Assignment-4

Assignment Date	03 November 2022
Student Name	Mr. KISHORE V
Student Roll Number	130719205025
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.

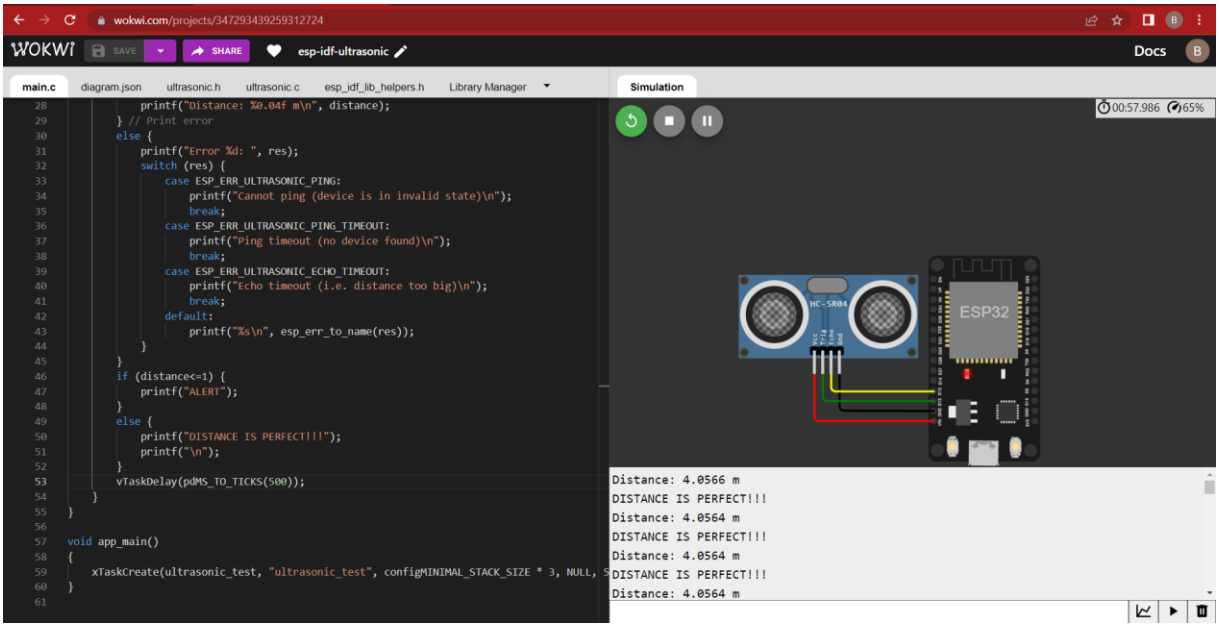
PROGRAM:

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: %0.04f 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.com/projects/347293439259312724
WOKWI
SAVE
SHARE
esp-idf-ultrasonic
Docs
main.c
diagram.json
ultrasonic.h
ultrasonic.c
esp_idf_lib_helpers.h
Library Manager
printf("Distance: %0.04f 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
}
Simulation
00:57.986
65%
HC-SR04
ESP32
Distance: 4.0566 m
DISTANCE IS PERFECT!!!
Distance: 4.0564 m
DISTANCE IS PERFECT!!!
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DISTANCE IS PERFECT!!!
Distance: 4.0564 m