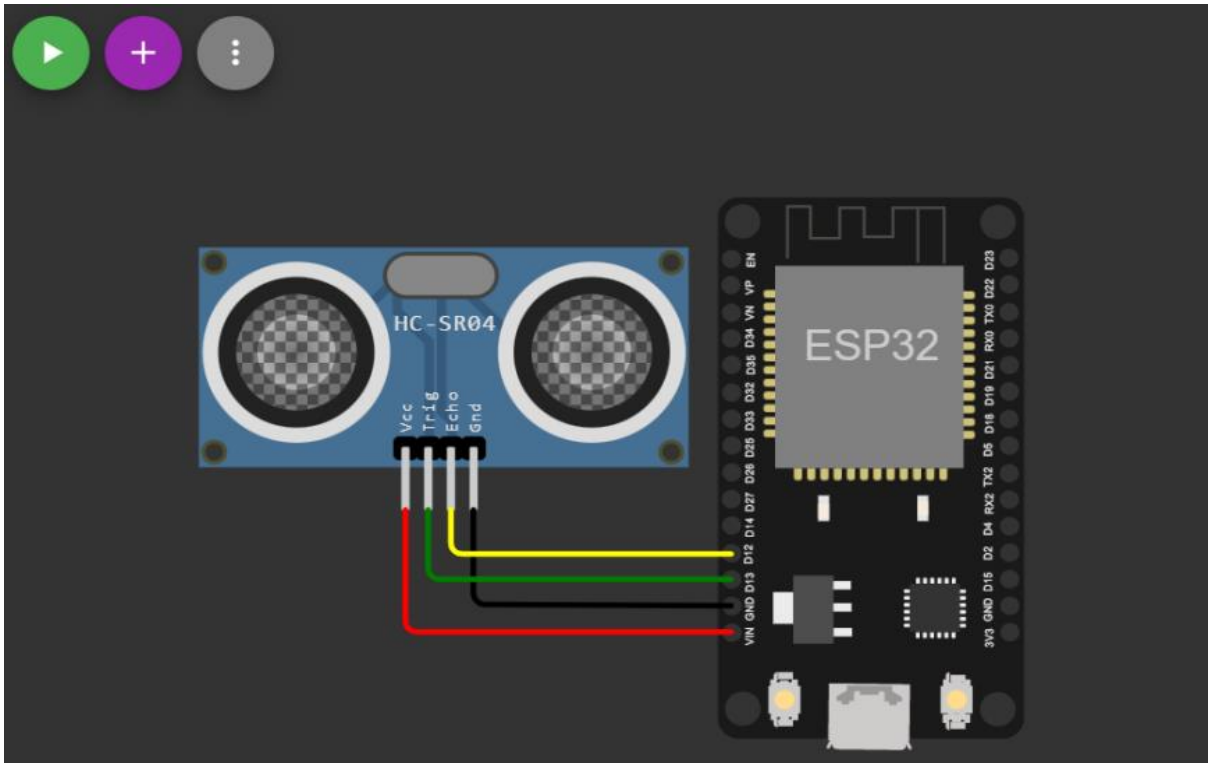
ASSIGNMENT 4

SIMULATION:

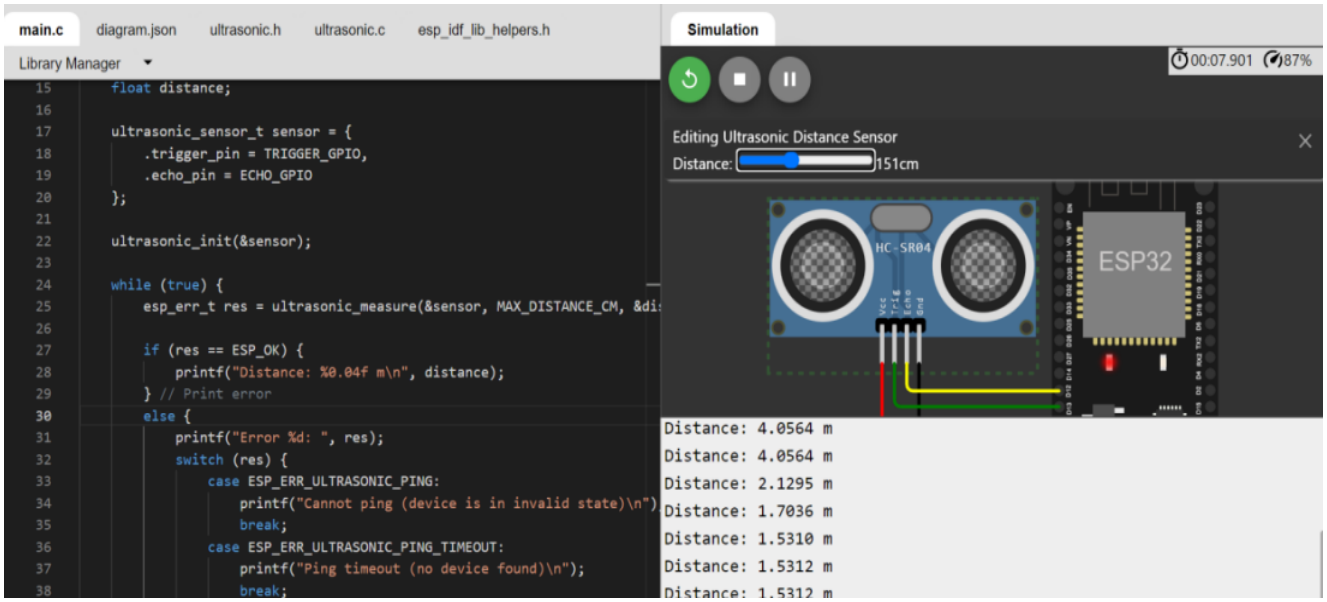


PROGRAM:

```
#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 100 // Maximum of 1 meter
void ultrasonic_test(void *pvParameters)
{
float dist;
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,
&dist);
if (res == ESP_OK) {
printf("Distance: %0.04f m\n", dist);
}
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 is very long)\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.c
diagram.json
ultrasonic.h
ultrasonic.c
esp_idf_lib_helpers.h
Library Manager
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;
Simulation
00:07.901
87%
Editing Ultrasonic Distance Sensor
Distance:
151cm
HC-SR04
ESP32
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