

```
#include <DHT.h>
#include <Servo.h>
#include <Stepper.h>
```

```
// --- Pin Definitions ---
```

```
#define DHTPIN 2 // Digital pin connected to the
DHT11 signal pin
```

```
#define DHTTYPE DHT11 // DHT 11 sensor
model
```

```
const int GREEN_LED_PIN = 5;
```

```
const int RED_LED_PIN = 6;
```

```
const int SERVO_PIN = 9;
```

```
const int LIGHT_SENSOR_PIN = A1;
```

```
// --- Thresholds ---
```

```
// Adjust these based on your setup
requirements
```

```
const float TEMP_HIGH_THRESHOLD = 30.0; //
```

```
Trigger alert/stepper if Temp exceeds 30°C
```

```
const int LIGHT_HIGH_THRESHOLD = 700; //
```

Trigger servo if light reading is ABOVE this

```
// --- Initialize DHT Sensor ---
```

```
DHT dht(DHTPIN, DHTTYPE);
```

```
// --- Stepper Motor Config ---
```

```
const int STEPS_PER_REV = 2048; // Standard  
28BYJ-48 stepper
```

```
Stepper myStepper(STEPS_PER_REV, 8, 10, 9,  
11);
```

```
// --- Servo Motor Object ---
```

```
Servo myServo;
```

```
void setup() {
```

```
Serial.begin(9600);
```

```
// Initialize DHT11
```

```
dht.begin();
```

```
// Initialize LEDs & Sensors
```

```
pinMode(GREEN_LED_PIN, OUTPUT);
```

```
pinMode(RED_LED_PIN, OUTPUT);
```

```
pinMode(LIGHT_SENSOR_PIN, INPUT);
```

```
// Initialize Servo
```

```
myServo.attach(SERVO_PIN);
```

```
myServo.write(0); // Set initial position to 0  
degrees
```

```
// Initialize Stepper
```

```
myStepper.setSpeed(10);
```

```
}
```

```
void loop() {
```

```
// Read Temperature (°C) and Humidity (%) from  
DHT11
```

```
float tempC = dht.readTemperature();
```

```
float humidity = dht.readHumidity();
```

```
// Read Light level from LDR
int lightValue =
analogRead(LIGHT_SENSOR_PIN);

// Check if DHT reading failed
if (isnan(tempC) || isnan(humidity)) {
Serial.println(F("Failed to read from DHT
sensor!"));
return;
}

// Conditions
bool isTempHigh = (tempC >
TEMP_HIGH_THRESHOLD);
bool isLightHigh = (lightValue >
LIGHT_HIGH_THRESHOLD);

// --- Actuator Logic ---
```

```
// Move stepper motor if temperature is high
if (isTempHigh) {
  myStepper.step(100);
}
```

```
// Move servo to 90 degrees if light is high,
otherwise 0 degrees
if (isLightHigh) {
  myServo.write(90);
} else {
  myServo.write(0);
}
```

```
// --- LED Status Logic ---
```

```
// RED LED if ANY condition is wrong (high temp
OR high light)
if (isTempHigh || isLightHigh) {
  digitalWrite(RED_LED_PIN, HIGH);
  digitalWrite(GREEN_LED_PIN, LOW);
}
```

```
}  
  
// GREEN LED if ALL conditions are OK  
else {  
    digitalWrite(GREEN_LED_PIN, HIGH);  
    digitalWrite(RED_LED_PIN, LOW);  
}
```

```
    delay(2000); // DHT11 requires at least a 2-  
    second delay between readings  
}
```