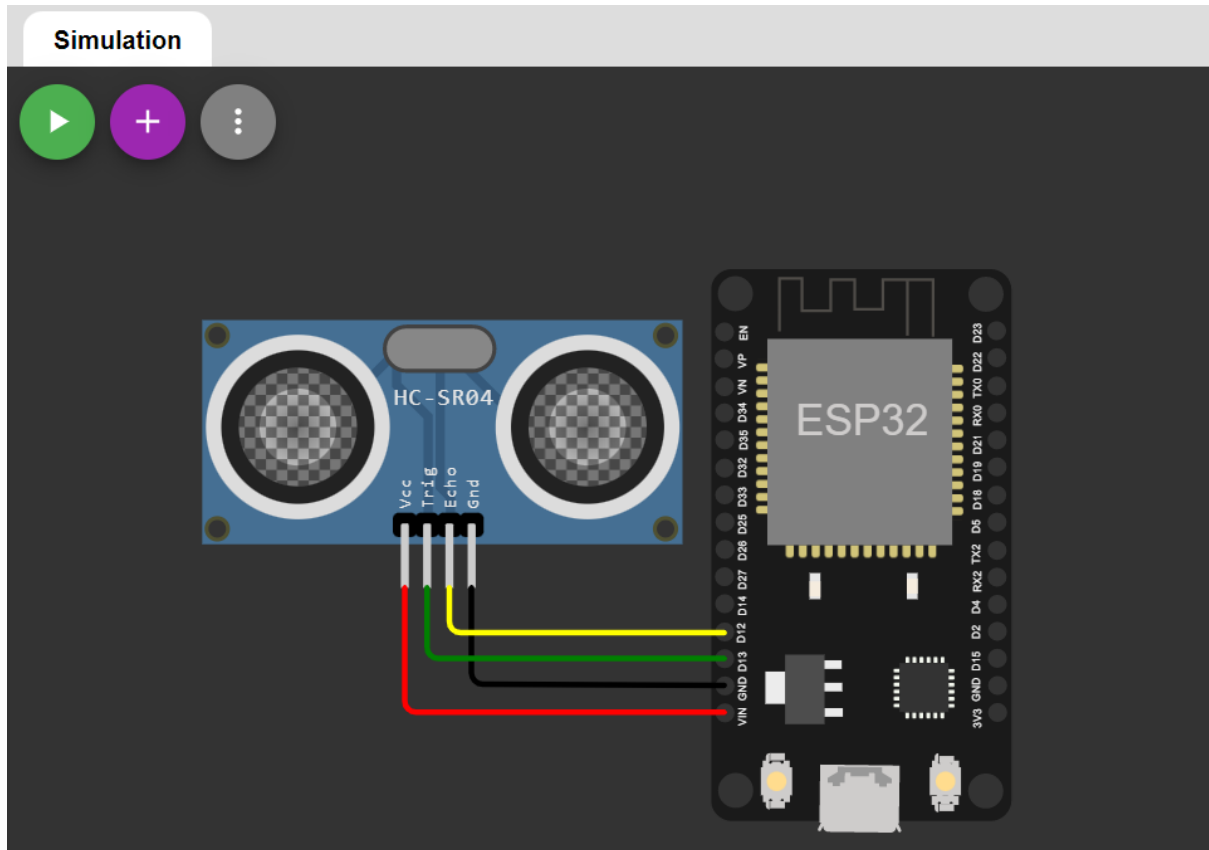


ASSIGNMENT 4

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;
            }
        }
    }
}

```

```

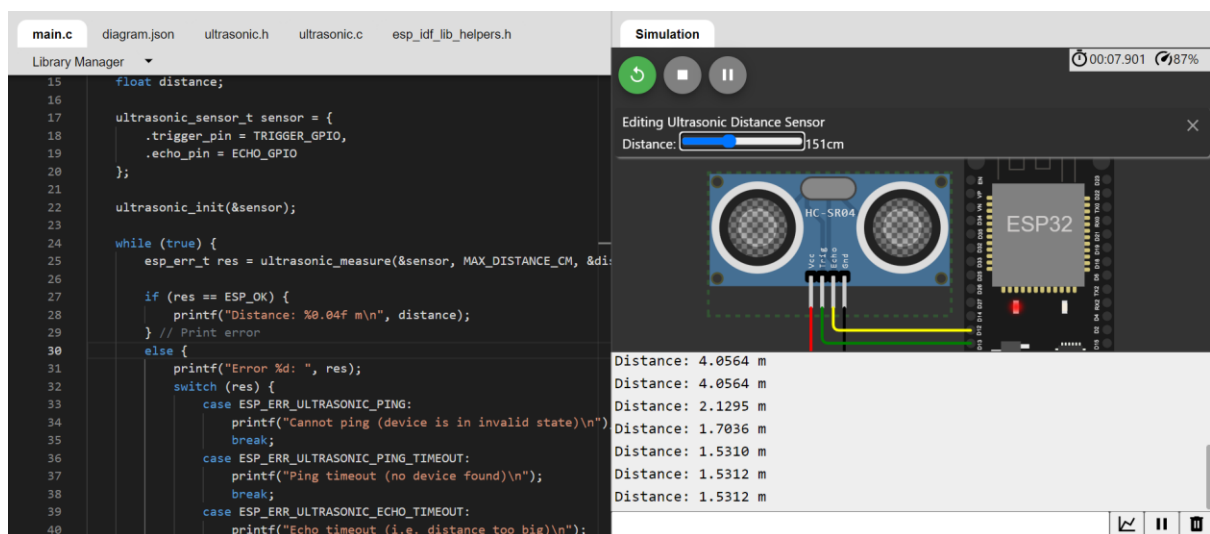
        case ESP_ERR_ULTRASONIC_ECHO_TIMEOUT:
            printf("Echo timeout (i.e. distance too big)\n");
            break;
        default:
            printf("%s\n", esp_err_to_name(res));
    }
}

vTaskDelay(pdMS_TO_TICKS(500));
}
}

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

```

OUTPUT:



main.cdiagram.jsonultrasonic.hultrasonic.cesp_idf_lib_helpers.h

Library Manager

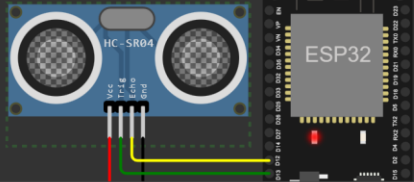
```
15 float distance;
16
17 ultrasonic_sensor_t sensor = {
18     .trigger_pin = TRIGGER_GPIO,
19     .echo_pin = ECHO_GPIO
20 };
21
22 ultrasonic_init(&sensor);
23
24 while (true) {
25     esp_err_t res = ultrasonic_measure(&sensor, MAX_DISTANCE_CM, &distance);
26
27     if (res == ESP_OK) {
28         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");
```

Simulation

00:10:51776%

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