1.Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send "Alert" to ibm cloud aand display in device recent 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 find
Pin 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 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 (- 340m/s)
cm=pulse_Width / 58;
inches = pulse_width/148.0;
```

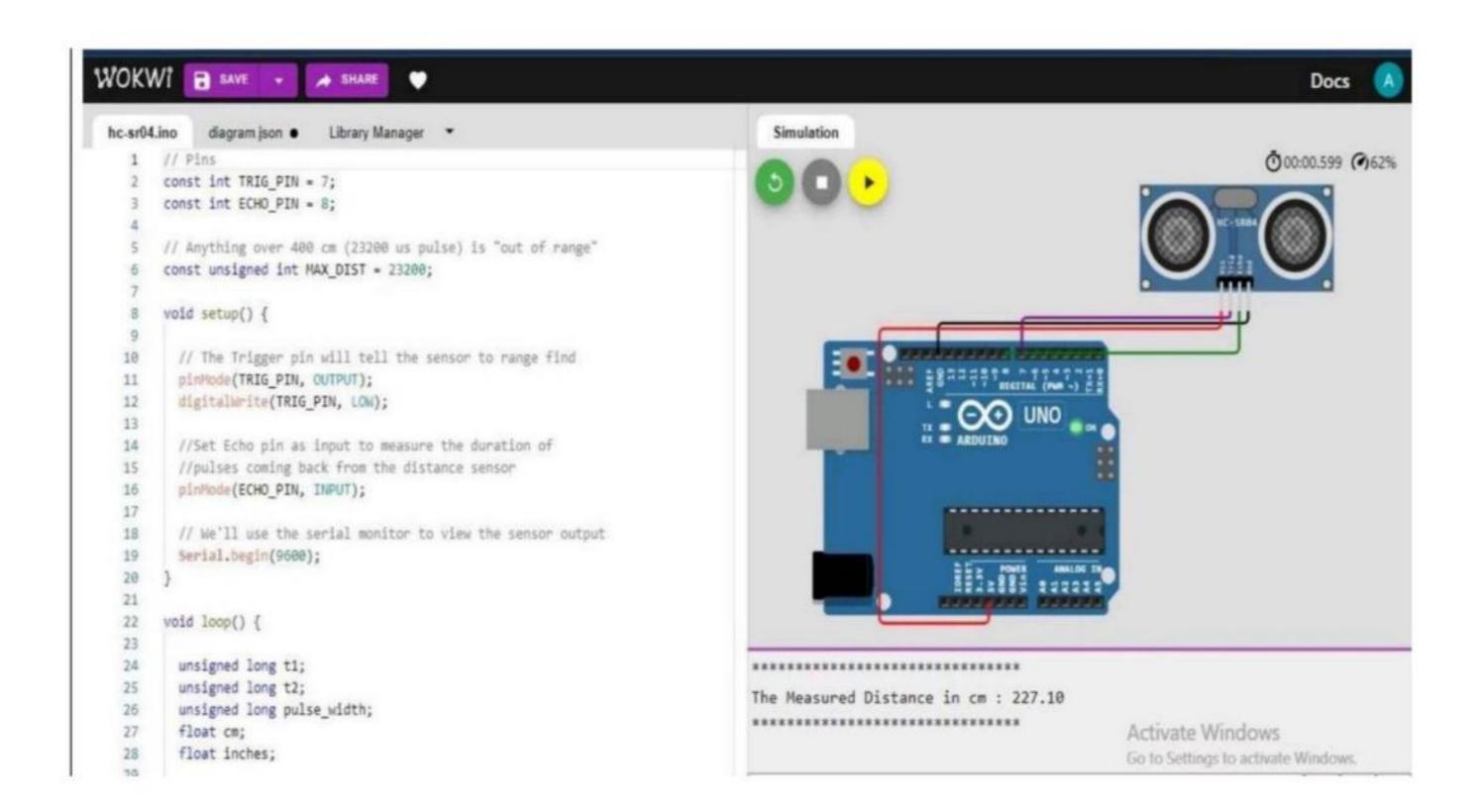
```
// Print out results
if (pulse_width >MAX _ DIST ){
Serial.println("Out of range");
} else {
Serial.print("The Measured Distance in cm: ");
Serial.println(cm);
if( cm < 100 ){
  //while(true){
   Serial.println("Alert!!");
   //}
Serial.print("********************************);
//wait at least 1000ms before next measurement
Delay(1000);
```

Output:

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

```
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                                                                                                                                             Docs
             diagram.json ● Library Manager ▼
                                                                               Simulation
                                                                                                                                        ₫00:00.466 €58%
       // Pins
       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"
                                                                              Distance:
        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
         //Set Echo pin as input to measure the duration of
  15
         //pulses coming back from the distance sensor
  16
         pinMode(ECHO_PIN, IMPUT);
  17
         // We'll use the serial monitor to view the sensor output
   18
   19
         Serial.begin(9600);
   28
  21
  22
       void loop() {
  23
  24
         unsigned long t1;
                                                                            unsigned long t2;
  25
         unsigned long pulse_width;
                                                                            The Measured Distance in cm : 84.14
  27
         float cm;
                                                                                                                        Activate Windows
         float inches;
                                                                            **************************
  29
                                                                                                                                             W 11 0
         // Hold the trigger pin high for at least 18 us
```

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



3. Simulation and code execution

