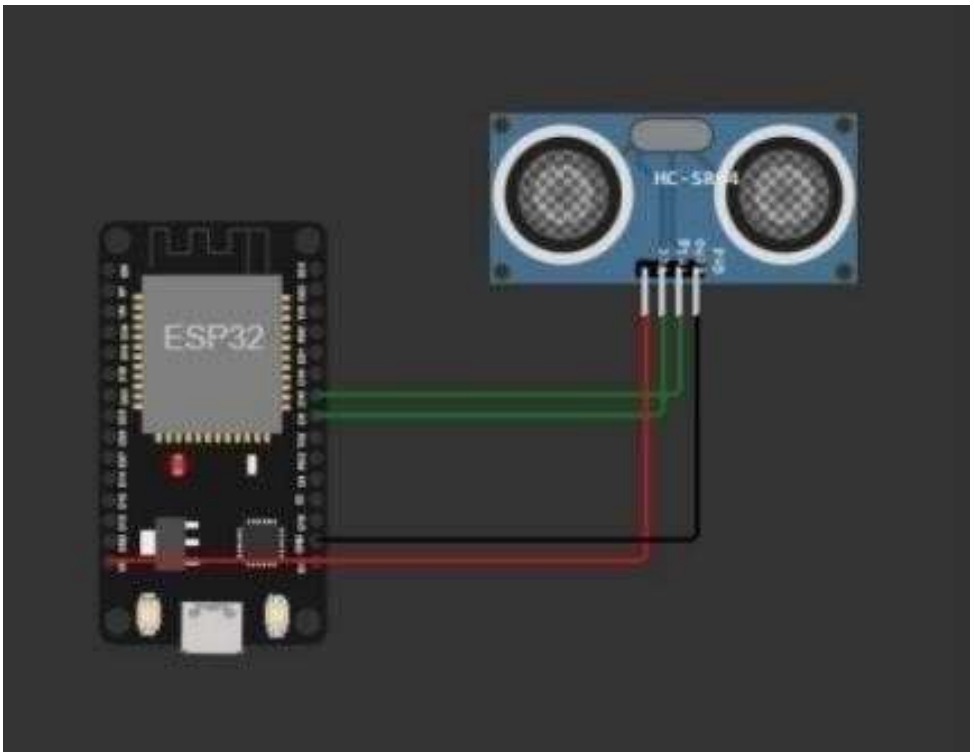
**Question-1:**

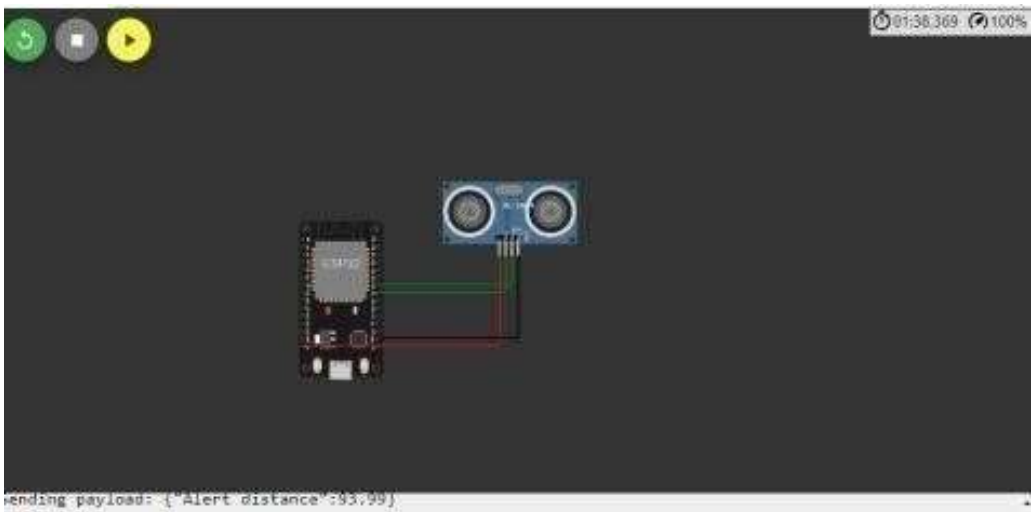
Write code and connections in work wifortheultrasonicsensor.
Wheneverthedistanceislessthan100cmssendan"alert"totheIBMcloudanddisplayinthedevicer e centevents.
Upload document with wokwisharelinkandimages ofIBMcloud

**Solution:**

```
#include<WiFi.h>#include
<PubSubClient.h>#include
<ArduinoJson.h> WiFiClientwifiClient;

#defineORG"nhpwjc"
#defineDEVICE_TYPE"raspberypi"#
defineDEVICE_ID"12345"
#defineTOKEN"123456789" #definespeed0.034

char server[] = ORG
".messaging.internetofthings.ibmcloud.com";charpublishTopic[]=" iot-
2/evt/Data/fmt/json"; chartopic[]="iot-
2/cmd/home/fmt/String";cha r authMethod[]="use-token-auth"; chartoken[]=TOKEN;
char clientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
PubSubClientclient(server,1883,wifiClient);vo idpublishData();

const int
trigpin=5;constintec
hopin=18;Stringcomma
nd;Stringdata="";

long
duration;int
dist; voidsetup()
{
  Serial.begin(115200);pin
  Mode(trigpin,OUTPUT);pin
  Mode(echopin,
  INPUT);wifiConnect();mqt
  tConnect();
}

voidloop(){

publishData();delay(500);
  if(!client.loop()){m
    qttConnect();
  }
}

voidwifiConnect(){
  Serial.print("Connectingto");Serial.print("Wifi");Wi
  Fi.begin("Wokwi-GUEST","",6); while(WiFi.status()!=WL_CONNECTED){del
    ay(500);
    Serial.print(".");
  }
```

```
  Serial.print("WiFiconnected,IPaddress:");Serial.println(WiFi.localIP());
}

voidmqttConnect(){
  if(!client.connected()){
    Serial.print("Reconnecting MQTT client to ");
    Serial.println(server);while(!client.connect(clientId, authMethod,token)){
      Serial.print(".");
    delay(1000); }
    initManagedDevice()
    ;
    Serial.println();
  }
}

voidinitManagedDevice(){
  if (client.subscribe(topic))
    {Serial.println(client.subscribe(topic));Serial.println("su bscribeto
    cmdOK");
  }else{
    Serial.println("subscribetocmdFAILED");
  }
} voidpublishData()
{ digitalWrite(trigpin,LOW);digitalWrite(tr
  igpin,HIGH);delayMicroseconds(10);digital
  Write(trigpin,LOW);duration=pulseIn(echop in,HIGH);dist=duration*speed/2;

  if(dist<100){DynamicJsonDocume
    ntdoc(1024);Stringpayload;do
    c["AlertDistance:"]=dist;ser
    ializeJson(doc,
    payload);delay(3000);Serial.
    print("\n");
    Serial.print("Sendingpayload:"); Serial.println(payload);
    if(client.publish(publishTopic,(char*)payload.c_str())){
    Serial.println("PublishOK");
    }else{
      Serial.println("PublishFAILED");
    }
  }
}
```






```
ending payload: {"Alert distance":93.99}
ublish OK

ending payload: {"Alert distance":93.96}
ublish OK

ending payload: {"Alert distance":93.96}
ublish OK

ending payload: {"Alert distance":93.96}
ublish OK

ending payload: {"Alert distance":93.96}
ublish OK

ending payload: {"Alert distance":93.96}
ublish OK
```