Assignment-

Team ID: PNT2022TMID28270

Name: Jayashree.A

1. Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cm send "Alert" to IBM cloud and display in devicerecent events.

Solution:

```
//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
findPin Mode(TRIG_PIN, OUTPUT);
digital Write(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
usdigitalWrite(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
 mint1= 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.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
measurementDelay(1000);
```

Output:

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

```
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       const int TRIG_PIN - 7;
       const int ECHO_PIN = 8;
                                                                               Editing Ultrasonic Distance Sensor
       // 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
  10
         pinMode(TRIG_PIN, OUTPUT);
  11
         digitalWrite(TRIG_PIN, LOW);
  12
  13
  14
         //Set Echo pin as input to measure the duration of
         //pulses coming back from the distance sensor
  15
  16
         pinMode(ECHO_PIN, INPUT);
  17
  18
         // We'll use the serial monitor to view the sensor output
  19
         Serial.begin(9600);
  20
  21
  22
       void loop() {
  23
  24
         unsigned long t1;
                                                                             ***********
  25
         unsigned long t2;
                                                                             The Measured Distance in cm : 84.14
  26
         unsigned long pulse_width;
  27
         float cm;
                                                                             Alert!!
  28
         float inches;
                                                                             ************
  29
                                                                                                                                                M II M
         // Hold the trigger pin high for at least 10 us
```

2. If the distance is more than 100 cm, it won't alert

```
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    1 // Pins
    2 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
   10
         pinMode(TRIG_PIN, OUTPUT);
   11
   12
          digitalWrite(TRIG_PIN, LOW);
   13
   14
          //Set Echo pin as input to measure the duration of
   15
          //pulses coming back from the distance sensor
   16
          pinMode(ECHO_PIN, INPUT);
   17
          // We'll use the serial monitor to view the sensor output
   18
   19
          Serial.begin(9600);
   20
   21
        void loop() {
   -22
   23
   24
          unsigned long t1;
                                                                               *********
   25
          unsigned long t2;
                                                                               The Measured Distance in cm : 227.10
   26
          unsigned long pulse_width;
                                                                               *********************
   27
                                                                                                                            Activate Windows
          float cm;
   28
          float inches;
                                                                                                                            Go to Settings to activate Windows.
```

3. Simulation and code execution





