

IBM ASSIGNMENT- 4

TEAM

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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.

Solu

tion

:

//Pi

ns

const int

TRIG_PI

N = 7 ;

const int

ECHO_P

IN = 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_PI

N, OUTPUT);

digital

```
Write(TRIG_PIN, LOW);
```

```
//Set Echo pin  
as input to  
measure the  
duration of  
//pulses
```

coming back

from the

distance

sensor

pinMode(ECH

O_PIN, INPUT

);


```
// We'll use the serial  
monitor to view the  
sensor output
```

```
Serial.begin(9600);
```

```
}
```

```
void
```

```
loop()
```

```
{
```

unsig

ned

long

t1;

unsig

ned

long

t2;

unsig

ned

long

pulse

_width

h;

float

cm;

float

inche

s;

// Hold the

trigger pin

```
high for at  
least 10 us  
digitalWrite(  
TRIG_PIN,  
HIGH);  
  
delayMicrose  
conds(10);
```

```
digitalWrite(  
TRIG_PIN,  
LOW);
```

```
// Wait for  
pulse    on  
echo    pin  
while
```

```
(digitalRea
```

```
d(
```

```
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  
(digitalRea  
d(ECHO_P  
IN) == 1);  
t2= micros  
());
```

```
pulse_wid
```

```
th = 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_widt

h/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.



hc-sr04.ino

diagram.json

Library Manager



Simulation



Editing Ultrasonic Distanc

Distance:






```
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
30     // Hold the trigger pin high for at least 10 us
```



The Measured Distanc
Alert!!




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


WOKWI  SAVE  SHARE 

hc-sr04.ino diagram.json Library Manager

```
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;
```

Simulation



The Measured Distance in cm

3.Simulation and code execution



