TEAM ID : PNT2022TMID45187

Assignment 4 :

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.

Program

```
//Pins
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;

//Anything over 400 cm (23200 us pulse) is "out of range" const
unsigned int MAX_DIST = 23200;

void setup(){

  // The Trigger pin will tell the sensor to range find
  pinMode(TRIG_PIN, OUTPUT);
  digitalWrite(TRIG_PIN, LOW);
  //Set Echo pin as input to measure the duration of
  //pulses coming back from the distance sensor
  pinMode(ECHO_PIN, INPUT );
  // We'll use the serial monitor to view the sensor output
  Serial.begin(9600);
}
void loop() { unsigned
  long t1; unsigned long
  t2;
  unsigned long pulse_width; float cm;
  float inches;

  // Hold the trigger pin high for at least 10 us
  digitalWrite(TRIG_PIN, HIGH); delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);

  // Wait for pulse on echo pin
  while (digitalRead( ECHO_PIN )==0 );

  // Measure how long the echo pin was held high (pulse width)
  // Note: the micros() counter will overflow after-70 min t1= micros
  ();
```

```
    while (digitalRead(ECHO_PIN) == 1); t2=
    micros ();

    pulse_width = t2-t1;
    // Calculate distance in centimeters and inches. The constants
    //are found in the datasheet, and calculated from the assumed speed
    // of sound in air at sea level (- 340m/s) cm=pulse_width/ 58
    ;
    inches = pulse_width/148.0;
    // Print out results
    if (pulse_width>MAX_DIST){
       Serial.println("Out of range");
       }
       else{
          Serial.println("*********************************"); Serial.print("The
          Measured Distance in cm: "); Serial.println(cm);

          if( cm < 100 ){
             //while(true){
                Serial.println("Alert!!");
                //}
       }
       Serial.print("***********************************");
       }
//wait at least 1000ms before next measurement delay(1000);
}
```

Output:

1. If the distance is less than 100 cms ,it alerts.

```
// The Trigger pin will tell the sensor to range find
```

**********Out of rangeTne Mea en red Dr stance in etc: 2 68. 0 0

```
}
void loop() {
  unsigned long t1;
  unsigned long t2;
  unsigned long pulse_width;
  float cm;
```

Tne Measured Distance in cm: 197.00

The Measured Distance in cm: 2.00
Alert!!

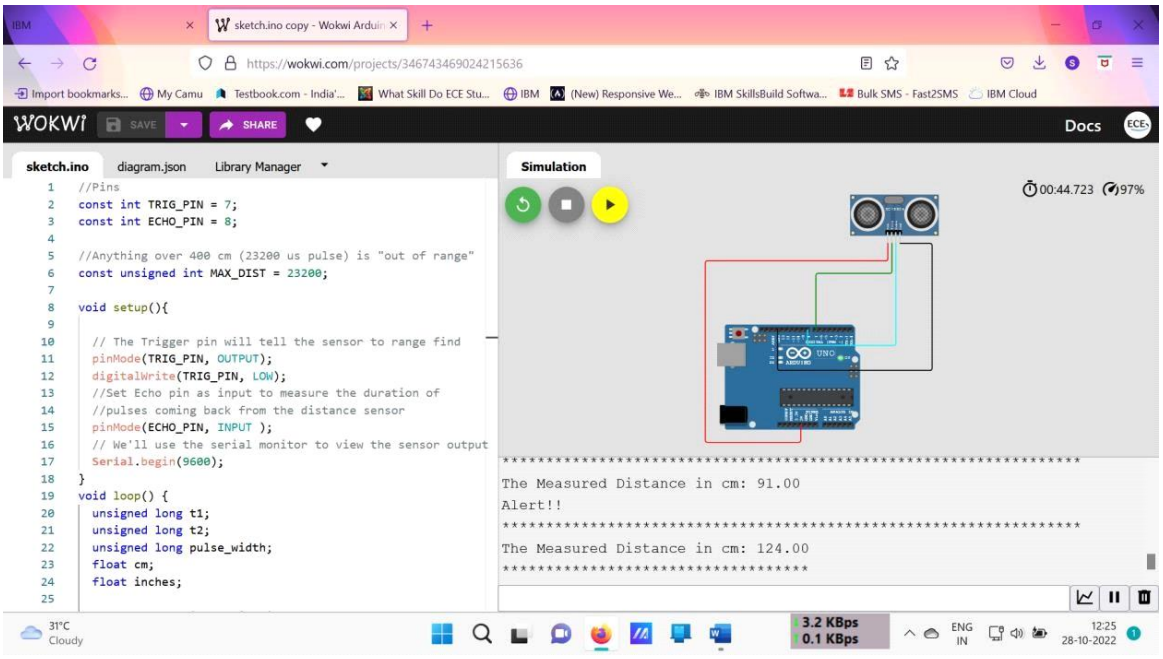
```
// The Trigger pin will tell the sensor to range find
```

ee

```
pinMode(ECHO_PIN, INPUT );
```

```
digitalWrite(TRIG_PIN, LOW);
unsigned long t2;
unsigned long pulse_width;
```

The Measured Distance in cm: Z.00
Alert!!



Link: https://wokwi.com/projects/346743469024215636