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Lab Report:	Week 6 Home task
Course Name:	Embedded IoT systems
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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 > ...
1  #include <Arduino.h>
2
3  #include <Wire.h>
4  #include <Adafruit_GFX.h>
5  #include <Adafruit_SSD1306.h>
6  #include <DHT.h>
7
8  // --- Pin configuration ---
9  #define DHTPIN 14      // DHT22 data pin
10 #define DHTTYPE DHT11 // Change to DHT11 if needed
11 #define LDR_PIN 34     // LDR analog input pin
12
13 #define SDA_PIN 21      // I2C SDA
14 #define SCL_PIN 22     // I2C SCL
15
16 // --- OLED setup ---
17 #define SCREEN_WIDTH 128
18 #define SCREEN_HEIGHT 64
19 Adafruit_SSD1306 display(SCREEN_WIDTH, SCREEN_HEIGHT, &Wire, -1);
20
21 // --- DHT sensor setup ---
22 DHT dht(DHTPIN, DHTTYPE);
23
24 // --- Setup function ---
25 void setup() {
26     Serial.begin(115200);
27     Serial.println("Hello, ESP32!");
28 }
```

```

29 // Initialize I2C on custom pins
30 Wire.begin(SDA_PIN, SCL_PIN);
31
32 // Initialize OLED
33 if (!display.begin(SSD1306_SWITCHCAPVCC, 0x3C)) {
34     Serial.println("SSD1306 allocation failed");
35     for (;;);
36 }
37 display.clearDisplay();
38 display.setTextColor(SSD1306_WHITE);
39 display.setTextSize(1);
40 display.setCursor(0, 0);
41 display.println("Initializing...");
42 display.display();
43
44 // Initialize DHT sensor
45 dht.begin();
46 delay(1000);
47 }
48
49 // --- Main loop ---
50 void loop() {
51     // Read temperature and humidity from DHT sensor
52     float temperature = dht.readTemperature();
53     float humidity = dht.readHumidity();
54

```

```

55 // Read LDR analog value and convert to voltage
56 int adcValue = analogRead(LDR_PIN);
57 float voltage = (adcValue / 4095.0) * 3.3;
58
59 // Check if DHT read failed
60 if (isnan(temperature) || isnan(humidity)) {
61     Serial.println("Error reading DHT22 sensor!");
62     return;
63 }
64
65 // Print values on Serial Monitor
66 Serial.print("Temperature: ");
67 Serial.print(temperature);
68 Serial.print(" °C | Humidity: ");
69 Serial.print(humidity);
70 Serial.print(" % | LDR ADC: ");
71 Serial.print(adcValue);
72 Serial.print(" | Voltage: ");
73 Serial.print(voltage, 2);
74 Serial.println(" V");
75
76 // Display readings on OLED
77 display.clearDisplay();
78 display.setTextSize(1);
79 display.setCursor(0, 0);
80 display.println("Hello IoT");
81 display.setCursor(0, 16);
82 display.print("Temp: ");
83 display.print(temperature);

```

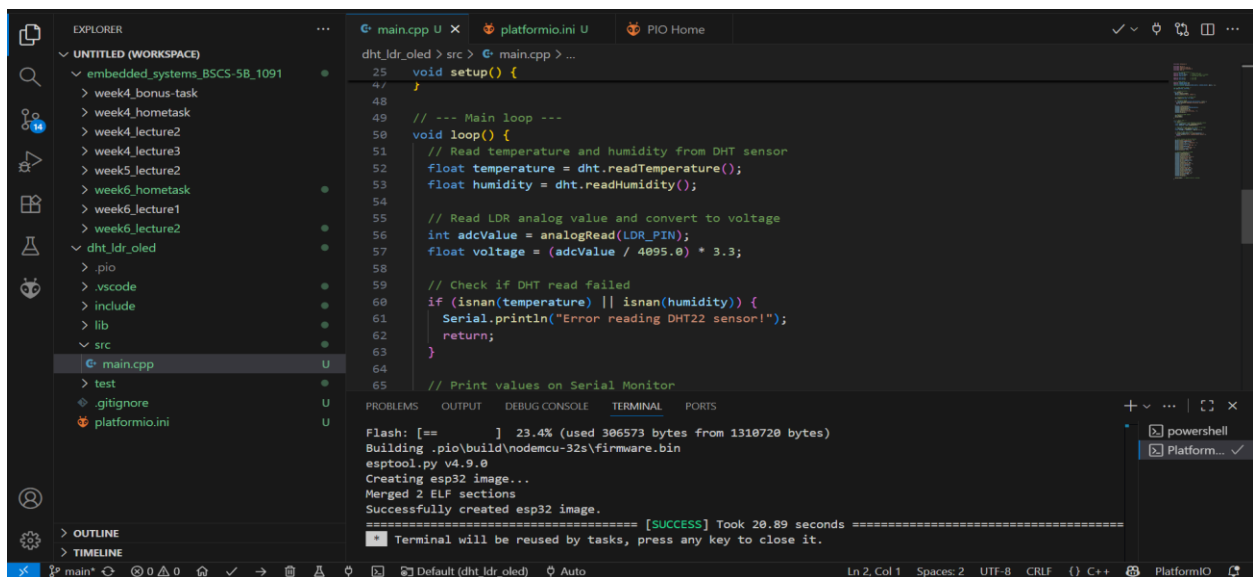
```

76 // Display readings on OLED
77 display.clearDisplay();
78 display.setTextSize(1);
79 display.setCursor(0, 0);
80 display.println("Hello IoT");
81 display.setCursor(0, 16);
82 display.print("Temp: ");
83 display.print(temperature);
84 display.println(" C");
85 display.setCursor(0, 28);
86 display.print("Humidity: ");
87 display.print(humidity);
88 display.println(" %");
89 display.setCursor(0, 40);
90 display.print("LDR ADC: ");
91 display.println(adcValue);
92 display.setCursor(0, 52);
93 display.print("Voltage: ");
94 display.print(voltage, 2);
95 display.println(" V");
96 display.display();
97
98 delay(2000); // update every 2 seconds
99 }

```

Vs Code work:

Build success:



Upload success:

```
25 void setup() {  
47 }  
48  
49 // --- Main loop ---  
50 void loop() {  
51 // Read temperature and humidity from DHT sensor  
52 float temperature = dht.readTemperature();  
53 float humidity = dht.readHumidity();  
54  
55 // Read LDR analog value and convert to voltage  
56 int adcValue = analogRead(LDR_PIN);  
57 float voltage = (adcValue / 4095.0) * 3.3;  
58  
59 // Check if DHT read failed  
60 if (isnan(temperature) || isnan(humidity)) {  
61 Serial.println("Error reading DHT22 sensor!");  
62 return;  
63 }  
64  
65 // Print values on Serial Monitor
```

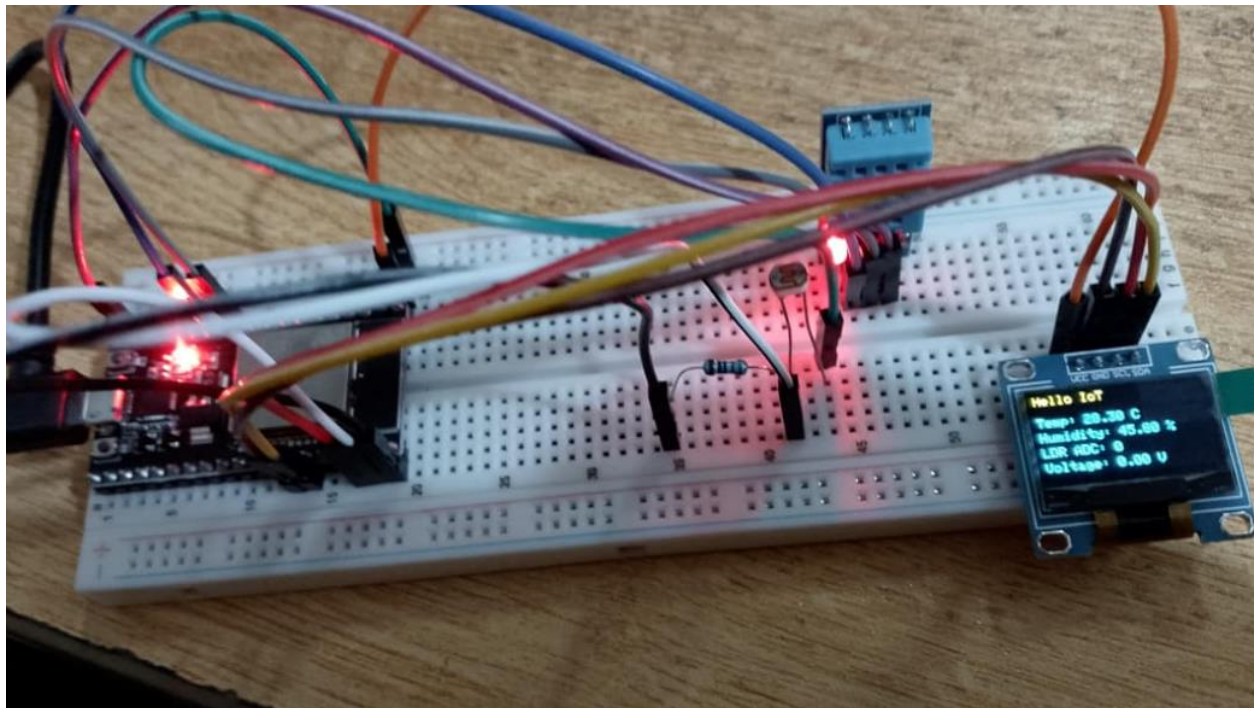
Writing at 0x00057f1a... (100 %)
Wrote 386944 bytes (172347 compressed) at 0x00010000 in 4.4 seconds (effective 563.8 kbit/s)...
Hash of data verified.

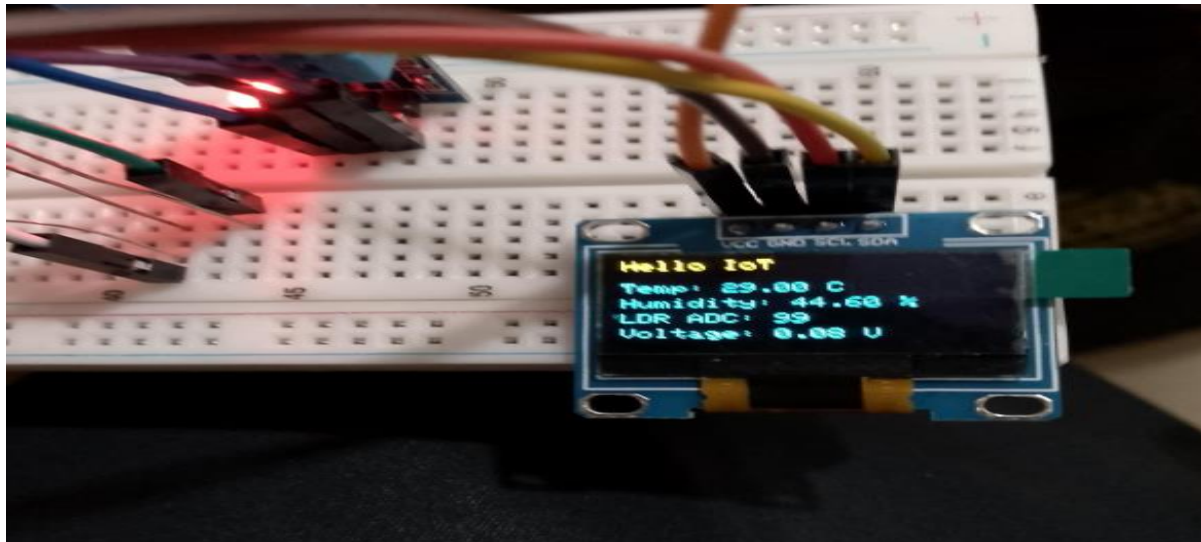
Leaving...
Hard resetting via RTS pin...

[SUCCESS] Took 13.34 seconds

Terminal will be reused by tasks, press any key to close it.

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

