



DUAL AXIS SOLAR TRACKER

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OBJECTIVE:

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- *WHAT IS DUEL AXIS SOLAR TRACKER
- *APPLICATION
- *IMPORTANCE
- *COMPONENTS
- *SOURCE CODE
- *COCLUSION

INTRODUCTION :

! The dual-axis tracking device tracks the sun to collect more solar energy.

! According to the type of axis, the dual-axis tracking device can be divided into two types

- *polar-axis tracking

- *altitude–azimuth tracking.

! Polar-axis tracking is also called spinning-elevation tracking .

WHAT IS DUAL AXIS SOLAR TRACKER :

A dual-axis solar tracking system using Arduino is a mechanism designed to automatically orient a solar panel or solar collector to continuously face the sun throughout the day.

By tracking the sun's position, these systems optimize the amount of solar energy captured, thereby increasing the overall efficiency of solar power generation.

The "dual-axis" aspect refers to the system's ability to adjust both the azimuth (horizontal) and elevation (vertical) angles of the solar panel.

APPLICATION :

Dual-axis solar trackers have several applications in the field of solar energy generation and can be particularly useful in situations where maximizing energy production is critical.

- * Residential Solar Systems
- * Commercial and Industrial Solar Installations
- * Educational and Demonstration Projects
- * Solar-Powered Water Pumping:

IMPORTANCE :

The primary importance of dual-axis solar trackers is their ability to significantly increase the energy production of solar installations.

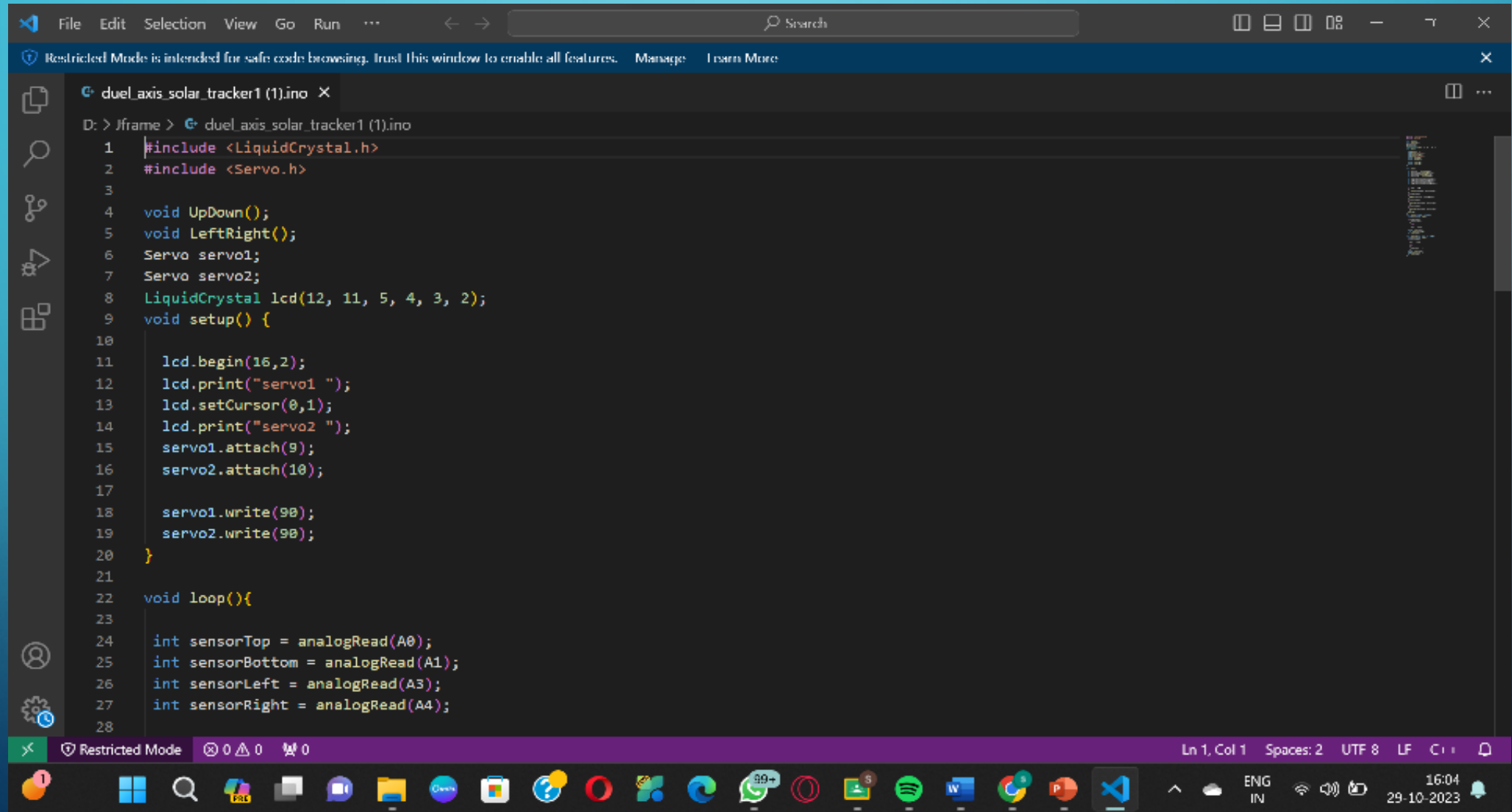
By continuously orienting solar panels or collectors to face the sun, these trackers can capture more solar energy throughout the day and across seasons.

This results in higher energy yields and improved system efficiency.

COMPONENTS:

- Arduino uno R3
- Bread board small
- Photoresistor
- Resistor
- Solar cell
- Micro servo

SOURCE CODE



```
1 #include <LiquidCrystal.h>
2 #include <Servo.h>
3
4 void UpDown();
5 void LeftRight();
6 Servo servo1;
7 Servo servo2;
8 LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
9 void setup() {
10
11     lcd.begin(16,2);
12     lcd.print("servo1 ");
13     lcd.setCursor(0,1);
14     lcd.print("servo2 ");
15     servo1.attach(9);
16     servo2.attach(10);
17
18     servo1.write(90);
19     servo2.write(90);
20 }
21
22 void loop(){
23
24     int sensorTop = analogRead(A0);
25     int sensorBottom = analogRead(A1);
26     int sensorLeft = analogRead(A3);
27     int sensorRight = analogRead(A4);
28 }
```

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duel_axis_solar_tracker1 (1).ino

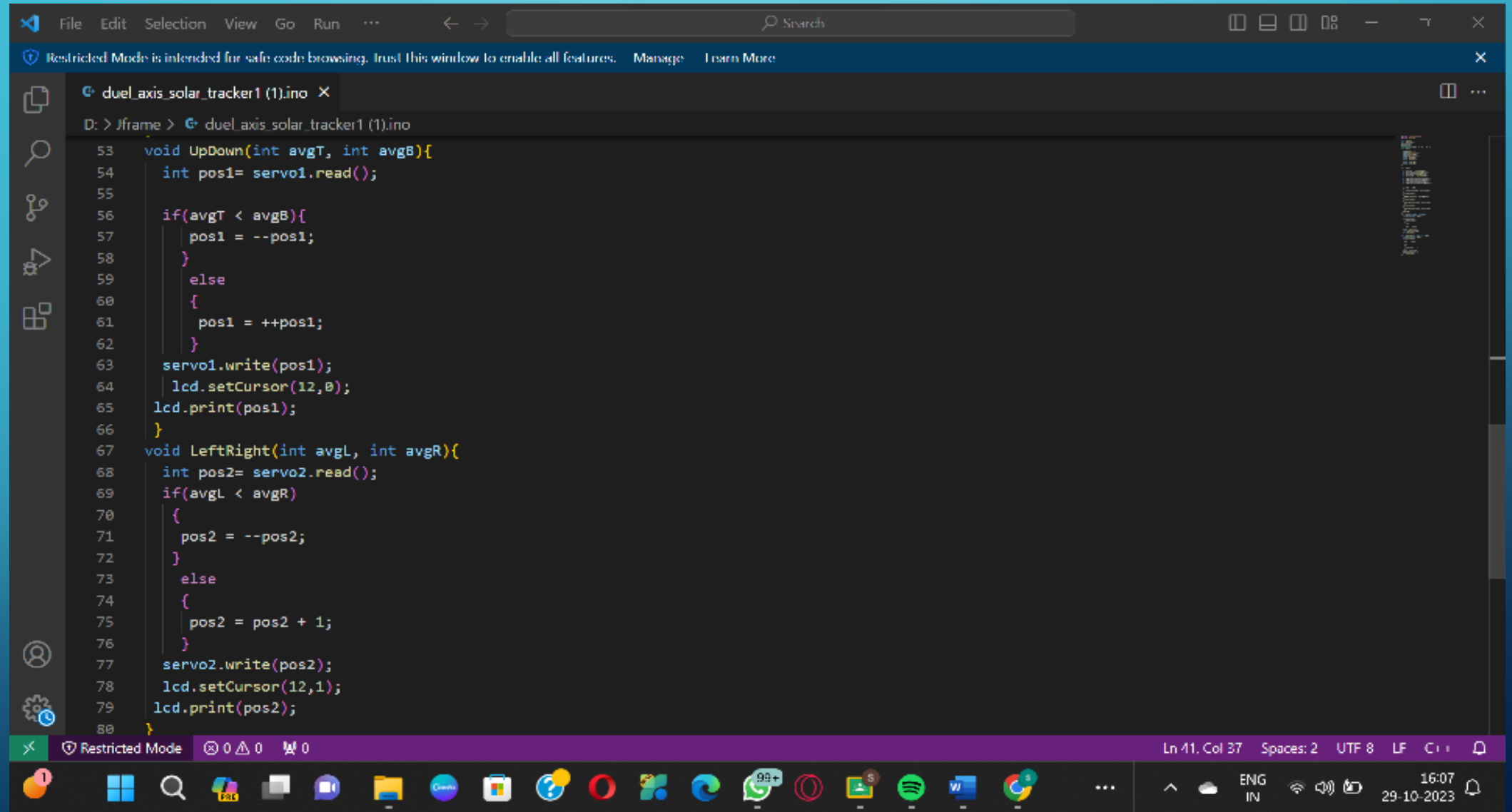
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```
22 void loop(){
23
24   int sensorTop = analogRead(A0);
25   int sensorBottom = analogRead(A1);
26   int sensorLeft = analogRead(A3);
27   int sensorRight = analogRead(A4);
28
29   int avgT=(sensorTop+sensorBottom)/2;
30   int avgB=(sensorLeft+sensorRight)/2;
31   int avgL=(sensorTop+sensorLeft)/2;
32   int avgR=(sensorBottom+sensorRight)/2;
33
34
35   if (avgT > avgB)
36   {
37     UpDown(sensorTop, sensorBottom);
38   }
39   if(avgT < avgB)
40   {
41     UpDown(sensorTop, sensorBottom);
42   }
43   if(avgL > avgR)
44   {
45     LeftRight(sensorLeft, sensorRight);
46   }
47   if(avgL < avgR)
48   {
49     LeftRight(sensorLeft, sensorRight);
```

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CONCLUSION:

Dual-axis solar trackers are important and beneficial components of solar energy systems due to their ability to maximize energy production, increase the efficiency of solar installations, and offer a range of advantages across various applications.

These trackers continuously adjust the orientation of solar panels or collectors to follow the sun's path in both the horizontal (azimuth) and vertical (elevation) directions



THANK YOU