

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

const unsigned int
MAX_DIST = 23200;

void setup() {
Mode(TRIG_PIN, OUTPUT);
digital Write(TRIG_PIN, LOW);

pinMode(ECHO_PIN, INPUT ) ;

Serial.begin(9600);
}

void loop() {
unsigned long t1;

unsigned long t2;

unsigned long pulse_width;
float cm;
float inches;

digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);

while (digitalRead( ECHO_PIN )==0 );

t1= micros ();
while (digitalRead(ECHO_PIN) == 1);
t2= micros ();
pulse_width = t2-t1;

cm=pulse_Width / 58 ;
inches = pulse_width/148.0;
```

```

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!!");

    }

}

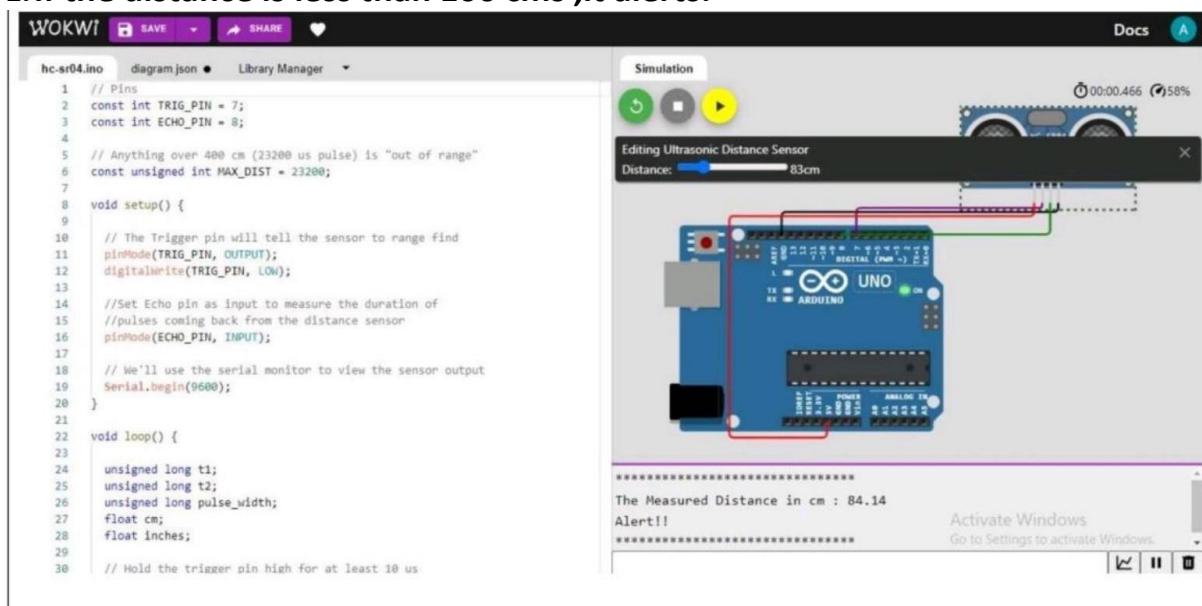
Serial.print("*****");
}

Delay(1000);
}

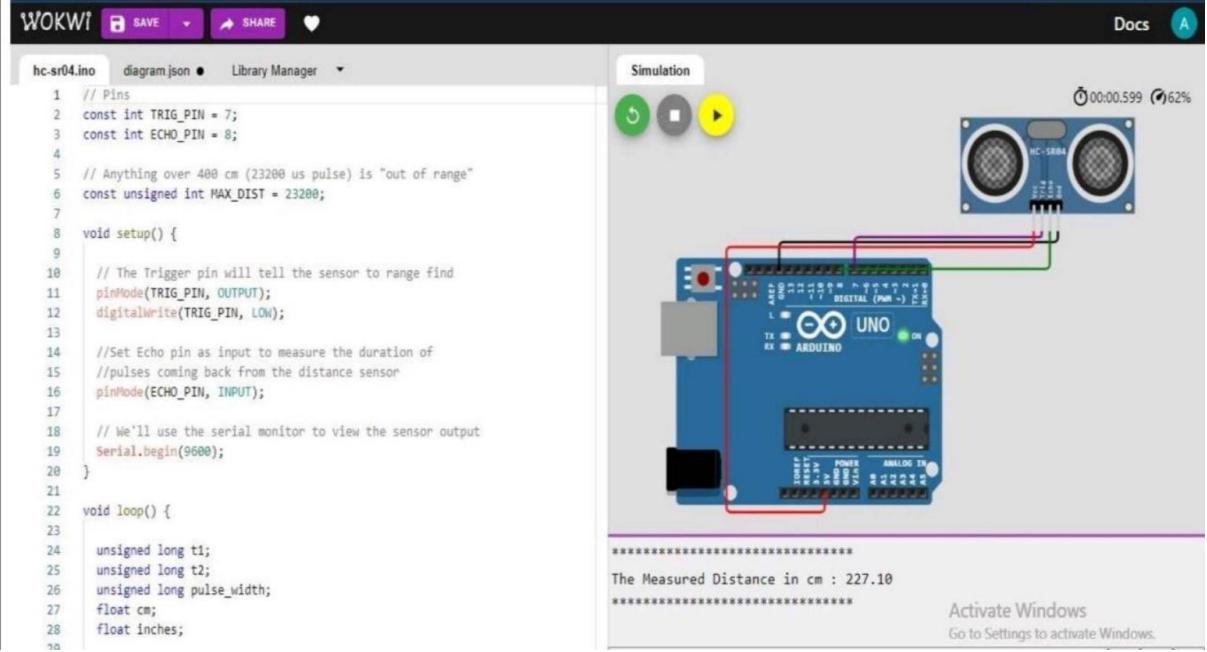
```

## 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



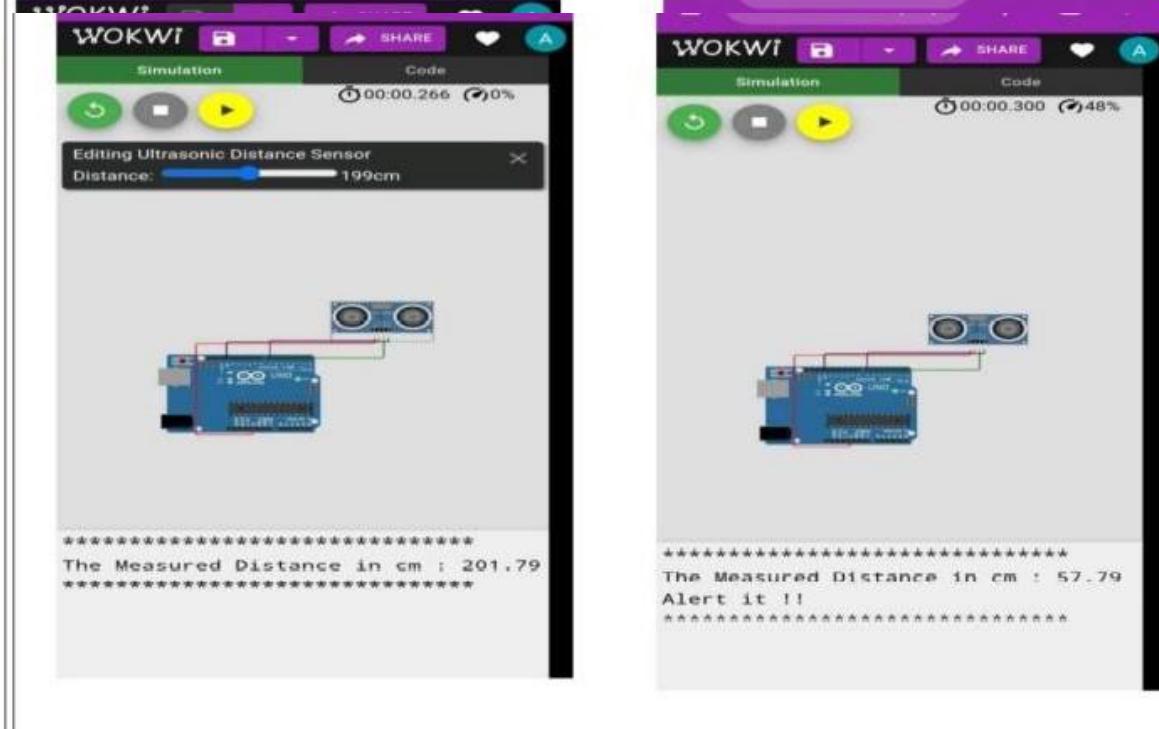
The image shows the Wokwi simulation interface. On the left, the code for `hc-sr04.ino` is displayed:

```
1 // Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4
5 // Anything over 400 cm (23200 us pulse) is "out of range"
6 const unsigned int MAX_DIST = 23200;
7
8 void setup() {
9
10    // The Trigger pin will tell the sensor to range find
11    pinMode(TRIG_PIN, OUTPUT);
12    digitalWrite(TRIG_PIN, LOW);
13
14    //Set Echo pin as input to measure the duration of
15    //pulses coming back from the distance sensor
16    pinMode(ECHO_PIN, INPUT);
17
18    // We'll use the serial monitor to view the sensor output
19    Serial.begin(9600);
20 }
21
22 void loop() {
23
24    unsigned long t1;
25    unsigned long t2;
26    unsigned long pulse_width;
27    float cm;
28    float inches;
29 }
```

On the right, the simulation window shows an Arduino Uno connected to an HC-SR04 ultrasonic sensor. The simulation time is 00:00.599 and the battery level is 62%. The output window displays:

```
*****
The Measured Distance in cm : 227.10
*****
```

## 3.Simulation and code execution



The image shows two screenshots of the Wokwi mobile application.

**Screenshot 1:** The top bar shows "WOKWI" and "Code". The main area shows the Arduino Uno and HC-SR04 setup. A modal dialog titled "Editing Ultrasonic Distance Sensor" shows a slider set to "Distance: 199cm". The output window shows:

```
*****
The Measured Distance in cm : 201.79
*****
```

**Screenshot 2:** The top bar shows "WOKWI" and "Code". The main area shows the same setup. The output window shows:

```
*****
The Measured Distance in cm : 57.79
Alert it !!
*****
```