BANNARI AMMAN INSTITUTE OF TECHNOLOGY, SATHYAMANGALAM

Department of Computer Science and Engineering

IOT Assignment

Topic : **Write a 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.**

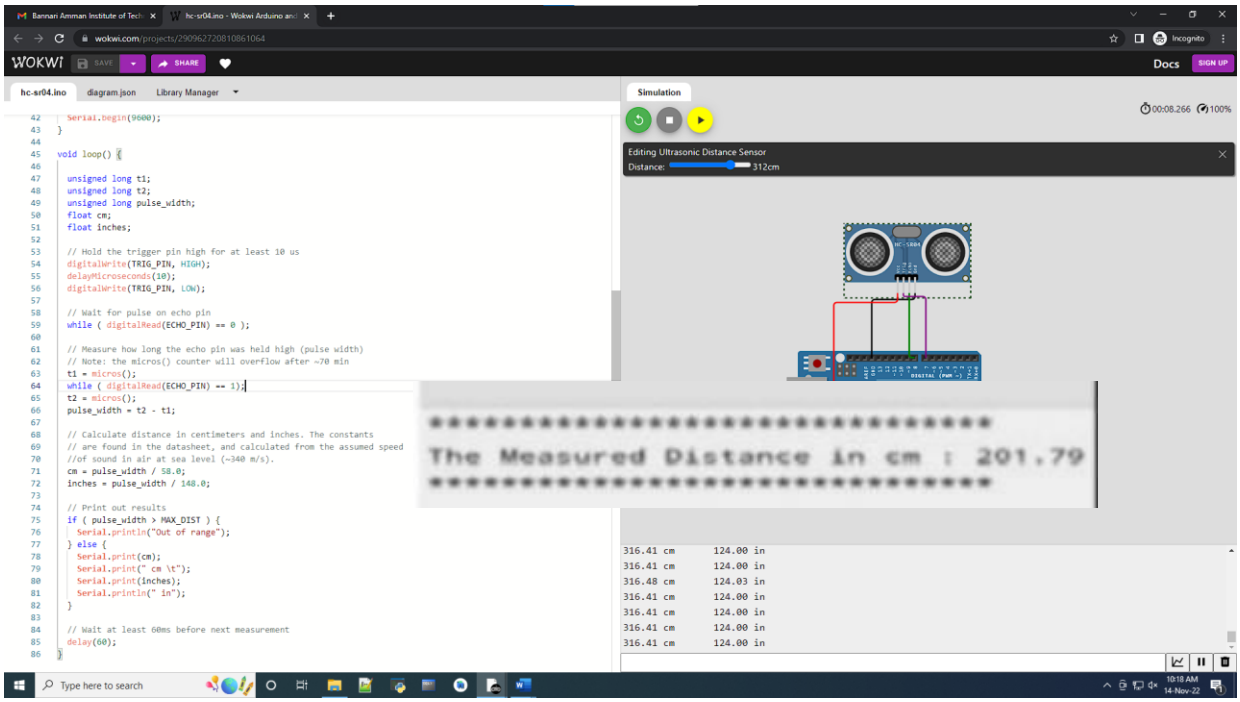
Name: Dakshana J

CODE:-

```
// 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 (~340 m/s).
  cm = pulse_width / 58.0;
  inches = pulse_width / 148.0;

  // Print out results
  if ( pulse_width > MAX_DIST ) {
    Serial.println("Out of range");
  } else {
    Serial.print(cm);
    Serial.print(" cm \t");
    Serial.print(inches);
    Serial.println(" in");
  }

  // Wait at least 60ms before next measurement
  delay(60);
}
```

OUTPUT:


wokwi.com/projects/290962720810861064
WOKWI
SAVE
SHARE
Docs
SIGN UP
hc-sr04.ino
diagram.json
Library Manager
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
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delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);
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while (digitalRead(ECHO_PIN) == 0);
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// Note: the micros() counter will overflow after ~70 min
t1 = micros();
while (digitalRead(ECHO_PIN) == 1);
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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 (~340 m/s).
cm = pulse_width / 58.0;
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// Print out results
if (pulse_width > MAX_DIST) {
Serial.println("Out of range");
} else {
Serial.print(cm);
Serial.print(" cm \t");
Serial.print(inches);
Serial.println(" in");
}
// Wait at least 60ms before next measurement
delay(60);
}
Simulation
00:08.266
100%
Editing Ultrasonic Distance Sensor
Distance:
312cm
The Measured Distance in cm : 201.79
316.41 cm 124.00 in
316.41 cm 124.00 in
316.48 cm 124.03 in
316.41 cm 124.00 in
316.41 cm 124.00 in
316.41 cm 124.00 in
316.41 cm 124.00 in
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14-Nov-22