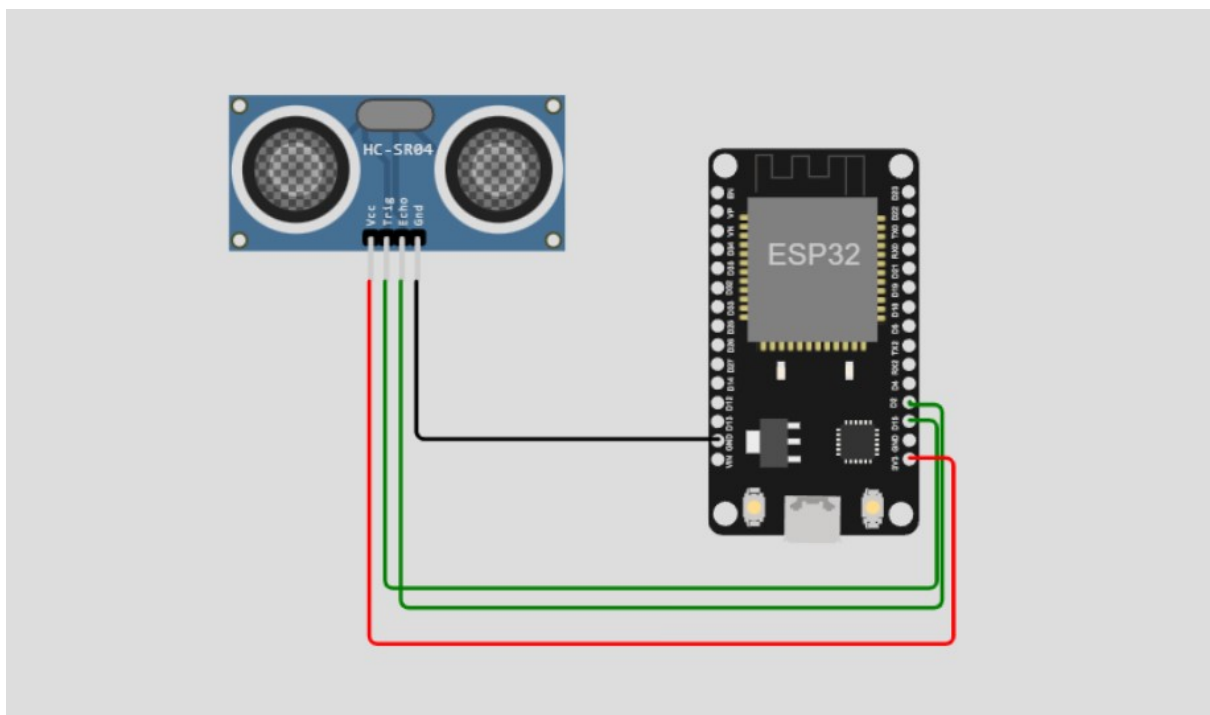


## ASSIGNMENT IV

Write code and connections in wowki for the ultrasonic sensor. Whenever the distance is less than 100 cms send an “alert” to the IBM cloud and display in the device recent events.

### CIRCUIT DIAGRAM:



## PROGRAM:

```
const int TRIG = 12;

const int ECHO = 13;

const unsigned int MAX_DIST = 23200;

void setup() {

  pinMode(TRIG, OUTPUT);

  digitalWrite(TRIG, LOW);

  pinMode(ECHO, INPUT );

  Serial.begin(9600);

}

void loop() {

  unsigned long t1;

  unsigned long t2;

  unsigned long pulse_width;

  float cm;

  float inches;

  digitalWrite(TRIG, HIGH);

  delayMicroseconds(10);

  digitalWrite(TRIG, LOW);

  while (digitalRead( ECHO )==0 );
```

```
t1= micros ();

while (digitalRead(ECHO) == 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 ){

Serial.println("ALERT!!");

}

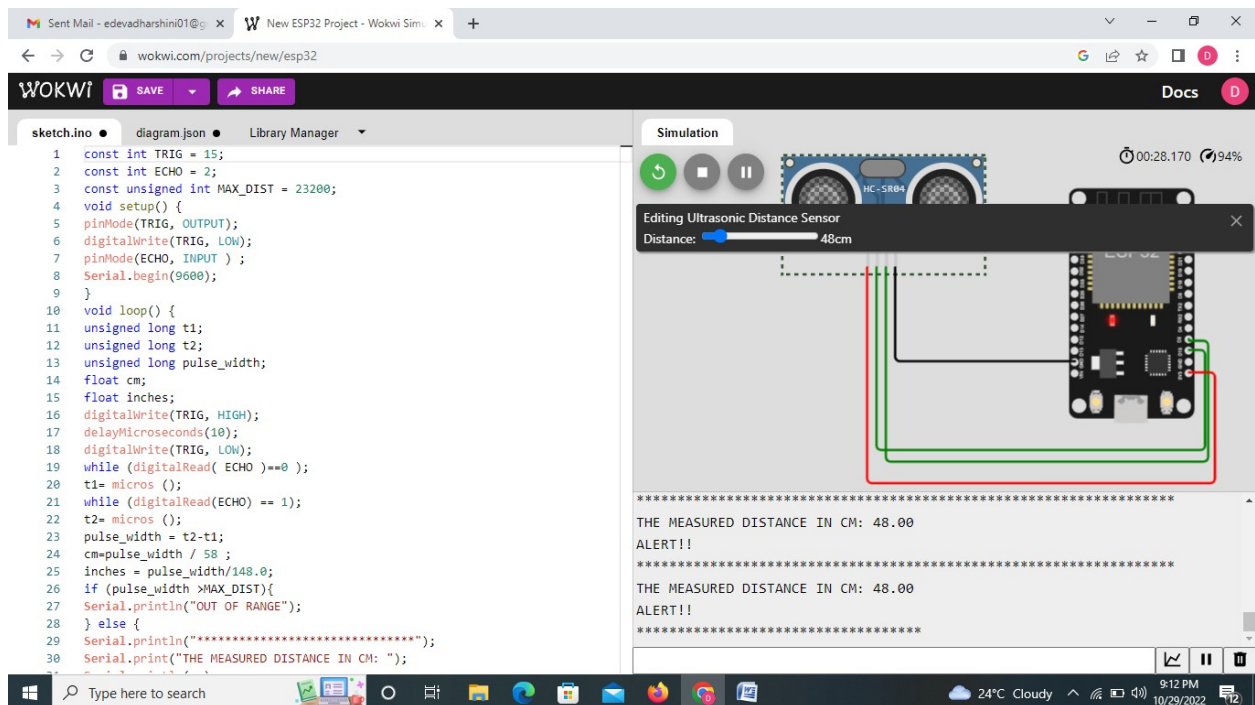
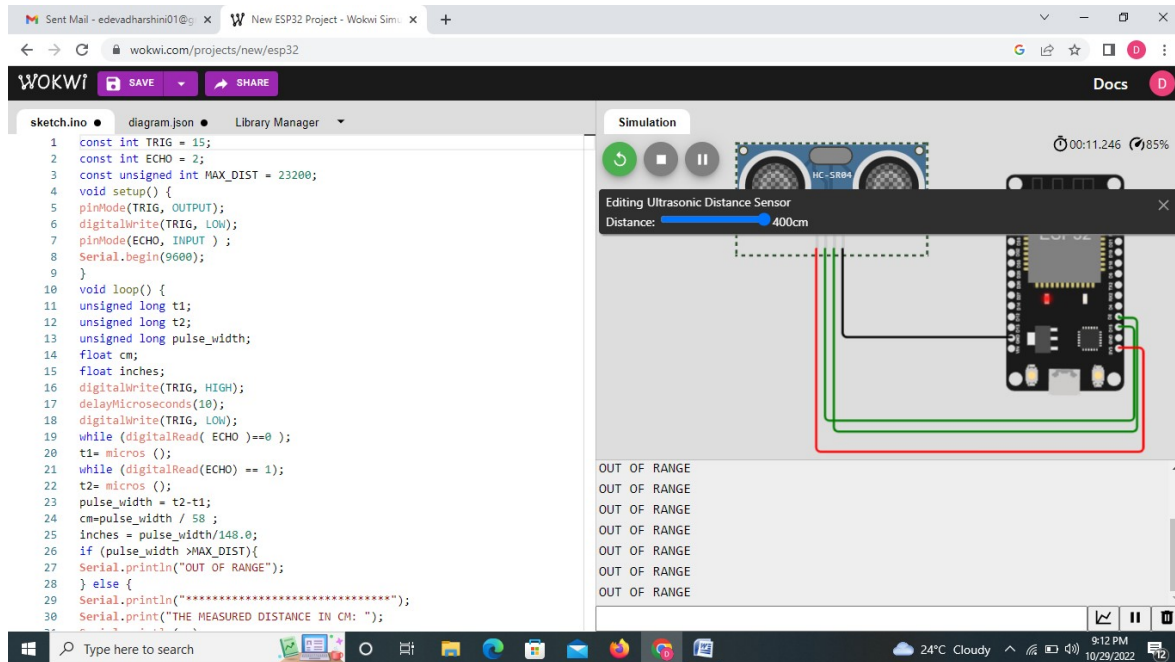
Serial.print("*****");

}

delay(1000);

}
```

## OUTPUTS:



WOKWI

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```

1 const int TRIG = 15;
2 const int ECHO = 2;
3 const unsigned int MAX_DIST = 23200;
4 void setup() {
5   pinMode(TRIG, OUTPUT);
6   digitalWrite(TRIG, LOW);
7   pinMode(ECHO, INPUT);
8   Serial.begin(9600);
9 }
10 void loop() {
11   unsigned long t1;
12   unsigned long t2;
13   unsigned long pulse_width;
14   float cm;
15   float inches;
16   digitalWrite(TRIG, HIGH);
17   delayMicroseconds(10);
18   digitalWrite(TRIG, LOW);
19   while (digitalRead(ECHO) == 0);
20   t1 = micros();
21   while (digitalRead(ECHO) == 1);
22   t2 = micros();
23   pulse_width = t2 - t1;
24   cm = pulse_width / 58;
25   inches = pulse_width / 148.0;
26   if (pulse_width > MAX_DIST) {
27     Serial.println("OUT OF RANGE");
28   } else {
29     Serial.println("*****");
30     Serial.print("THE MEASURED DISTANCE IN CM: ");

```

Simulation

00:35.213 89%

Editing Ultrasonic Distance Sensor

Distance: 217cm

THE MEASURED DISTANCE IN CM: 220.00

THE MEASURED DISTANCE IN CM: 220.00

THE MEASURED DISTANCE IN CM: 220.00

24°C Cloudy 9:13 PM 10/29/2022

WOKWI

SAVE SHARE

Docs

sketch.ino diagram.json Library Manager

```

1 const int TRIG = 15;
2 const int ECHO = 2;
3 const unsigned int MAX_DIST = 23200;
4 void setup() {
5   pinMode(TRIG, OUTPUT);
6   digitalWrite(TRIG, LOW);
7   pinMode(ECHO, INPUT);
8   Serial.begin(9600);
9 }
10 void loop() {
11   unsigned long t1;
12   unsigned long t2;
13   unsigned long pulse_width;
14   float cm;
15   float inches;
16   digitalWrite(TRIG, HIGH);
17   delayMicroseconds(10);
18   digitalWrite(TRIG, LOW);
19   while (digitalRead(ECHO) == 0);
20   t1 = micros();
21   while (digitalRead(ECHO) == 1);
22   t2 = micros();
23   pulse_width = t2 - t1;
24   cm = pulse_width / 58;
25   inches = pulse_width / 148.0;
26   if (pulse_width > MAX_DIST) {
27     Serial.println("OUT OF RANGE");
28   } else {
29     Serial.println("*****");
30     Serial.print("THE MEASURED DISTANCE IN CM: ");

```

Simulation

00:56.829 101%

Editing Ultrasonic Distance Sensor

Distance: 2cm

THE MEASURED DISTANCE IN CM: 30.00

ALERT!!

THE MEASURED DISTANCE IN CM: 2.00

ALERT!!

24°C Cloudy 9:13 PM 10/29/2022

## WOWKI SHARE LINK:

<https://wokwi.com/projects/346868465723769428>

## CLOUD IMAGE:

