PANIMALAR ENGINEERING COLLEGE

Department of Electronics and Communication Engineering IOT Assignment

Assignment -4

Python Programming

Name: J.Santhanaprabhu

Team ID: PNT2022TMID01176

Question:

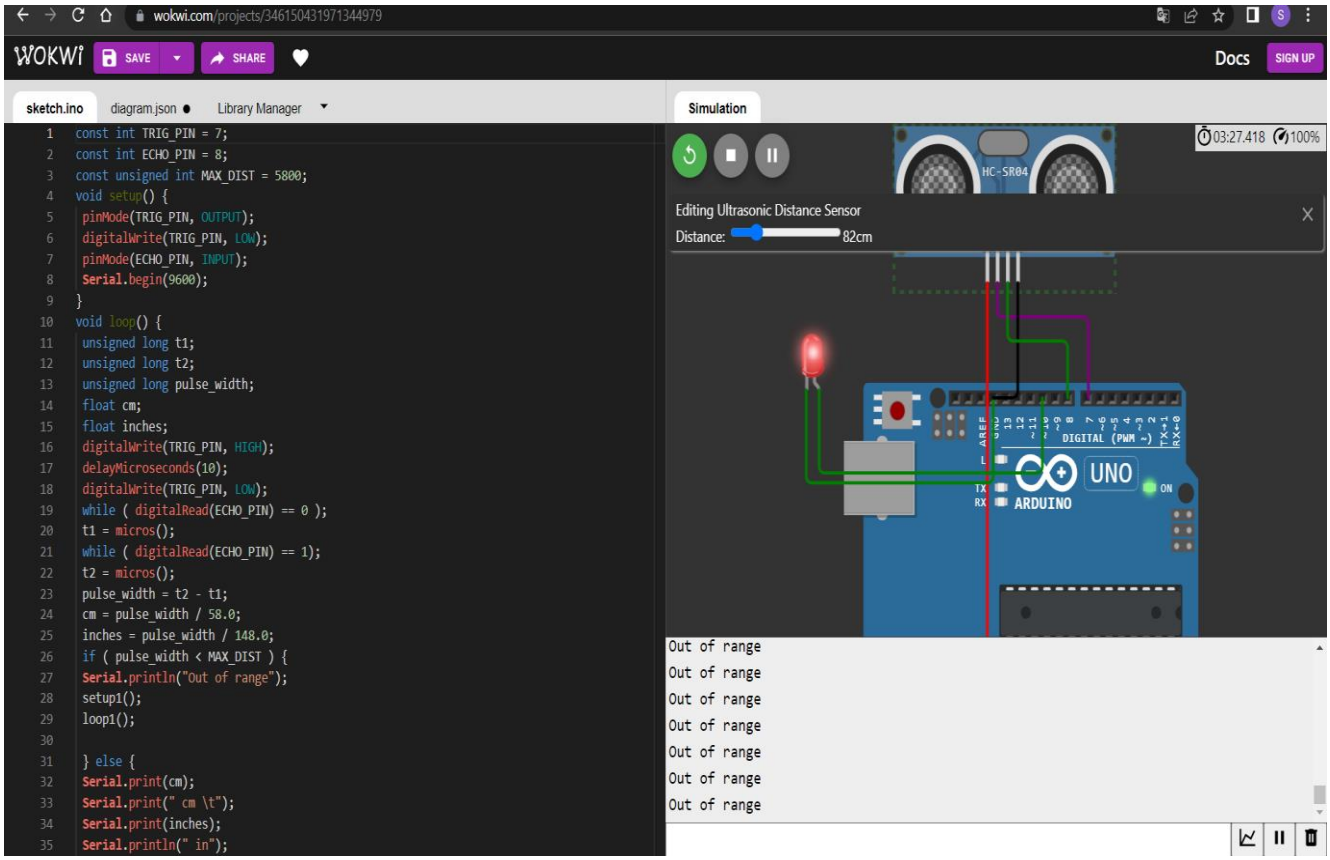
Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.

Code:

```
const int TRIG_PIN = 7;

const int ECHO_PIN = 8;

const unsigned int MAX_DIST = 5800;

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;
```

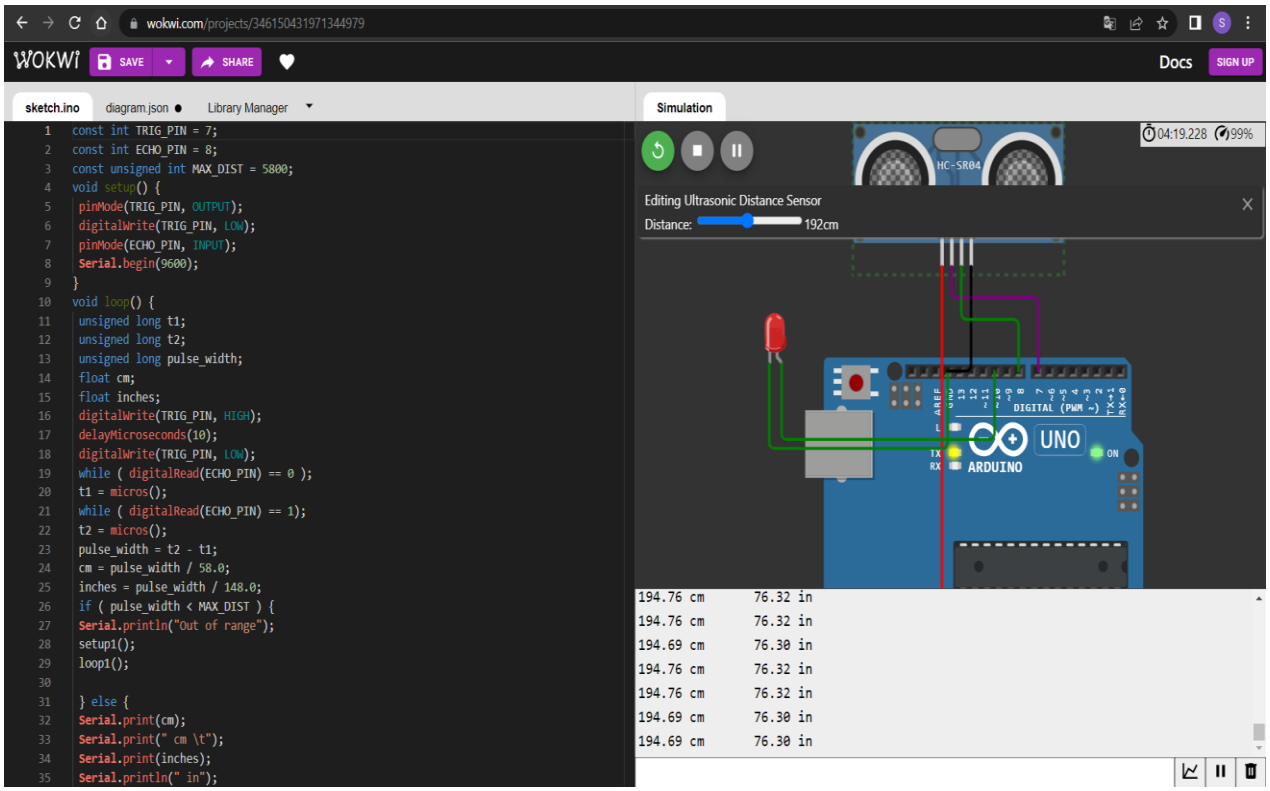
```
    float cm;
    float inches;
    digitalWrite(TRIG_PIN,HIGH);
    delayMicroseconds(10);
    digitalWrite(TRIG_PIN, LOW);

    while ( digitalRead(ECHO_PIN) == 0 );

    t1 = micros();
    while ( digitalRead(ECHO_PIN) == 1);

    t2 = micros();
    pulse_width = t2 - t1;
    cm= pulse_width / 58.0;
    inches = pulse_width / 148.0;

    if ( pulse_width < MAX_DIST )
    {
     Serial.println("Out of range");setup1();
        loop1();
      }
        else
        {
        Serial.print(cm);
        Serial.print(" cm \t");
        Serial.print(inches);
        Serial.println(" in");
    }



    delay(60);
}



void setup1() { pinMode(10,
    OUTPUT); }
void loop1() {
    digitalWrite(10, HIGH);
    delay(500);
    digitalWrite(10, LOW);
    delay(500);
}
```

Output (Distance less than 100m**):**




```
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;
const unsigned int MAX_DIST = 5800;
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();
 while ( digitalRead(ECHO_PIN) == 1);
 t2 = micros();
 pulse_width = t2 - t1;
 cm = pulse_width / 58.0;
 inches = pulse_width / 148.0;
 if ( pulse_width < MAX_DIST ) {
 Serial.println("Out of range");
 setup1();
 loop1();

 } else {
 Serial.print(cm);
 Serial.print(" cm \t");
 Serial.print(inches);
 Serial.println(" in");
```

Output (Distance greater than 100m**):**




```
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;
const unsigned int MAX_DIST = 5800;
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();
 while ( digitalRead(ECHO_PIN) == 1);
 t2 = micros();
 pulse_width = t2 - t1;
 cm = pulse_width / 58.0;
 inches = pulse_width / 148.0;
 if ( pulse_width > MAX_DIST ) {
 Serial.println("Out of range");
 setup1();
 loop1();

 } else {
 Serial.print(cm);
 Serial.print(" cm \t");
 Serial.print(inches);
 Serial.println(" in");
```

Wokwi link: https://wokwi.com/projects/346150431971344979