ASSIGNMENT-4

1.Write 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.

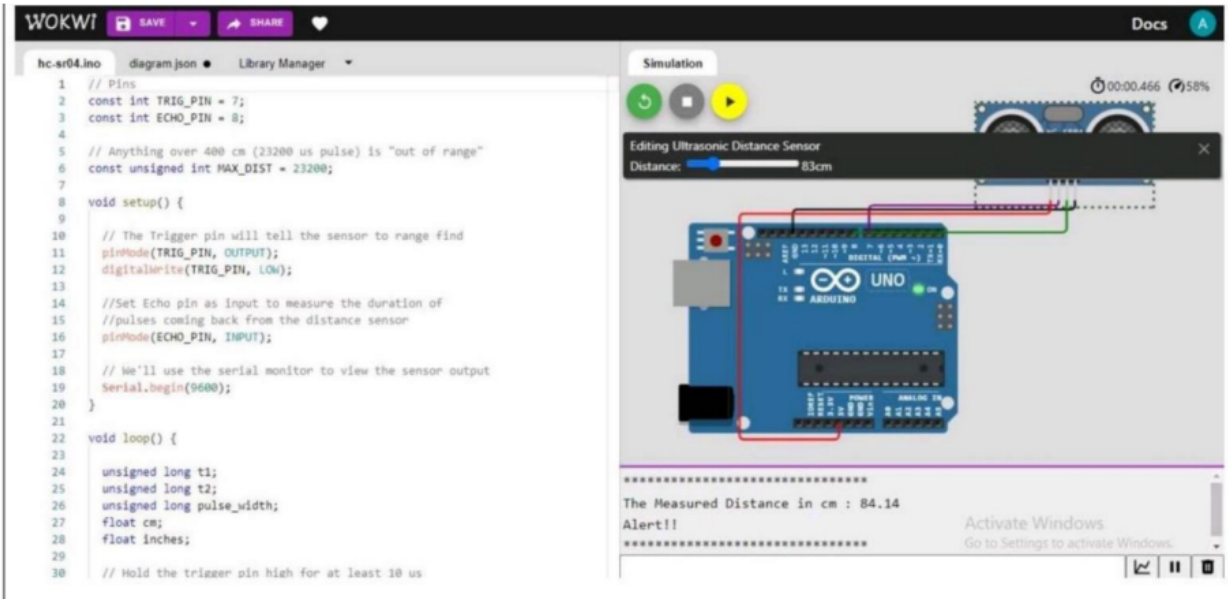
Solution:

```
 //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
```

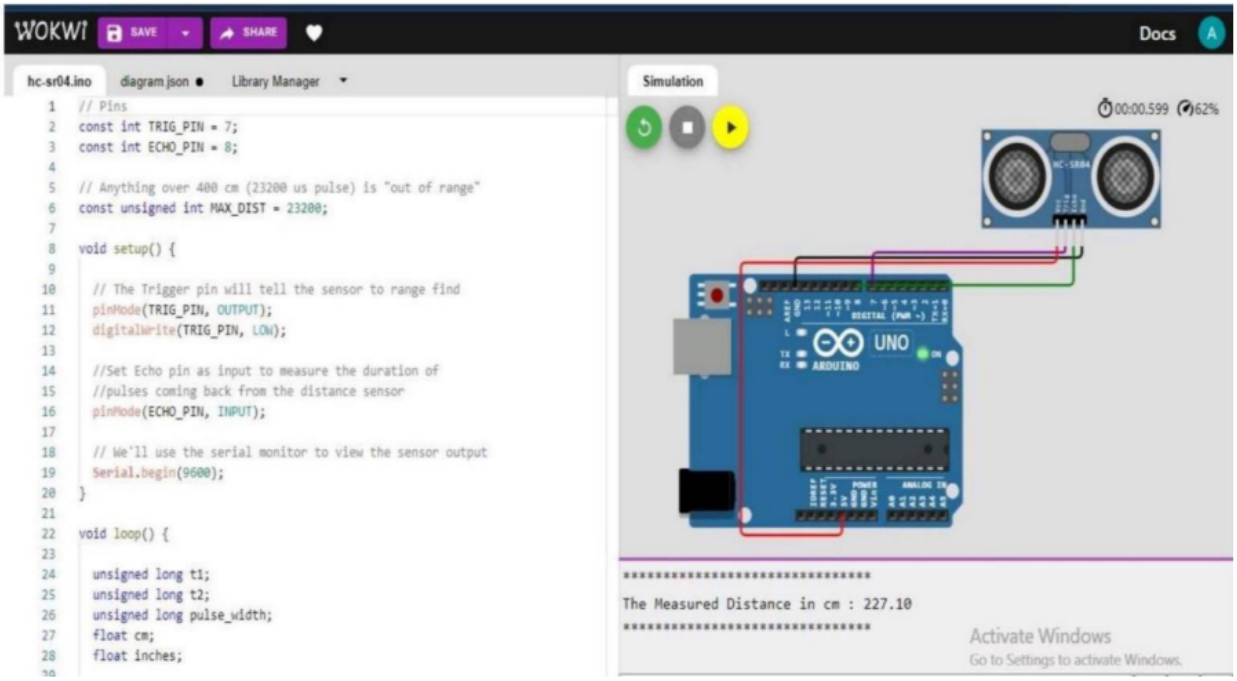
```
 // of sound in air at sea level (- 340m/s) cm=pulse_Width / 58 ;
 inches = pulse_width/148.0;
// Print out results
 if (pulse_width >MAX _ DIST ){
 Serial.println("Out of range"); }
 else { Serial.println("*******************************”);
 Serial.print("The Measured Distance in cm: ");
Serial.println(cm); if( cm < 100 ){ //while(true)
{
Serial.println(“Alert!!”);
 //}
 }
 Serial.print(“***********************************”); }
 //wait at least 1000ms before next measurement
 Delay(1000);
 }
```

OUTPUT:

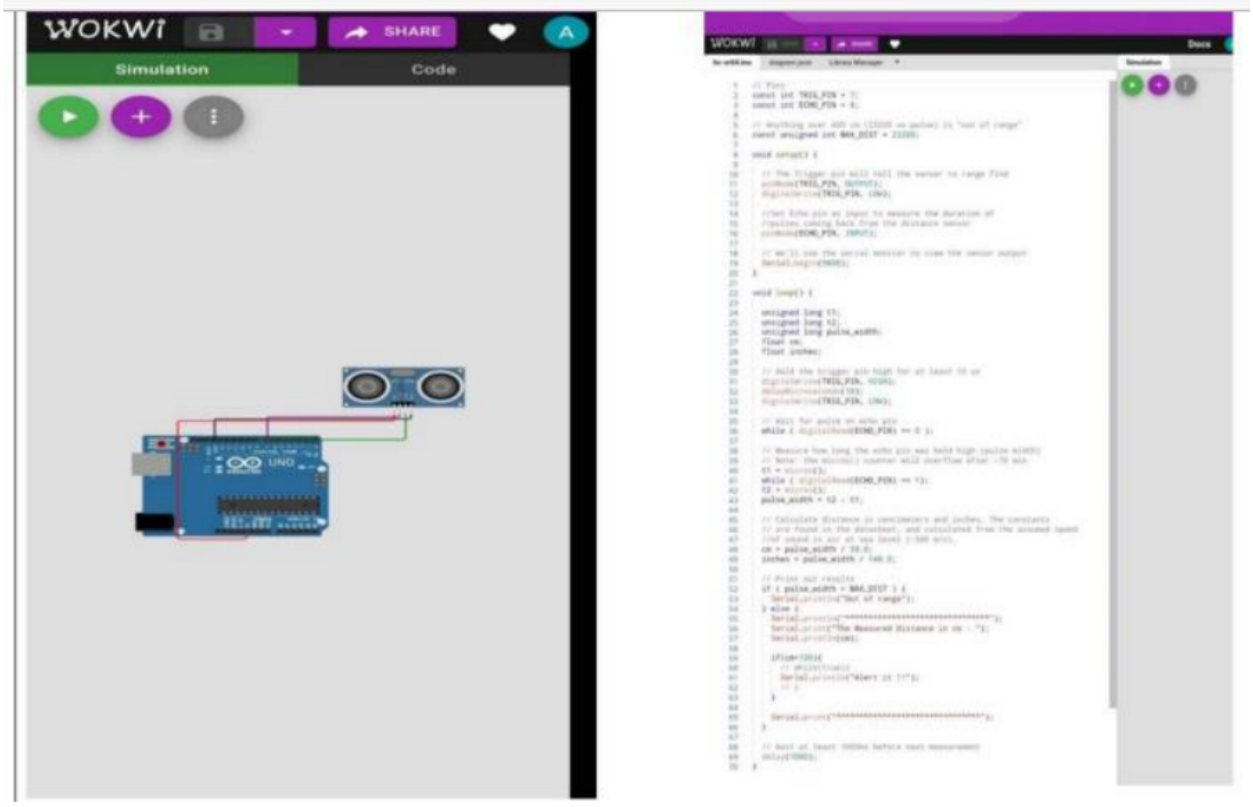
1.If the distance is less than 100 cms ,it alerts



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



3.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 !!
****