

ASSIGNMENT – IV

DOMAIN – IOT

PROJECT TITLE : SMART FARMER – IOT ENABLED SMART FARMING APPLICATION

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ASSIGNMENT TITLE :

Write code and connections in wokwi for ultrasonic sensor whenever distance is less than 100 cms send “alert” to IBM CLOUD and display in device recent events.

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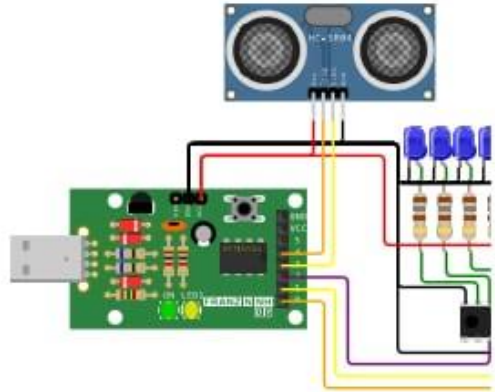
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distance detection using ultrasonic sensor.ino diagram.json Simulation

Library Manager

```
1
2
3 #define TRIG_PIN A8
4 #define ECHO_PIN A3
5
6 #define DATA_PIN 8 // Pino conectado ao DS do 74HC5
7 #define LATCH_PIN 1 // Pino conectado ao STCP do 74H
8 #define CLOCK_PIN 2 // Pino conectado ao SHCP do 74H
9
10 // Quantos registros de deslocamento
11 #define NUM_SHIFT_REGS 1
12
13 const uint8_t numOfRegisterPins = NUM_SHIFT_REGS * 8;
14
15 bool registers[numOfRegisterPins];
16
17 uint16_t duration = 0;
18 uint32_t interval = 0;
19
20 float distance = 0;
21
22 void setup() {
23   pinMode(TRIG_PIN, OUTPUT);
24   pinMode(ECHO_PIN, INPUT);
25   pinMode(DATA_PIN, OUTPUT);
26   pinMode(CLOCK_PIN, OUTPUT);
27   pinMode(LATCH_PIN, OUTPUT);
28   clearRegisters();
29 }
```



<https://wokwi.com/projects/346508058390692434>

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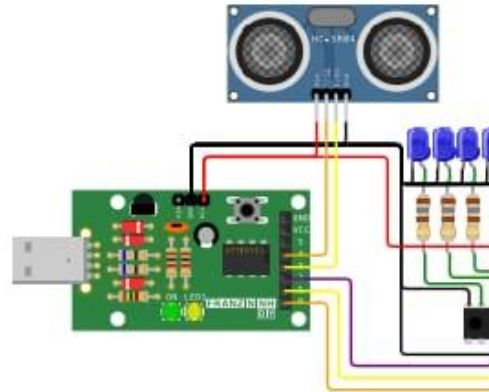
distance detection using ultrasonic sensor.ino

diagram.json

Simulation

Library Manager

```
29   writeRegisters();
30 }
31
32 void loop() {
33   // Verifica a cada 100 milissegundos
34   if ((millis() - interval) >= 100) {
35     interval = millis();
36
37     digitalWrite(TRIG_PIN, LOW);
38     delayMicroseconds(5);
39     digitalWrite(TRIG_PIN, HIGH);
40     delayMicroseconds(10);
41     digitalWrite(TRIG_PIN, LOW);
42
43     // Tempo de leitura do trigger ao echo
44     duration = pulseIn(ECHO_PIN, HIGH);
45
46     // Calcula a distância
47     distance = (duration / 2) / 29;
48
49     // Retorna o valor da distância e converte para (
50     uint8_t value = map(distance, 2, 400, 0, numOfReg
51
52     for (uint8_t i = 0; i < numOfRegisterPins; i++) {
53       if (i >= value) {
54         setRegisterPin(i, HIGH);
55       } else {
56         setRegisterPin(i, LOW);
```



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distance detection using ultrasonic sensor.ino

diagram.json

Simulation

Library Manager

```

74
75 void writeRegisters() {
76     // Define e exibe os registros
77     digitalWrite(LATCH_PIN, LOW);
78
79     for (int i = numOfRegisterPins - 1; i >= 0; i--) {
80         digitalWrite(CLOCK_PIN, LOW);
81         digitalWrite(DATA_PIN, registers[i]);
82         digitalWrite(CLOCK_PIN, HIGH);
83     }
84
85     digitalWrite(LATCH_PIN, HIGH);
86 }
87

```

<https://wokwi.com/projects/346508058390592434>

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Data send to the IBM cloud device when the object is far :

Identity	Device Information	Recent Events	State	Logs
The recent events listed show the live stream of data that is coming and going from this device.				
Event	Value	Format	Last Received	
Data	{"distance":141.21,"object":"No"}	json	a few seconds ago	
Data	{"distance":141.21,"object":"No"}	json	a few seconds ago	
Data	{"distance":141.21,"object":"No"}	json	a few seconds ago	
Data	{"distance":141.18,"object":"No"}	json	a few seconds ago	
Data	{"distance":141.2,"object":"No"}	json	a few seconds ago	

Data sent to the IBM cloud device when the object is near

Event	Value	Format	Last Received
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.64,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.64,"object":"Near"}	json	a few seconds ago
Data	{"distance":79.66,"object":"Near"}	json	a few seconds ago