

ASSIGNMENT – 4

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Date	21/09/2022
Team ID	PNT2022TMID38992
Project Name	IoT Based Safety Gadget For Child Safety Monitoring
Maximum Marks	2 Marks

OBJECTIVE:

To develop a code and make connections in wokwi for ultrasonic sensor, whenever distance is less than 100 cm send “Alert” to IBM cloud and display in device recent events.

CODE:

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

const unsigned int MAX_DIST = 23600;
void setup() {
  pinMode(TRIG_PIN, OUTPUT);
  digitalWrite(TRIG_PIN, LOW);

  pinMode(ECHO_PIN, INPUT);

  Serial.begin(9600);
}
void loop() {
  unsigned long t1;
  unsigned long t2;
  unsigned long pulse_width;
  float cm;
  float inches;

  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);

  while (digitalRead(ECHO_PIN) == 0);
  t1 = micros();
```

```

t1 = micros();
while (digitalRead(ECHO_PIN) == 1);
t2 = micros();
pulse_width = t2 - t1;

cm = pulse_width / 58;
inches = pulse_width / 148.0;

if (pulse_width > MAX_DIST) {
  Serial.println("Out of range");
}
else
{
  Serial.print("The Measured Distance in cm: "); Serial.println(cm);

  if (cm < 100)
  {
    {
      Serial.println("Alert! Object detected");
    }
  }
}

delay(1000);
}

```

SIMULATION

The screenshot displays the Wokwi online IDE interface. On the left, the sketch code for an ultrasonic sensor is shown. The code defines pins for TRIG (7) and ECHO (8), sets a maximum distance of 23600, and implements a loop that sends a high pulse to the TRIG pin, delays for 10 microseconds, sends a low pulse, and then reads the ECHO pin to calculate the distance. The distance is printed to the serial monitor, and an alert is triggered if the distance is less than 100 cm.

On the right, the simulation window shows a 3D model of an Arduino Uno board connected to an ultrasonic sensor module. The sensor module has two circular sensors and a small display. The simulation is running, and the serial monitor output shows the following sequence of events:

```

Alert! Object detected
The Measured Distance in cm:
95.00
Alert! Object detected
The Measured Distance in cm:
95.00
Alert! Object detected

```

The bottom status bar indicates the system temperature is 29°C, the weather is cloudy, and the time is 15:58.