

ASSIGNMENT – 4

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Team ID	PNT2022TMID46404
Project Name	Smart Farmer- IOT Enabled Smart Farming Application
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 shows the Wokwi online IDE interface. On the left, the 'sketch.ino' file is open, displaying the following code:

```

1  const int TRIG_PIN = 7;
2  const int ECHO_PIN = 8;
3
4  const unsigned int MAX_DIST = 23600;
5  void setup() {
6
7    pinMode(TRIG_PIN, OUTPUT);
8    digitalWrite(TRIG_PIN, LOW);
9
10   pinMode(ECHO_PIN, INPUT);
11
12   Serial.begin(9600);
13 }
14 void loop() {
15
16   unsigned long t1;
17   unsigned long t2;
18   unsigned long pulse_width;
19   float cm;
20   float inches;
21
22   digitalWrite(TRIG_PIN, HIGH);
23   delayMicroseconds(10);
24   digitalWrite(TRIG_PIN, LOW);
25
26   while (digitalRead(ECHO_PIN) == 0);
27

```

On the right, the 'Simulation' tab shows a 3D model of an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. Below the simulation, the serial monitor displays the following output:

```

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 is at 29°C Cloudy, with the time 15:58 and language set to ENG.