

## Assignment-4

Assignment Date	03 November 2022
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Student Roll Number	130719205011
Maximum Marks	2 Marks

### STATEMENT:

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.

### PROGRAM:

<https://wokwi.com/projects/347293439259312724>

```
#include <stdio.h>
#include <stdbool.h>
#include <freertos/FreeRTOS.h>
#include <freertos/task.h>
#include <esp_err.h>

#include "ultrasonic.h"

#define ECHO_GPIO 12
#define TRIGGER_GPIO 13
#define MAX_DISTANCE_CM 500 // Maximum of 5 meters

void ultrasonic_test(void *pvParameters)
{
    float distance;

    ultrasonic_sensor_t sensor = {
        .trigger_pin = TRIGGER_GPIO,
        .echo_pin = ECHO_GPIO
    };

    ultrasonic_init(&sensor);

    while (true) {
        esp_err_t res = ultrasonic_measure(&sensor, MAX_DISTANCE_CM,
        &distance);

        if (res == ESP_OK) {
            printf("Distance: %.04f m\n", distance);
        } // Print error
        else {
```

```

        printf("Error %d: ", res);
        switch (res) {
            case ESP_ERR_ULTRASONIC_PING:
                printf("Cannot ping (device is in invalid state)\n");
                break;
            case ESP_ERR_ULTRASONIC_PING_TIMEOUT:
                printf("Ping timeout (no device found)\n");
                break;
            case ESP_ERR_ULTRASONIC_ECHO_TIMEOUT:
                printf("Echo timeout (i.e. distance too big)\n");
                break;
            default:
                printf("%s\n", esp_err_to_name(res));
        }
    }
    if (distance<=1) {
        printf("ALERT");
    }
    else {
        printf("DISTANCE IS PERFECT!!!");
        printf("\n");
    }
    vTaskDelay(pdMS_TO_TICKS(500));
}

}

void app_main()
{
    xTaskCreate(ultrasonic_test, "ultrasonic_test", configMINIMAL_STACK_SIZE *
3, NULL, 5, NULL);
}

```

## OUTPUT :

WOKWI

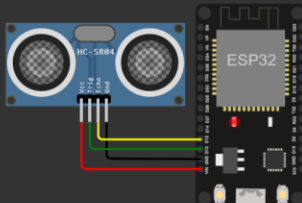
esp-idf-ultrasonic

main.c diagram.json ultrasonic.h ultrasonic.c esp\_idf\_helpers.h Library Manager Simulation

```
28 printf("Distance: %0.04f m\n", distance);
29 } // Print error
30 else {
31     printf("Error %d: ", res);
32     switch (res) {
33         case ESP_ERR_ULTRASONIC_PING:
34             printf("Cannot ping (device is in invalid state)\n");
35             break;
36         case ESP_ERR_ULTRASONIC_PING_TIMEOUT:
37             printf("Ping timeout (no device found)\n");
38             break;
39         case ESP_ERR_ULTRASONIC_ECHO_TIMEOUT:
40             printf("Echo timeout (i.e. distance too big)\n");
41             break;
42         default:
43             printf("%s\n", esp_err_to_name(res));
44     }
45 }
46 if (distance==1) {
47     printf("ALERT!");
48 }
49 else {
50     printf("DISTANCE IS PERFECT!!!");
51     printf("\n");
52 }
53 vTaskDelay(pdMS_TO_TICKS(500));
54 }
55 }
56
57 void app_main()
58 {
59     xTaskCreate(ultrasonic_test, "ultrasonic_test", configMINIMAL_STACK_SIZE * 3, NULL, 5
60 }
61
```

Simulation

00:57.986 65%



Distance: 4.0566 m  
DISTANCE IS PERFECT!!!  
Distance: 4.0564 m  
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