# Assignment-4

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## 1. Write Code and connections in wokwi for ultrasonic sensor. whatever distance is less than 100 cm 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(“\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*”);

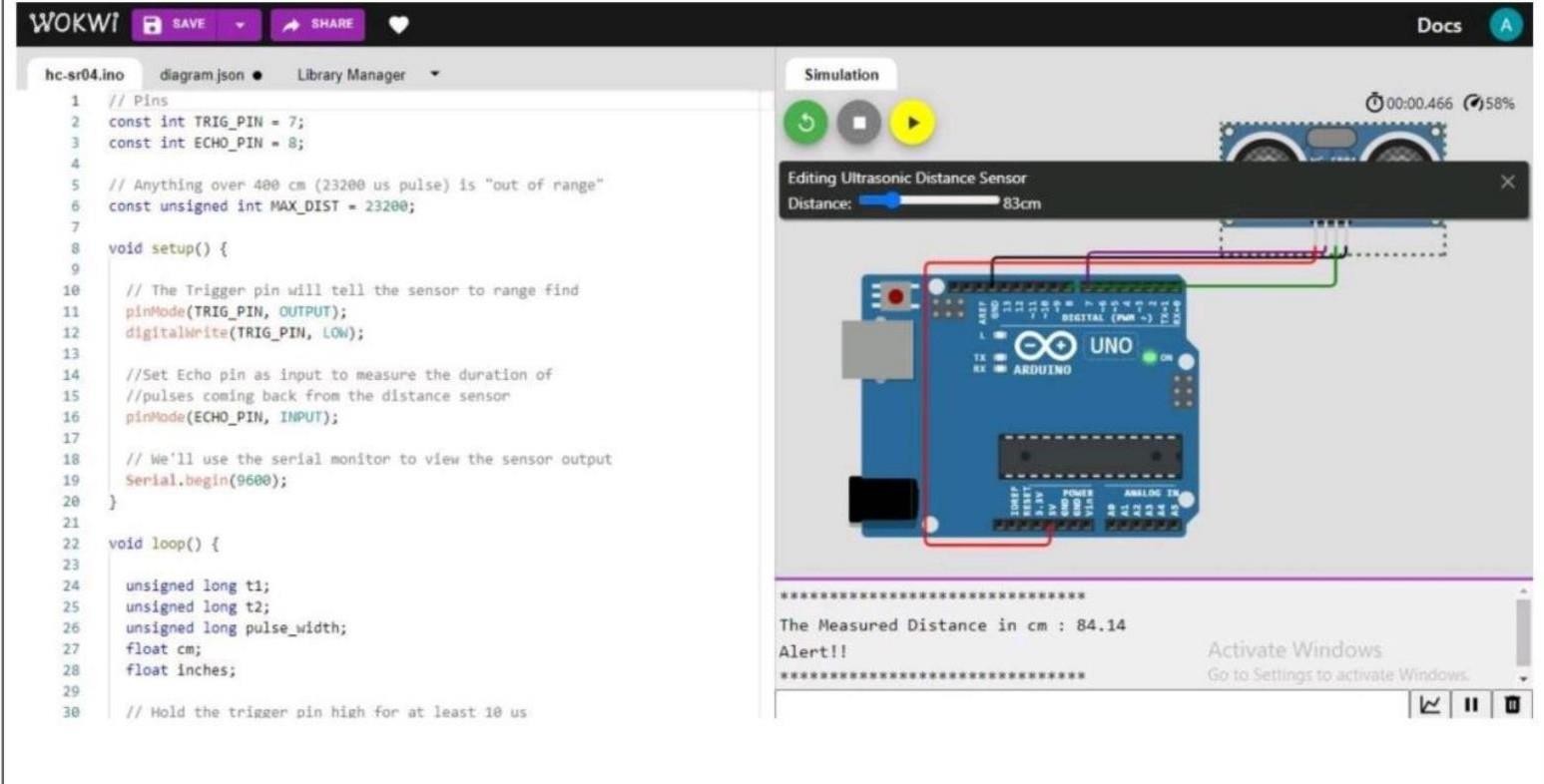
}

//wait at least 1000ms before next measurement Delay(1000);

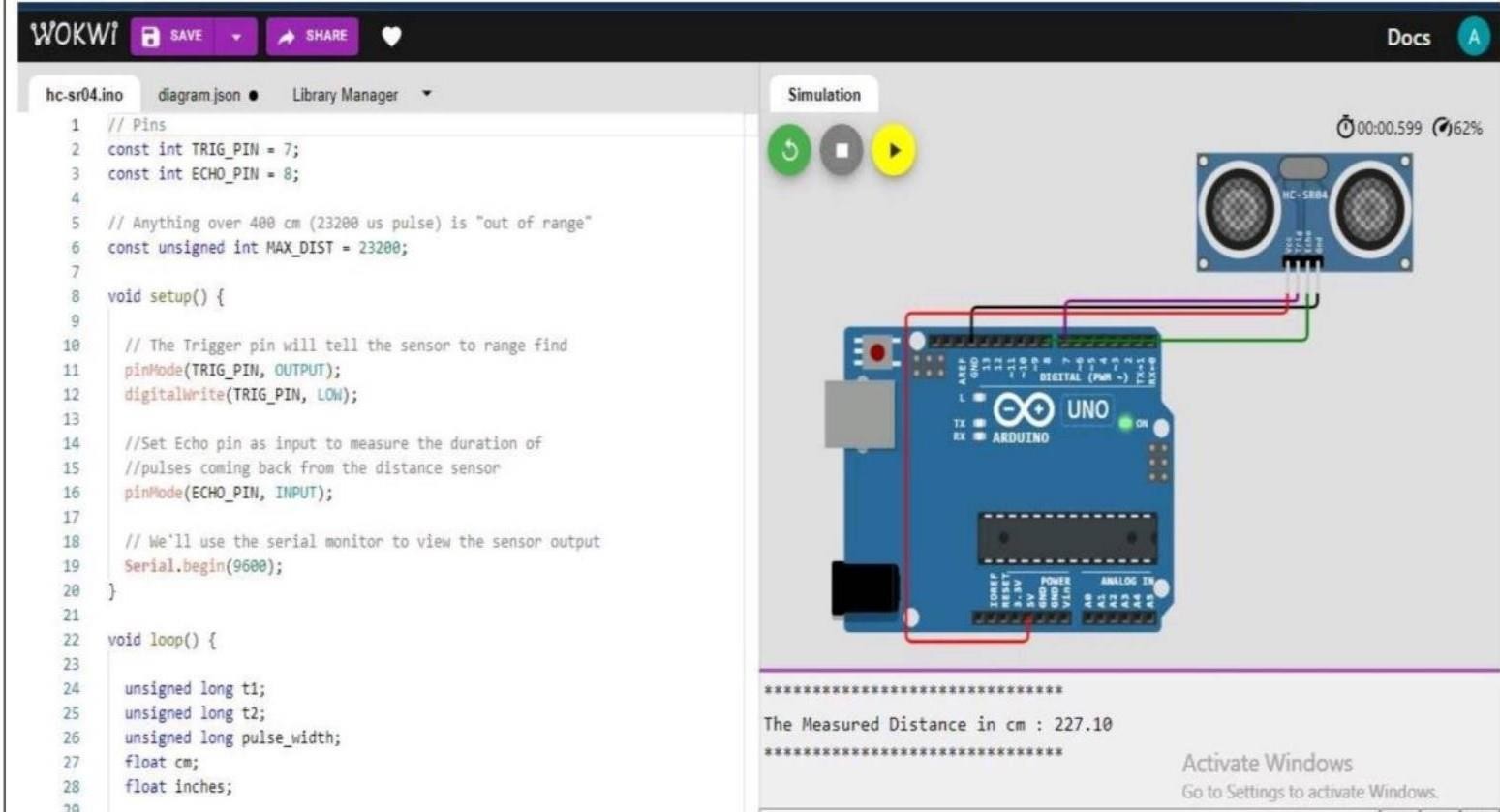
}

# Output:

## If the distance is less than 100 cm, it alerts.



1. **If the distance is more than 100 cm, it won’t alert**



## Simulation and code execution

