IBM ASSIGNMENT- 4

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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
                              if
             out
                  results
(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
```

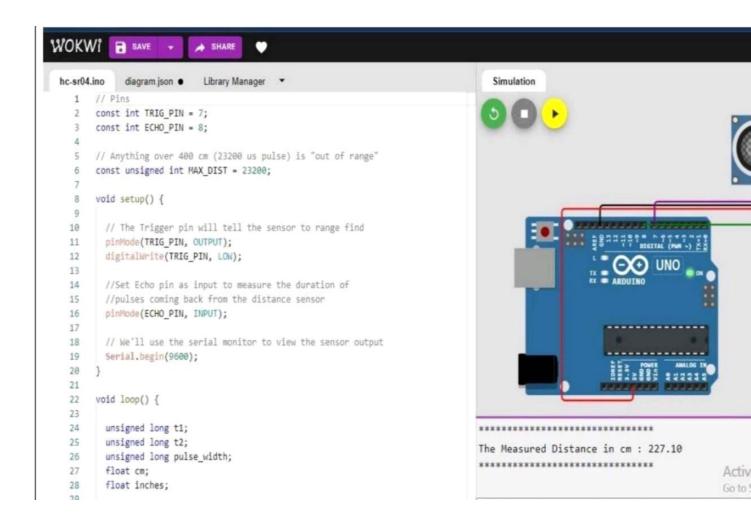
```
Delay(1000);
}
```

Output:

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

```
WOKWI
 hc-sr04.ino
                                                                                      Simulation
                             Library Manager
              diagram json •
        // 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;
    8
        void setup() {
          // The Trigger pin will tell the sensor to range find
   10
          pinMode(TRIG_PIN, OUTPUT);
          digitalWrite(TRIG_PIN, LOW);
   12
   13
          //Set Echo pin as input to measure the duration of
   14
   15
          //pulses coming back from the distance sensor
          pinMode(ECHO_PIN, INPUT);
   17
          // We'll use the serial monitor to view the sensor output
   18
   19
          Serial.begin(9600);
                                                                                                             1122812 11111
   20
        void loop() {
   22
   23
   24
          unsigned long t1;
                                                                                   **********************
          unsigned long t2;
   25
                                                                                   The Measured Distance in cm : 84.14
          unsigned long pulse_width;
   27
         float cm;
   28
         float inches;
                                                                                   ***********************
   29
          // Hold the trigger pin high for at least 10 us
```

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



3. Simulation and code execution