1.Write Code and connections in wokwi for ultrasonic sensor. Whenever 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 ) ;
```

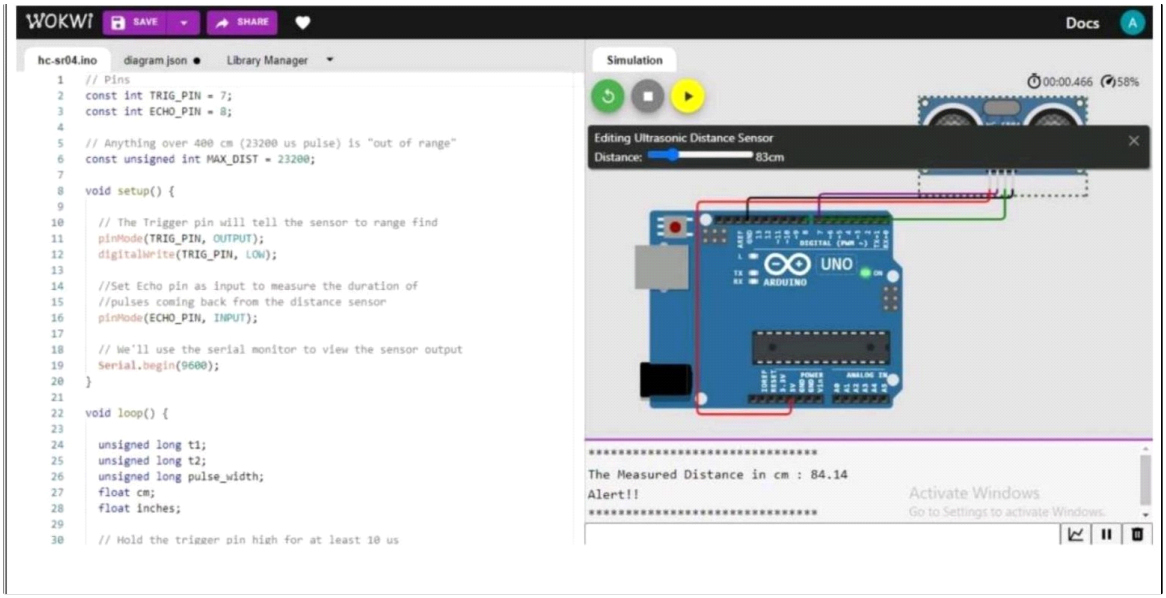
```
// We'll use the serial monitor to view the sensor
 output Serial.begin(9600);
}
void
loop()
{ unsign
ed long
t1;


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!!”);
      //}
```

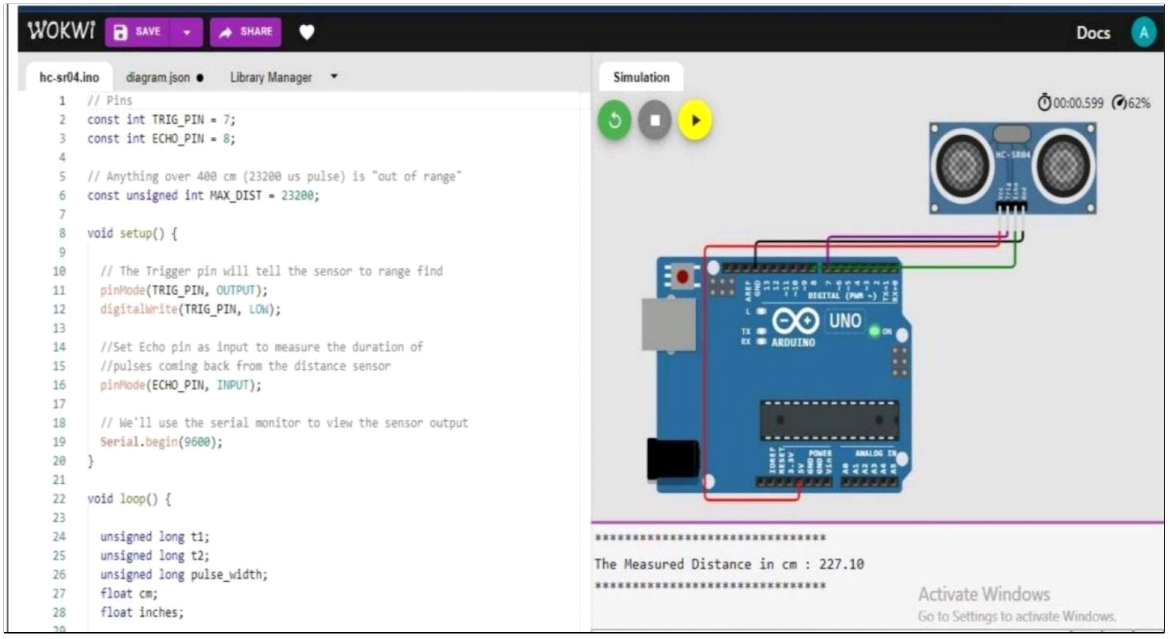
```
}
Serial.print("**********");
}
//wait at least 1000ms before next
measurement Delay(1000);
}
```

## Output:

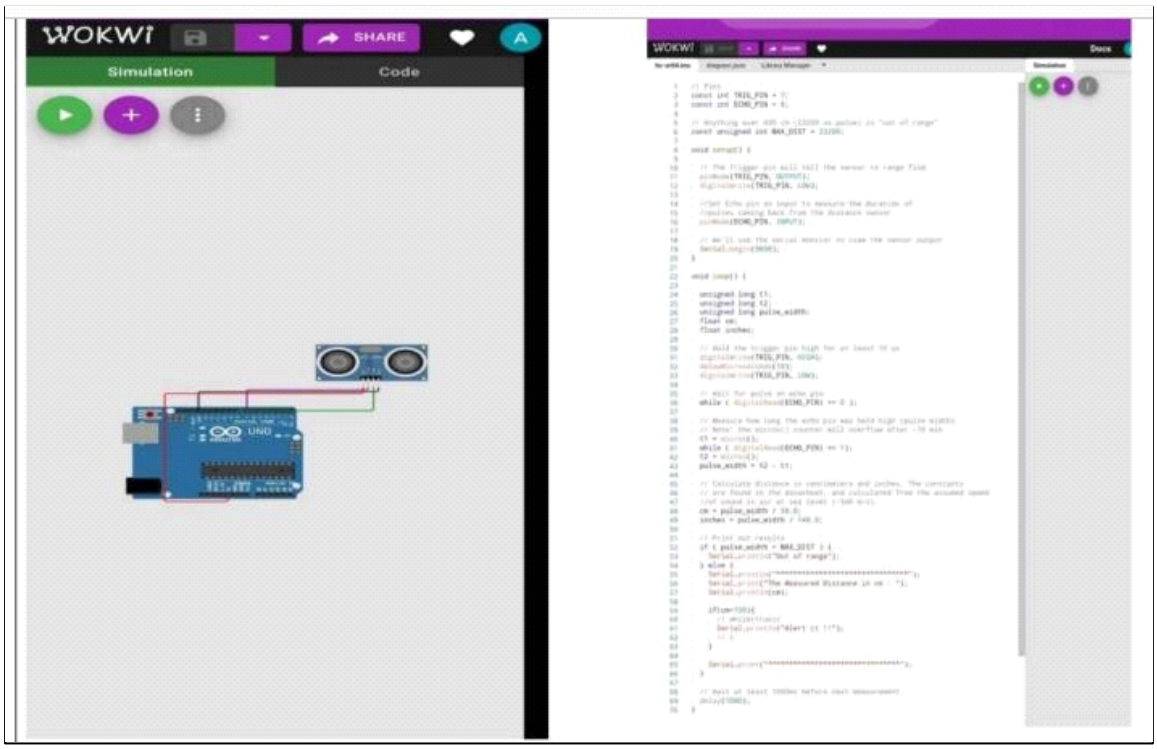
- If the distance is less than 100 cms ,it alerts.

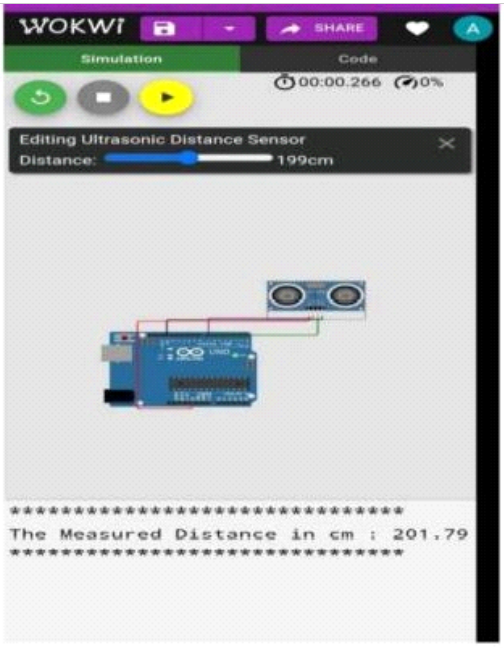


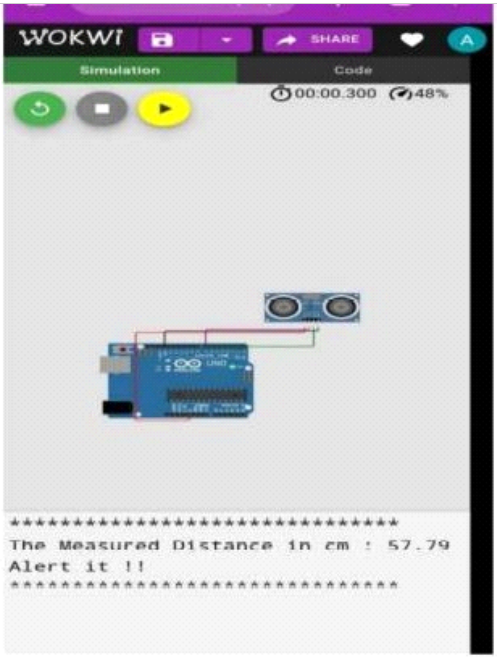

- If the distance is more than 100 cms,it won't alert




- Simulation and code execution




WOKWI
SHARE
Simulation
Code
00:00.266
0%
Editing Ultrasonic Distance Sensor
Distance:
199cm
**********
The Measured Distance in cm : 201.79
**********


WOKWI
SHARE
Simulation
Code
00:00.300
48%
**********
The Measured Distance in cm : 57.79
Alert it !!
**********