Assignment -4

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Project Name	Project -Smart farmer-IOT enabled smart Farming Application

Question:

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud.

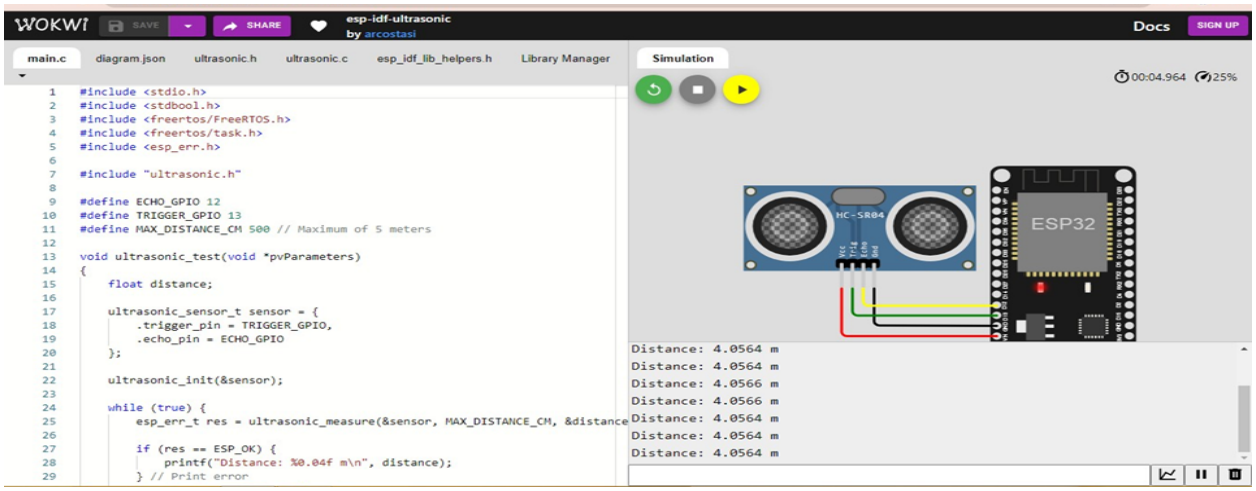
Code:

```
#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(&senso

    r); 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");

                        bre
                    ak;
                    default:
                        printf("%s\n", esp_err_to_name(res));
                }
            }

            vTaskDelay(pdMS_TO_TICKS(500));
        }
}


void app_main()

{

    xTaskCreate(ultrasonic_test, "ultrasonic_test",
 configMINIMAL_STACK_SIZE * 3, NULL, 5, NULL);

}
```

Output:


WOKWI
SAVE
SHARE
esp-idf-ultrasonic
by arcostasi
Docs
SIGN UP
main.c
diagram.json
ultrasonic.h
ultrasonic.c
esp_idf_lib_helpers.h
Library Manager
Simulation
00:04.964
25%
HC-SR04
ESP32
#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
Distance: 4.0564 m
Distance: 4.0564 m
Distance: 4.0566 m
Distance: 4.0566 m
Distance: 4.0564 m
Distance: 4.0564 m
Distance: 4.0564 m