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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:

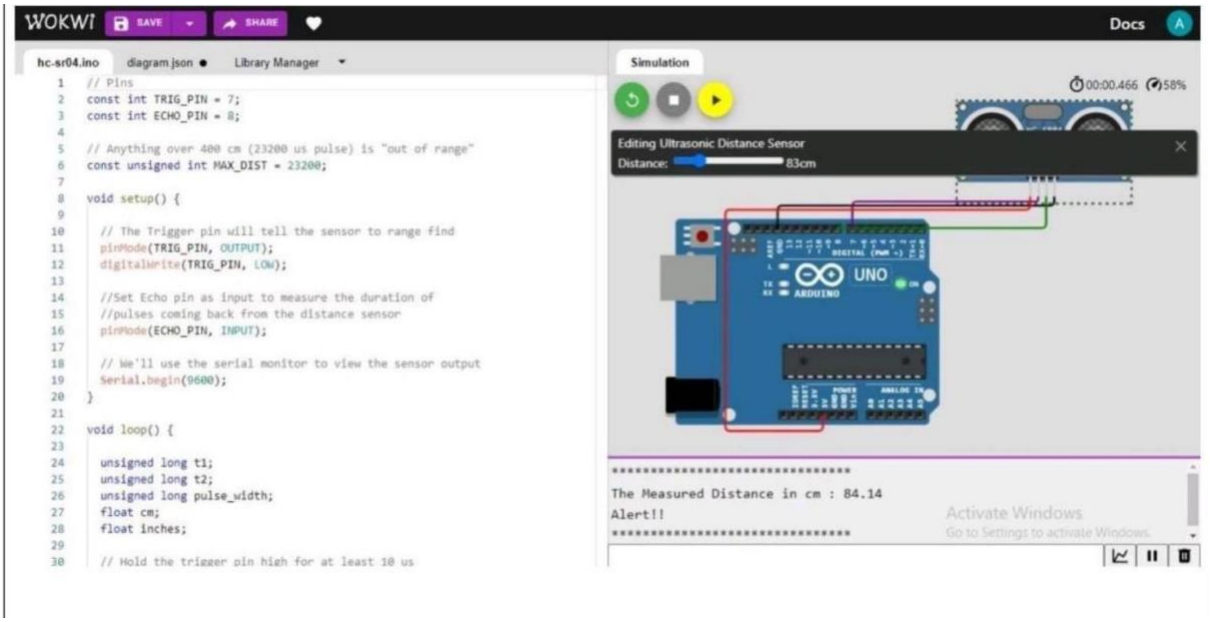
```
//Pins const int
TRIG_PIN = 7 ; const int
ECHO_PIN = 8;

//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;
```

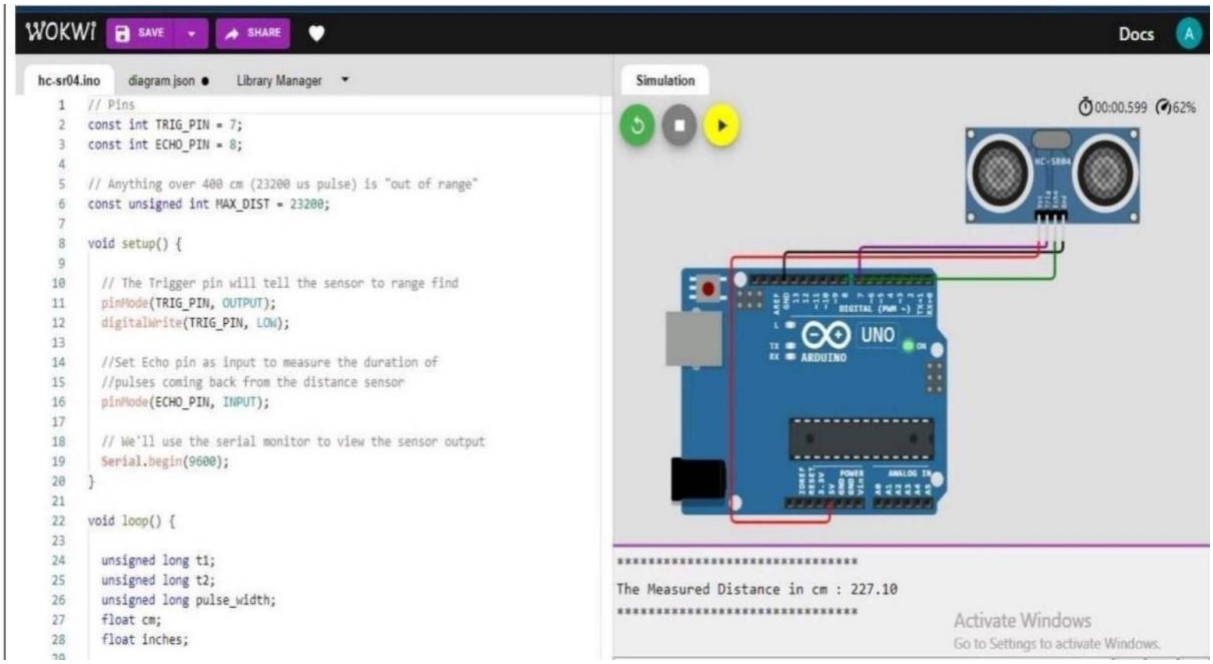
```
// Calculate distance in centimeters and inches. The constants
//are found in the datasheet, and calculated from the assumed speed
// of sound in air at sea level (- 340m/s)
cm=pulse_Width / 58 ; inches = pulse_width/148.0;

// Print out results if
(pulse_width >MAX _
DIST ){Serial.println("Out of range");
} else
{ Serial.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:

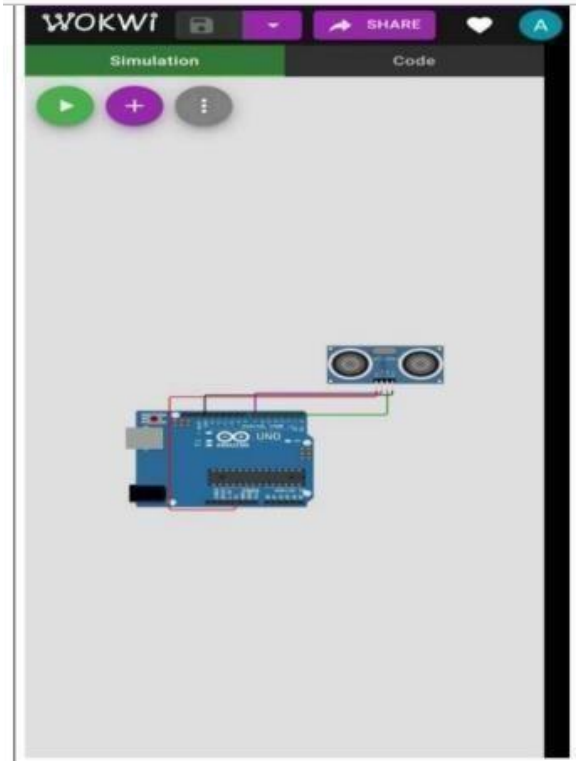
1.If the distance is less than 100 cms ,it alerts.



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



3.Simulation and code execution


WOKWi
SHARE
Simulation
Code


WOKWi


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 !!
****

IBM cloud output: