ASSIGNMENT 4

Assignment date	20 oct 2022
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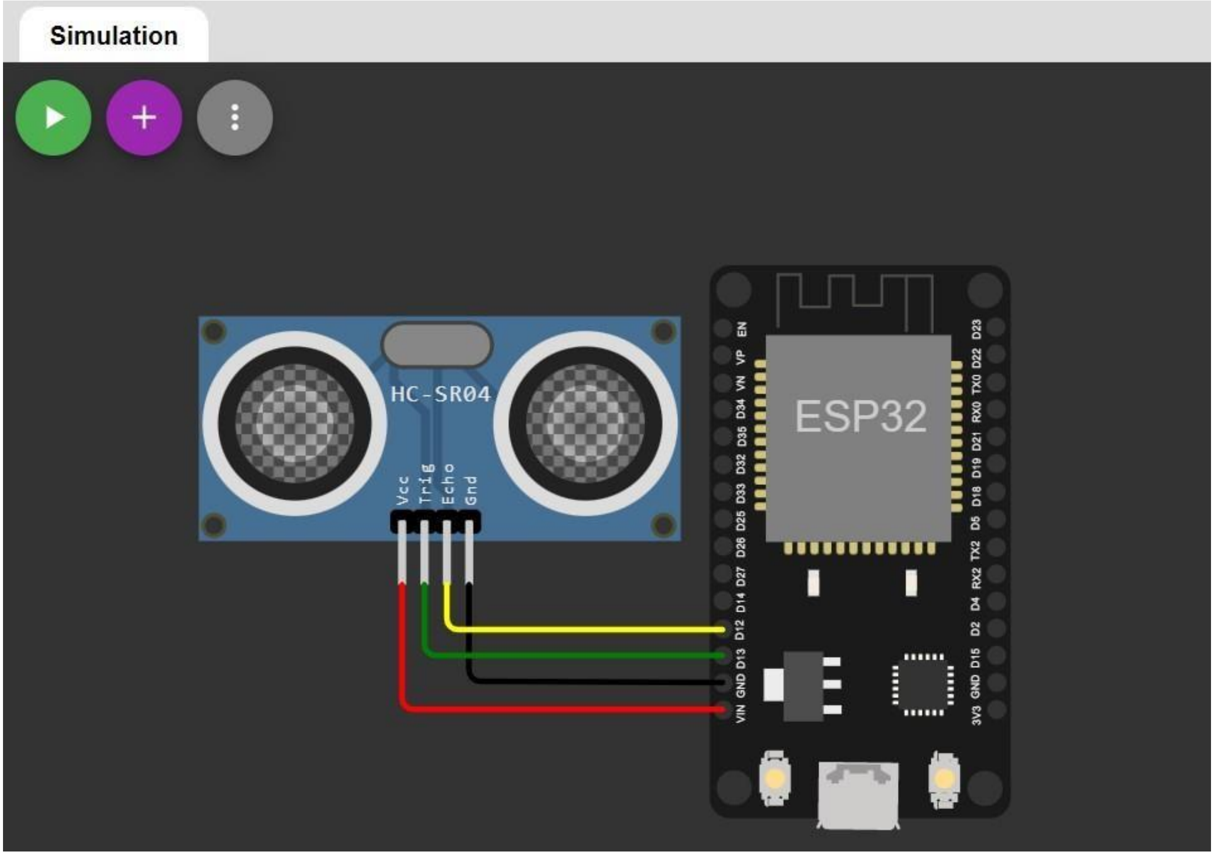
Marks	2 Marks

INPUT:



CODE:

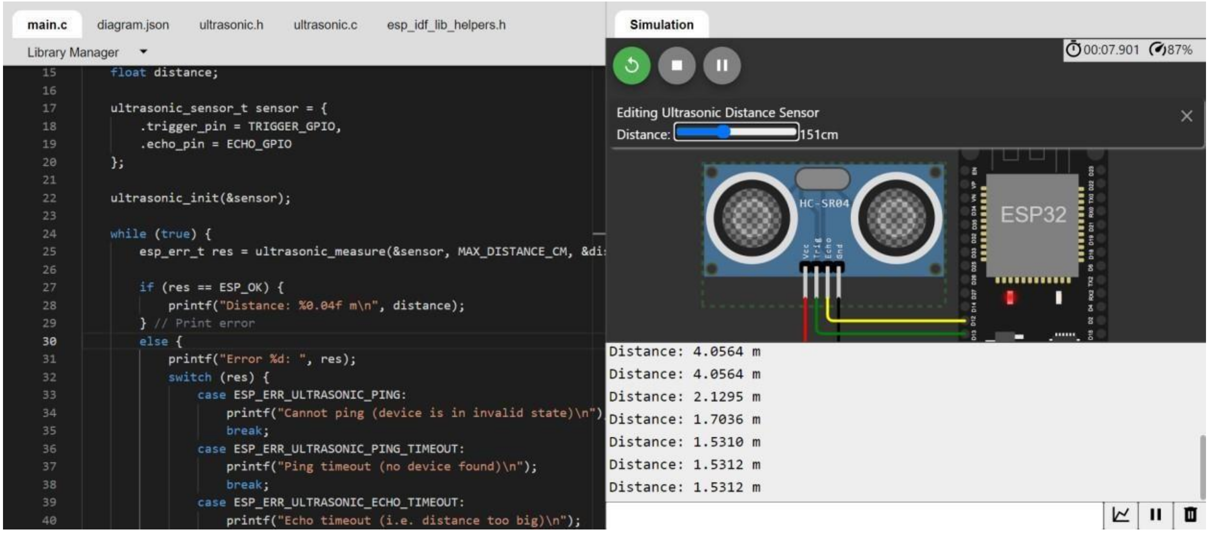
```
#include <stdio.h>

#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(&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:
```

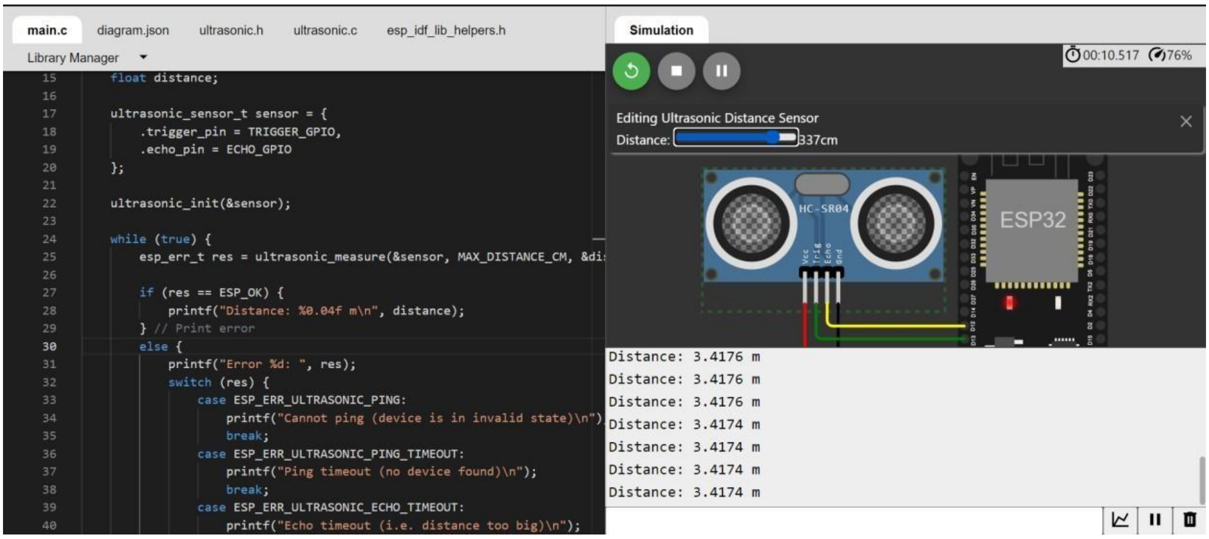
```
                printf("%s\n", esp_err_to_name(res));
            }
        }

        vTaskDelay(pdMS_TO_TICKS(500));
    }
}

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

<u>OUTPUT</u>:



```
    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, &di

        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");
```

```
Distance: 4.0564 m
Distance: 4.0564 m
Distance: 2.1295 m
Distance: 1.7036 m
Distance: 1.5310 m
Distance: 1.5312 m
Distance: 1.5312 m
```



```c
    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, &di

        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");
```

Editing Ultrasonic Distance Sensor

Distance: 337cm

```
Distance: 3.4176 m
Distance: 3.4176 m
Distance: 3.4176 m
Distance: 3.4174 m
Distance: 3.4174 m
Distance: 3.4174 m
Distance: 3.4174 m
```