SOLAR TRACKER

```cpp
#include <Servo.h>

#include <DHT.h>

#include <LiquidCrystal.h>

// Pin definitions

#define LDR_LEFT A0

#define LDR_RIGHT A1

#define LDR_TOP A2

#define LDR_BOTTOM A3

#define DHTPIN 8 // Pin for DHT sensor

#define DHTTYPE DHT11

#define RAIN_SENSOR A4

#define SERVO_PIN 9

#define MOTOR_PIN1 2 // L293D motor pin 1

#define MOTOR_PIN2 3 // L293D motor pin 2

#define ENABLE_PIN 5 // L293D enable pin

// LCD pin configuration: RS, EN, D4, D5, D6, D7

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

// Create DHT sensor instance

DHT dht(DHTPIN, DHTTYPE);

// Create servo object

Servo verticalServo;

// Variables for light intensity comparison

int threshold = 30; // Define a threshold for light difference

void setup() {

 // Initialize pins

 pinMode(LDR_LEFT, INPUT);

 pinMode(LDR_RIGHT, INPUT);

 pinMode(LDR_TOP, INPUT);
```

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  pinMode(LDR_BOTTOM, INPUT);

  pinMode(RAIN_SENSOR, INPUT);

  pinMode(MOTOR_PIN1, OUTPUT);

  pinMode(MOTOR_PIN2, OUTPUT);

  pinMode(ENABLE_PIN, OUTPUT);

  verticalServo.attach(SERVO_PIN);

  // Initialize LCD

  lcd.begin(16, 2);

  // Start DHT sensor

  dht.begin();

  // Set motor speed

  analogWrite(ENABLE_PIN, 200); // Moderate speed

  lcd.print("Solar Tracker");

}

void loop() {

  int lightLeft = analogRead(LDR_LEFT);

  int lightRight = analogRead(LDR_RIGHT);

  int lightTop = analogRead(LDR_TOP);

  int lightBottom = analogRead(LDR_BOTTOM);

  // Horizontal movement based on LDR comparison (left and right)

  if (abs(lightLeft - lightRight) > threshold) {

    if (lightLeft > lightRight) {

      moveMotorLeft();

    } else {

      moveMotorRight();

    }

  } else {

    stopMotor();

  }

  // Vertical movement based on LDR comparison (top and bottom)

  if (abs(lightTop - lightBottom) > threshold) {
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    if (lightTop > lightBottom) {

      verticalServo.write(verticalServo.read() + 1); // Move up

    } else {

      verticalServo.write(verticalServo.read() - 1); // Move down

    }

  }

  // Read temperature, humidity, and rain sensor

  float temperature = dht.readTemperature();

  float humidity = dht.readHumidity();

  int rain = analogRead(RAIN_SENSOR);

  // Display sensor data on LCD

  lcd.setCursor(0, 1);

  lcd.print("Temp: ");

  lcd.print(temperature);

  lcd.print("C");

  lcd.setCursor(0, 2);

  lcd.print("Humidity: ");

  lcd.print(humidity);

  lcd.print("%");

  if (rain < 500) {

    lcd.setCursor(0, 3);

    lcd.print("Rain Detected");

  } else {

    lcd.setCursor(0, 3);

    lcd.print("No Rain ");

  }

  delay(1000);

}

void moveMotorLeft() {

  digitalWrite(MOTOR_PIN1, HIGH);

  digitalWrite(MOTOR_PIN2, LOW);
```

```
}
void moveMotorRight() {
  digitalWrite(MOTOR_PIN1, LOW);
  digitalWrite(MOTOR_PIN2, HIGH);
}
void stopMotor() {
  digitalWrite(MOTOR_PIN1, LOW);
  digitalWrite(MOTOR_PIN2, LOW);
}
```