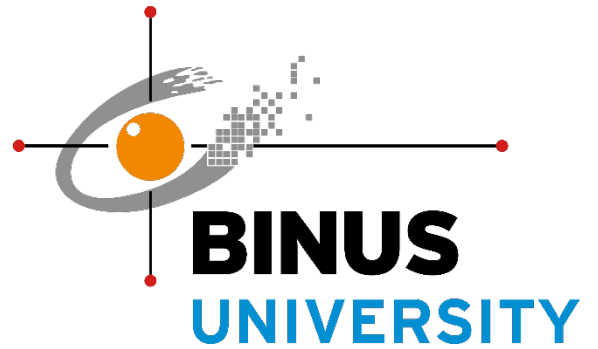
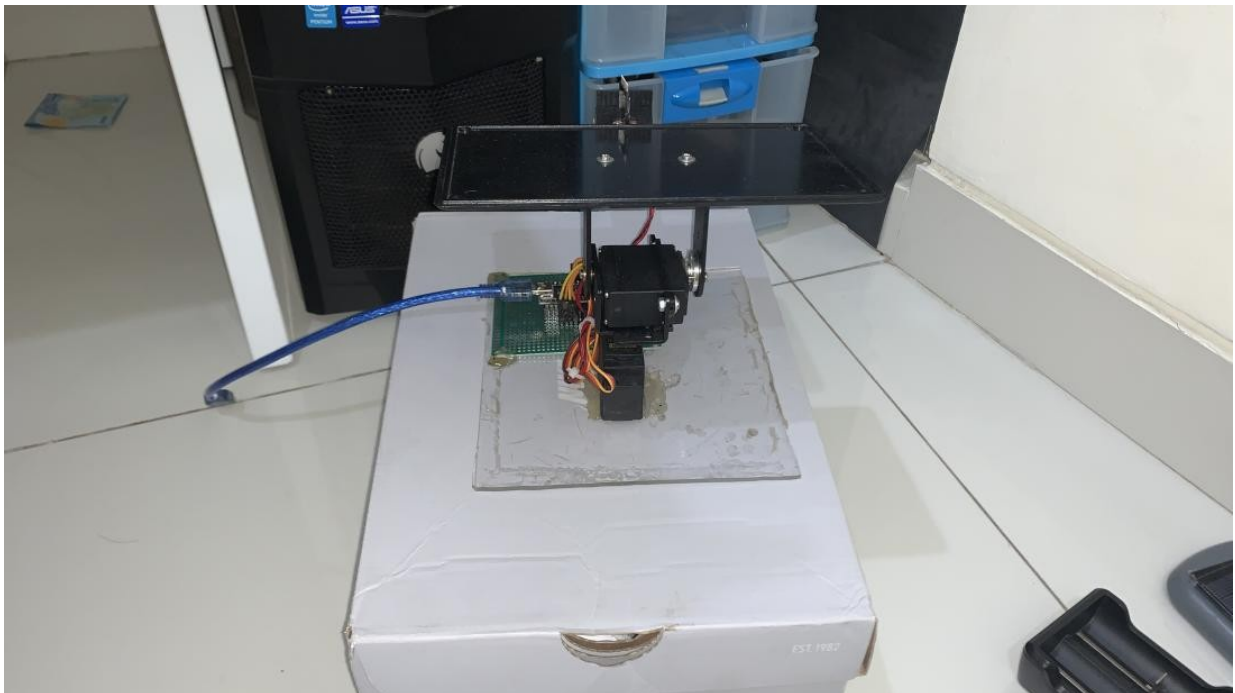


# Solar Panel Tracker



Made by :

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**Step 1 :**

Prepare a base or foundation for the Solar Panel tracker such as the picture above, Prepare Arduino for the base of coding we used in this product

**Step 2 :**

Secondly, Prepare Servo Motor for the movement of the solar panel

**Step 3 :** After we do the step before. Set the code to the Arduino as below

```
// include Servo library
#include <Servo.h>
// horizontal servo
Servo horizontal;
int servoh = 90;
int servohLimitHigh = 115;
int servohLimitLow = 0;
// vertical servo
Servo vertical;
int servov = 90;
int servovLimitHigh = 95;
int servovLimitLow = 0;
// LDR pin connections
int ldrTR = A0; // LDR top right
int ldrTL = A1; // LDR top left
int ldrBL = A2; // LDR bottom left
int ldrBR = A3; // LDR bottom right
void setup() {
  Serial.begin(9600);
  horizontal.attach(5);
  vertical.attach(6);
  horizontal.write(0);
  vertical.write(0);
  delay(3000);
}
```

```
void loop() {

    int tr = analogRead(ldrTR); // top right
    int tl = analogRead(ldrTL); // top left
    int br = analogRead(ldrBR); // bottom right
    int bl = analogRead(ldrBL); // bottom left

    int dtime = 0; // change for debugging only
    int tol = 25; // high tolerance high intensity

    int avt = (tl + tr) / 2; // average value top
    int avd = (bl + br) / 2; // average value bottom
    int avl = (tl + bl) / 2; // average value left
    int avr = (tr + br) / 2; // average value right

    int dvert = avt - avd; // check the difference of up and down
    int dhoriz = avl - avr; // check the difference of left and right

    // send data to the serial monitor if desired
    Serial.print(tl);
    Serial.print(" ");
    Serial.print(tr);
    Serial.print(" ");
    Serial.print(bl);
    Serial.print(" ");
    Serial.print(br);
    Serial.print("  ");
    Serial.print(avt);
    Serial.print(" ");
    Serial.print(avd);
    Serial.print(" ");
    Serial.print(avl);
    Serial.print(" ");
    Serial.print(avr);
    Serial.print("  ");
    Serial.print(dtime);
    Serial.print(" ");
```

```
Serial.print(tol);  
Serial.print(" ");  
Serial.print(servov);  
Serial.print(" ");  
Serial.print(servoh);  
Serial.println(" ");
```

```
// check if the difference is in the tolerance else change vertical angle
```

```
if (-1 * tol > dvert || dvert > tol) {  
  if (avt < avd) {  
    servov = ++servov;  
    if (servov > servovLimitHigh) {  
      servov = servovLimitHigh;  
    }  
  }  
  else if (avt > avd) {  
    servov = --servov;  
    if (servov < servovLimitLow) {  
      servov = servovLimitLow;  
    }  
  }  
  vertical.write(servov);  
}
```

```
// check if the difference is in the tolerance else change horizontal angle
```

```
if (-1 * tol > dhoriz || dhoriz > tol) {  
  if (avl > avr) {  
    servoh = --servoh;  
    if (servoh < servohLimitLow) {  
      servoh = servohLimitLow;  
    }  
  }  
  else if (avl < avr) {  
    servoh = ++servoh;  
    if (servoh > servohLimitHigh) {  
      servoh = servohLimitHigh;  
    }  
  }  
}
```

```

}

horizontal.write(servoh);

}

delay(dtime);

}

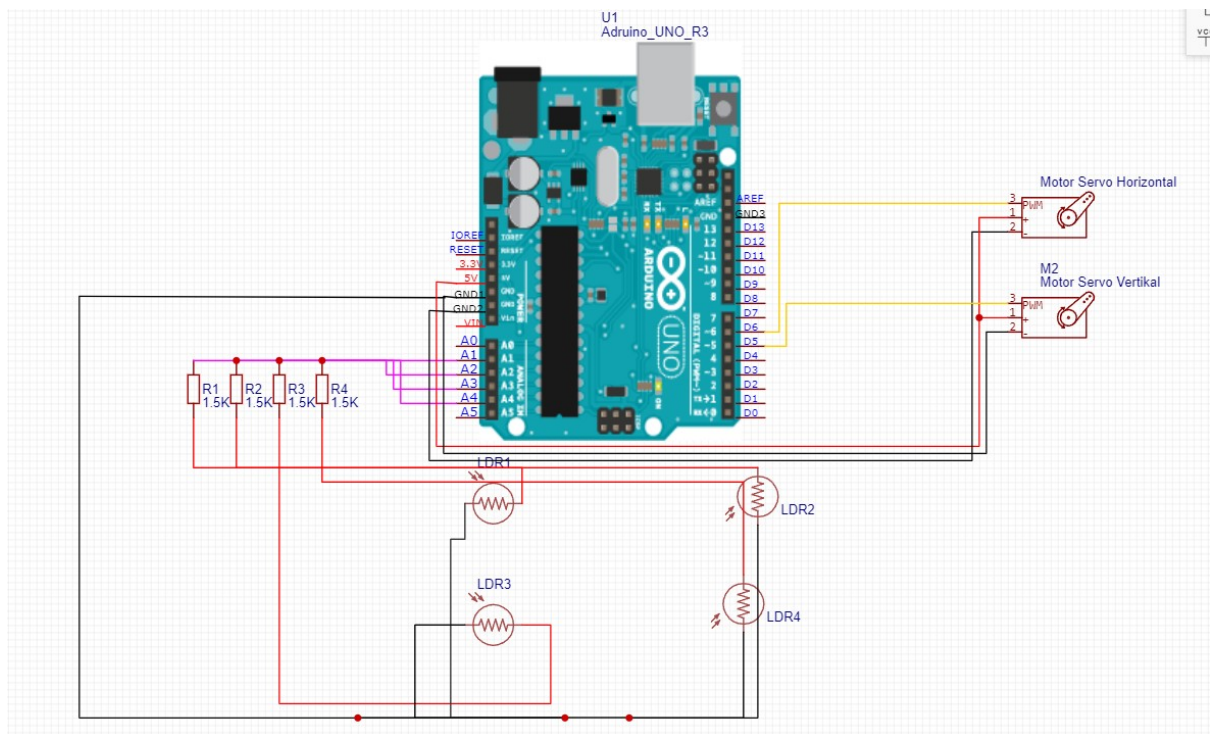
```

**Step 4 :**

For the schematic of the tools, First connect the 2 servo to the Arduino pin that we define before at the code, and also the other pin such as LDR sensor pin and etc.

**Step 5 :**

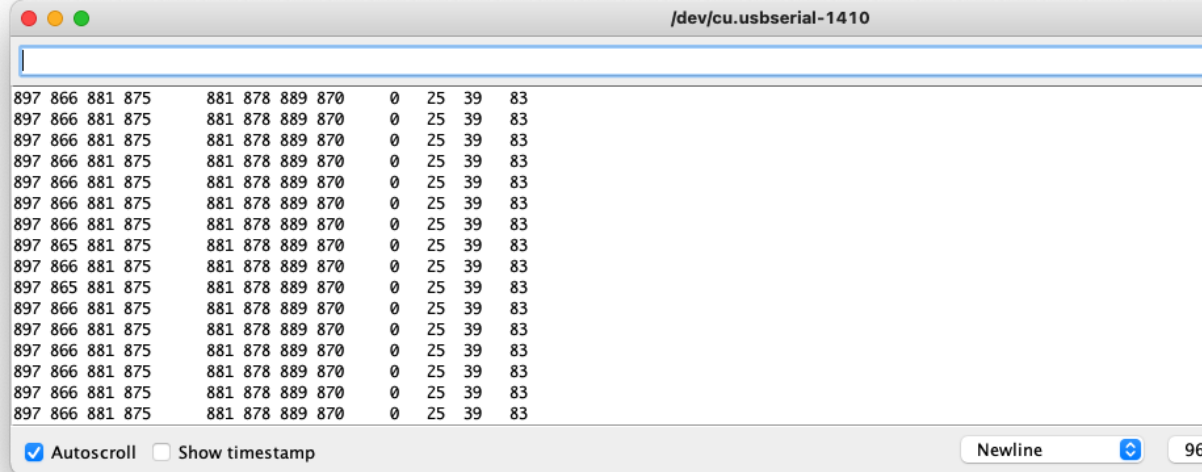
For the wiring we will provide this picture as a reference



**Step 6 :**

After that try to use the Solar Panel tracker, We will give you the example of the movement data from the solar panel tracker

JAM 16:00 SORE  
6 JAN 2022  
CUACA : GERIMIS



A terminal window titled "/dev/cu.usbserial-1410" displaying a continuous stream of data. The data consists of 20 lines, each containing a sequence of numbers: "897 866 881 875", "881 878 889 870", "0", "25", "39", and "83". The window includes standard macOS window controls (red, yellow, green buttons) and a status bar at the bottom with the following options: "Autoscroll" (checked), "Show timestamp" (unchecked), "Newline" (dropdown menu), and "96" (character count).

```
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 865 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 865 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
897 866 881 875      881 878 889 870      0  25  39  83
```

Step 7 :

Enjoy your very own Solar Panel tracker 😊