

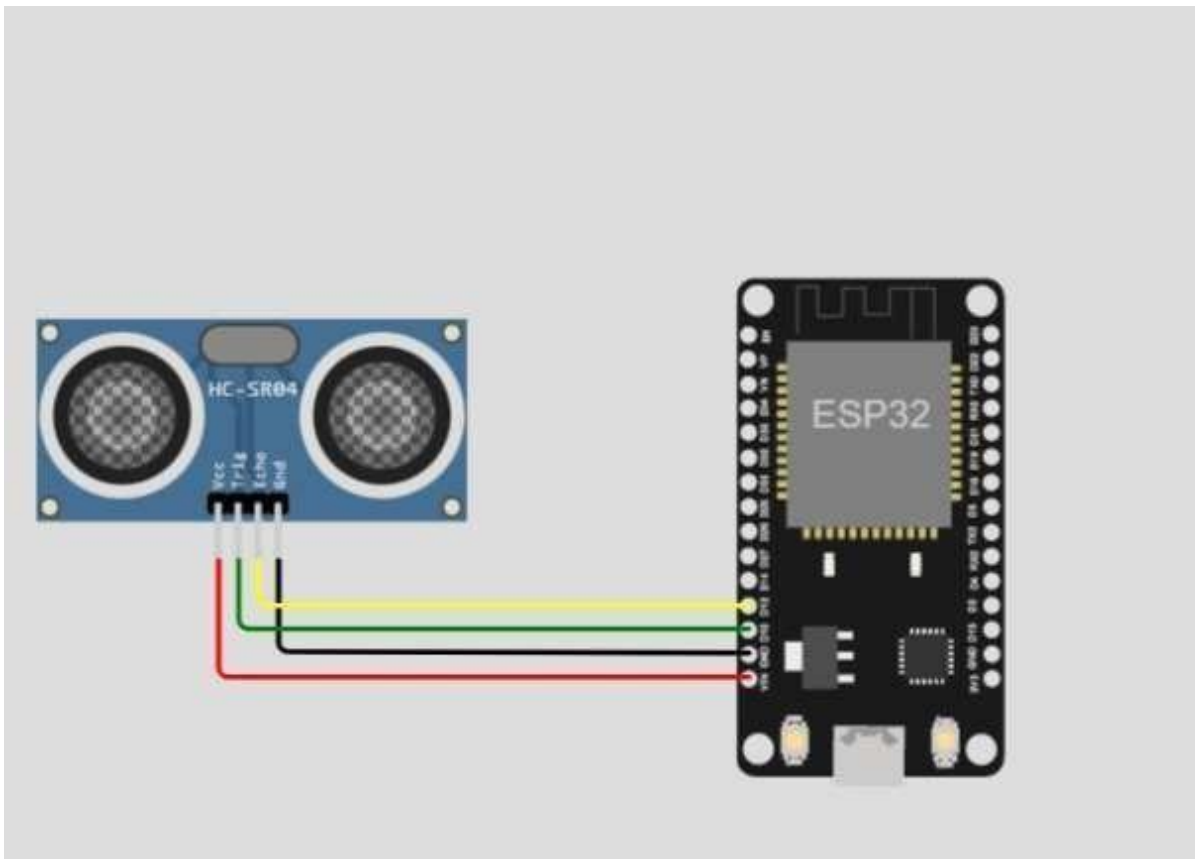
ASSIGNMENT - 4

Objective:

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Circuit Diagram:

Link: <https://wokwi.com/projects/346775166279221842>



```
#include <Wifi.h> //library for wifi
#include <PubSubClient.h> //library for MQTT
#define TRIG_PIN 13
#define ECHO_PIN 12

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)

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

#define ORG "6j0iab" //IBM ORGANITION ID
#define DEVICE_TYPE "rasperrypi" //Device type mentioned in ibm watson IOT Plat
#define DEVICE_ID "Device1" //Device ID mentioned in ibm watson IOT Platform
#define TOKEN "123456789" //Token

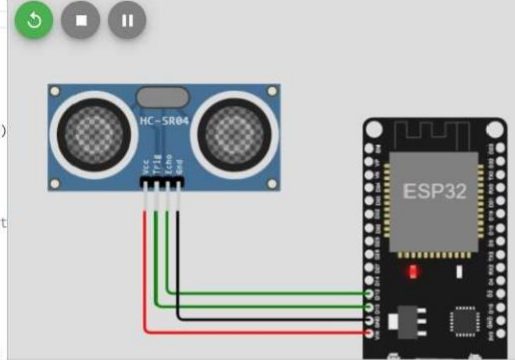
//----- Customise the above values -----
char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json"; // topic name and type of even
char subscribetopic[] = "iot-2/cmd/command/fmt/String"; // cmd REPRESENT comma
char authMethod[] = "use-token-auth"; // authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id

//-----
WiFiClient wificlient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback, wificlient); //calling the presen

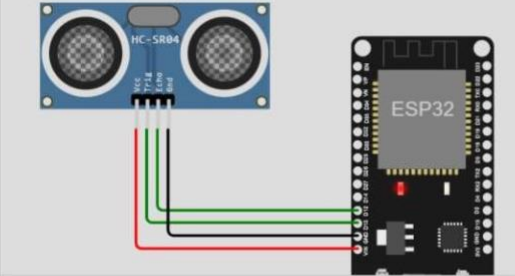
void setup() // configuring the ESP32
{
  Serial.begin(115200);
  pinMode(TRIG_PIN, OUTPUT);
  digitalWrite(TRIG_PIN, LOW);
  pinMode(ECHO_PIN, INPUT);
  delay(10);
  Serial.println();
  wificlient.connect();
  mqtt.connect();
}

void loop() // Recursive Function
{
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  float duration_us = pulseIn(ECHO_PIN, HIGH);
  float distance = 0.017 * duration_us;

  if(distance < 100)
  {
    PublishData(distance, "ALERT");
  }
  else
  {
    PublishData(distance, "SAFE");
  }
}
```



Connecting to
 Wifi connected
 IP address:
 10.10.0.2
 Reconnecting client to 6j0iab.messaging.internetofthings.ibmcloud.com
 iot-2/cmd/command/fmt/String
 subscribe to cmd OK



Sending payload: {"Distance":400.04,"MESSAGE":"SAFE"}
 Publish ok
 Sending payload: {"Distance":399.96,"MESSAGE":"SAFE"}
 Publish ok
 Reconnecting client to 6j0iab.messaging.internetofthings.ibmcloud.com

OUTPUT:

Browse Action Device Types Interfaces Add Device +

Search by Device ID Device Simulator

Device ID	Status	Device Type	Class ID	Date Added
Device1	Disconnected	rasperrypi	Device	Oct 31, 2022 7:49 PM

Identity Device Information Recent Events State Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"Distance":399.96,"MESSAGE":"SAFE"}	json	a few seconds ago
Data	{"Distance":400.04,"MESSAGE":"SAFE"}	json	a few seconds ago