1.Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cms send “Alert” to ibm cloud and display in device recent events.

Solution:

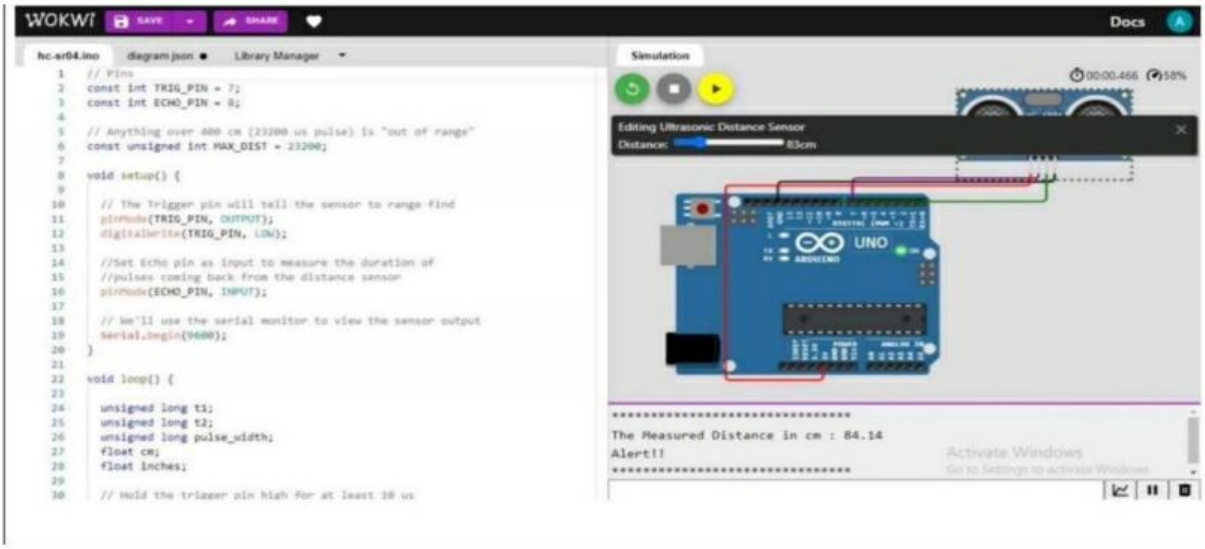
```
 //Pins
const int TRIG_PIN = 7 ;
const int ECHO_PIN = 8;

//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;
```

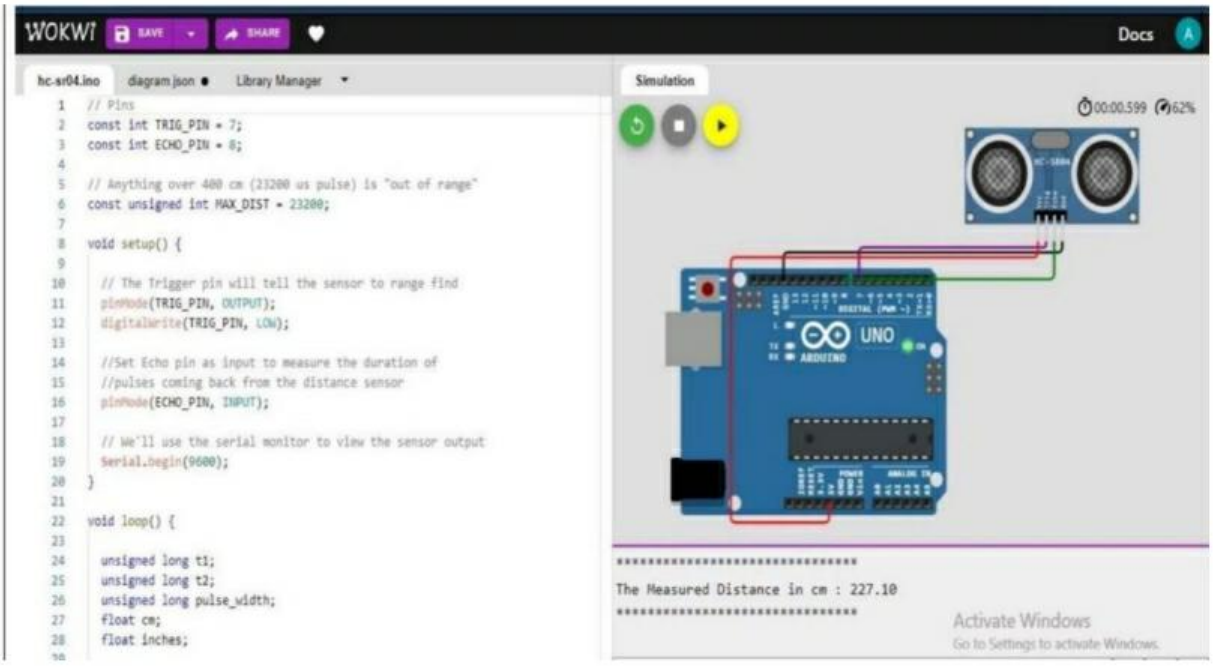
```
// Print out results
if (pulse_width >MAX _ DIST ){
Serial.println("Out of range");
} else {
Serial.println("*********************************”);
Serial.print("The Measured Distance in cm: ");
Serial.println(cm);

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 cms ,it alerts.



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



3.Simulation and code execution