National Textile University, Faisalabad

Department of Computer Science

Name:	**Samar Khalid**
Class:	**BSCS-5B**
Registration No:	**23-NTU-CS-1091**
Lab Report:	**Week 6 Home task**
Course Name:	**Embedded IoT systems**
Submitted To:	**Sir Nasir Mahmood**
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Week 6

Home Task

Task: Use of DHT and LDR and Display on OLED

Code Screen Shot:

dht_ldr_oled > src > main.cpp > ...

```cpp
#include <Arduino.h>

#include <Wire.h>
#include <Adafruit_GFX.h>
#include <Adafruit_SSD1306.h>
#include <DHT.h>

// --- Pin configuration ---
#define DHTPIN 14        // DHT22 data pin
#define DHTTYPE DHT11    // Change to DHT11 if needed
#define LDR_PIN 34       // LDR analog input pin

#define SDA_PIN 21       // I2C SDA
#define SCL_PIN 22       // I2C SCL

// --- OLED setup ---
#define SCREEN_WIDTH 128
#define SCREEN_HEIGHT 64
Adafruit_SSD1306 display(SCREEN_WIDTH, SCREEN_HEIGHT, &Wire, -1);

// --- DHT sensor setup ---
DHT dht(DHTPIN, DHTTYPE);

// --- Setup function ---
void setup() {
  Serial.begin(115200);
  Serial.println("Hello, ESP32!");

```

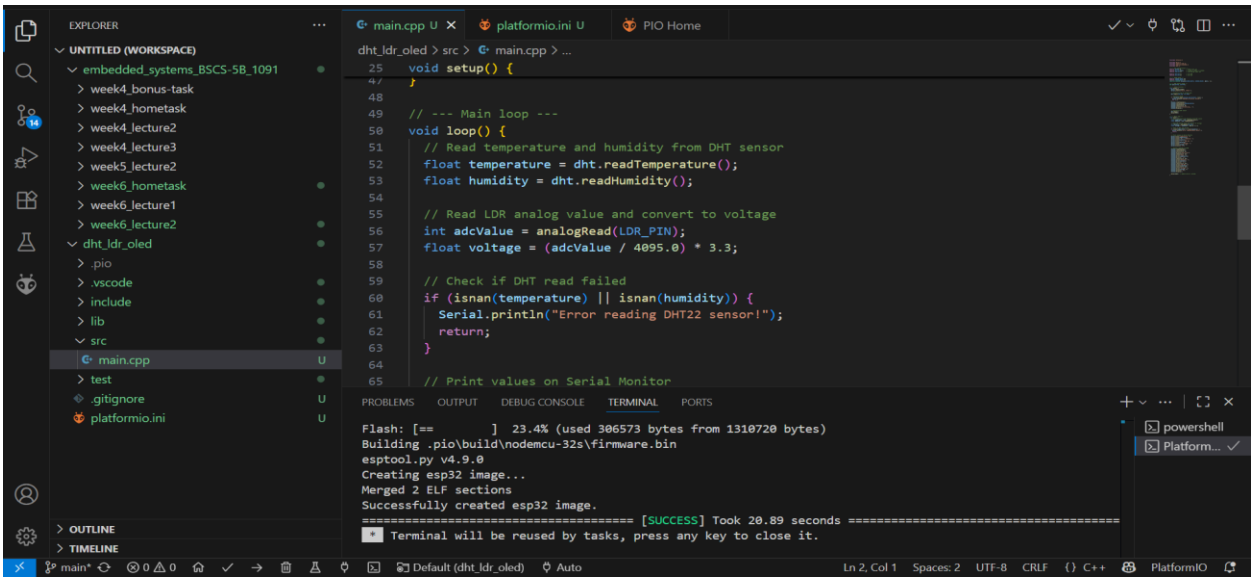
```
  // Initialize I2C on custom pins
  Wire.begin(SDA_PIN, SCL_PIN);

  // Initialize OLED
  if (!display.begin(SSD1306_SWITCHCAPVCC, 0x3C)) {
    Serial.println("SSD1306 allocation failed");
    for (;;);
  }
  display.clearDisplay();
  display.setTextColor(SSD1306_WHITE);
  display.setTextSize(1);
  display.setCursor(0, 0);
  display.println("Initializing...");
  display.display();

  // Initialize DHT sensor
  dht.begin();
  delay(1000);
}

// --- Main loop ---
void loop() {
  // Read temperature and humidity from DHT sensor
  float temperature = dht.readTemperature();
  float humidity = dht.readHumidity();

```

```
  // Read LDR analog value and convert to voltage
  int adcValue = analogRead(LDR_PIN);
  float voltage = (adcValue / 4095.0) * 3.3;

  // Check if DHT read failed
  if (isnan(temperature) || isnan(humidity)) {
    Serial.println("Error reading DHT22 sensor!");
    return;
  }

  // Print values on Serial Monitor
  Serial.print("Temperature: ");
  Serial.print(temperature);
  Serial.print(" °C  |  Humidity: ");
  Serial.print(humidity);
  Serial.print(" %  |  LDR ADC: ");
  Serial.print(adcValue);
  Serial.print("  |  Voltage: ");
  Serial.print(voltage, 2);
  Serial.println(" V");

  // Display readings on OLED
  display.clearDisplay();
  display.setTextSize(1);
  display.setCursor(0, 0);
  display.println("Hello IoT");
  display.setCursor(0, 16);
  display.print("Temp: ");
  display.print(temperature);
```

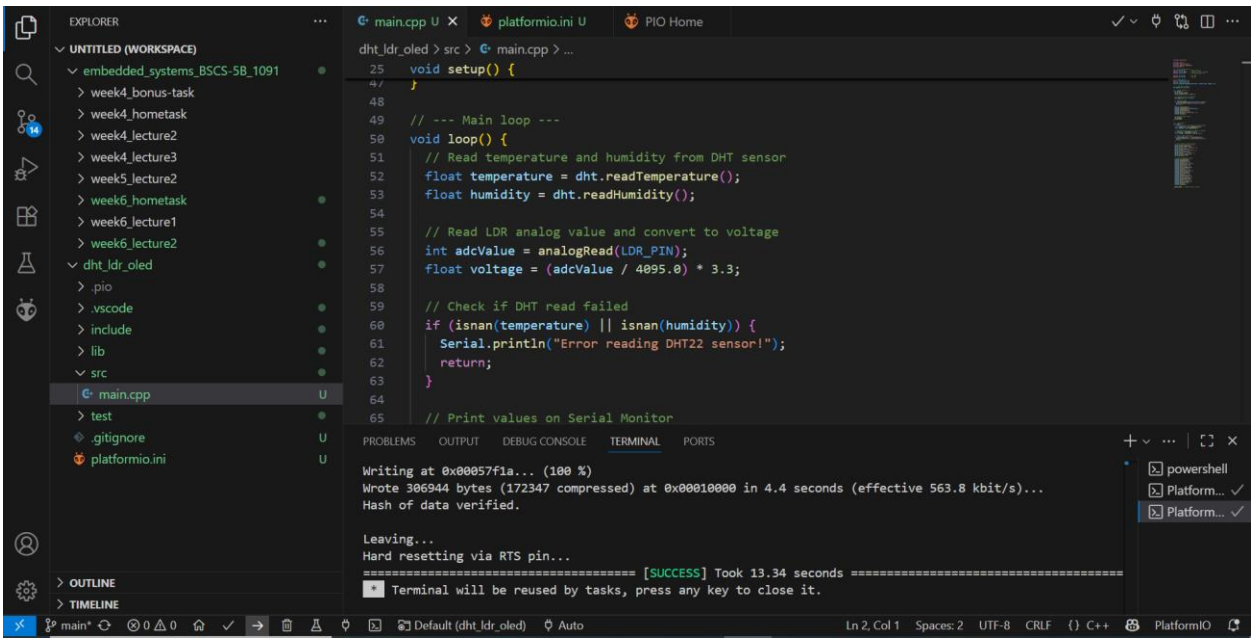
```
  // Display readings on OLED
  display.clearDisplay();
  display.setTextSize(1);
  display.setCursor(0, 0);
  display.println("Hello IoT");
  display.setCursor(0, 16);
  display.print("Temp: ");
  display.print(temperature);
  display.println(" C");
  display.setCursor(0, 28);
  display.print("Humidity: ");
  display.print(humidity);
  display.println(" %");
  display.setCursor(0, 40);
  display.print("LDR ADC: ");
  display.println(adcValue);
  display.setCursor(0, 52);
  display.print("Voltage: ");
  display.print(voltage, 2);
  display.println(" V");
  display.display();

  delay(2000); // update every 2 seconds
}
```

Vs Code work:

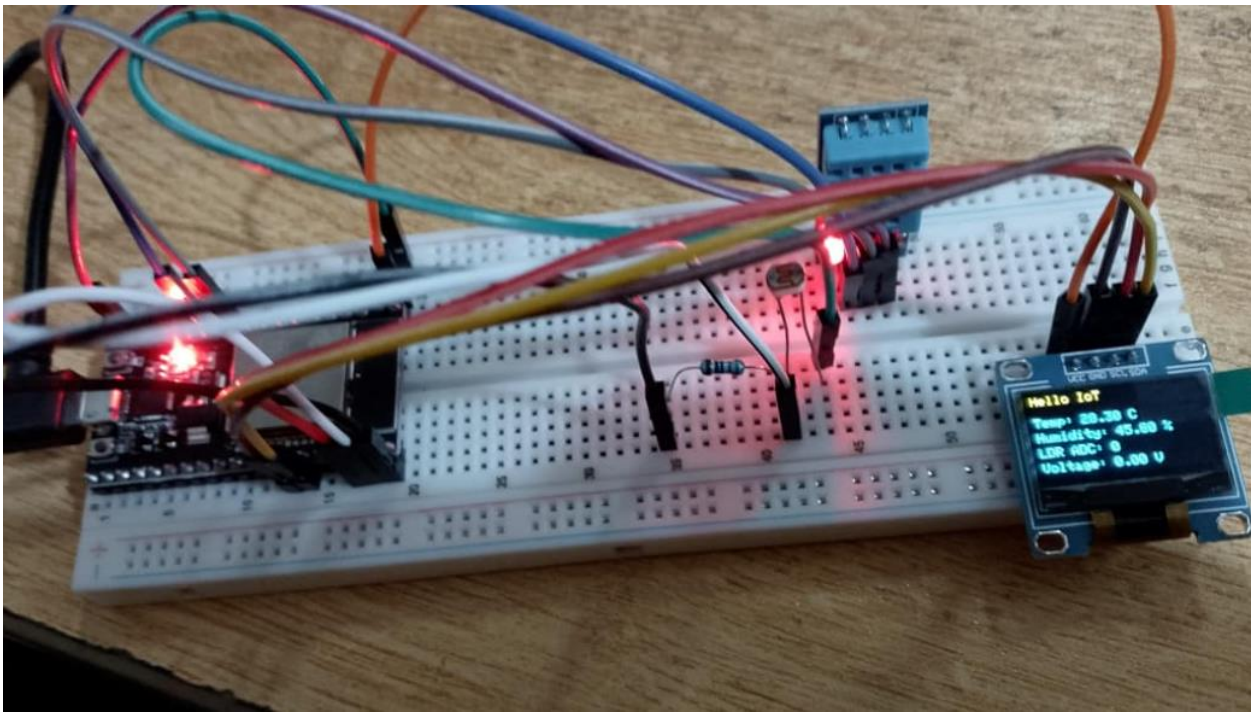
Build success:

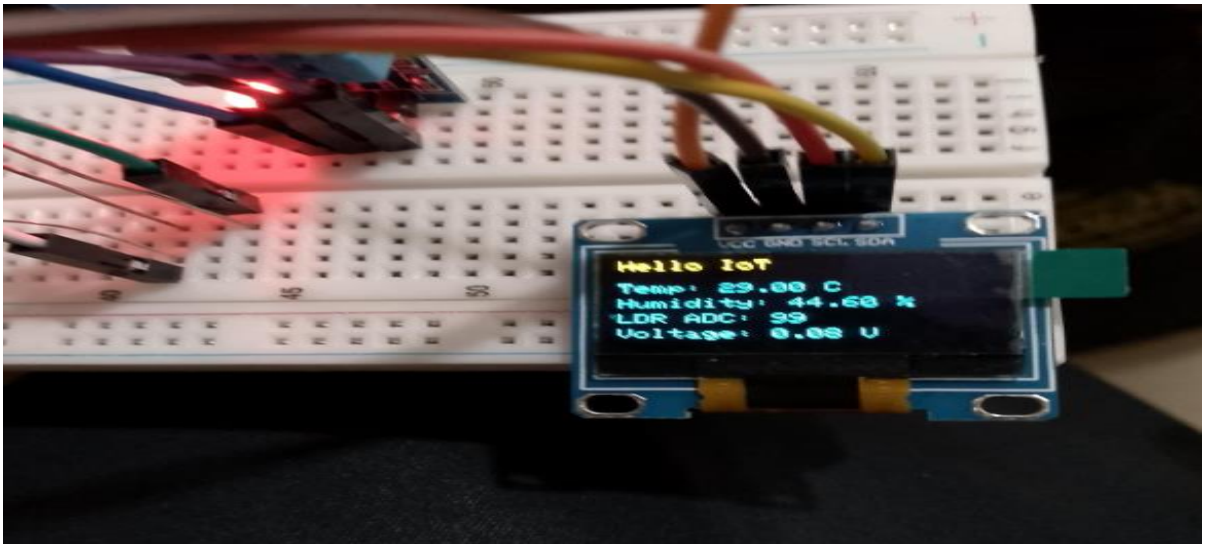


Upload success:



Output:





Pin map:

Device name	Device pin	Esp Pin
OLED	Vcc	3.3 v
OLED	SDA	GPIO21
OLED	SCL	GPIO22
OLED	GND	GND
DHT	Vcc	5v
DHT	Data	GPIO14
DHT	GND	GND
LDR	Pin1	3.3 v
LDR	Pin2	GND
Resistor 10k	Pin1	GND
Resistor10k	Pin2	GPIO26