LDR based Solar Tracker

Abstract:

In our project solar pannel will be powering the street lights.To make solar pannel more efficient we have to adjust it in such a way that it absorbs maximum intensity of light. For doing that we are adusting a LDRs on the edges of the pannel and according to the light falling on ldr our solar tracker will move along with the sun direction with the help of servomotor. In this way we can use the maximum intensity of sunlight fot the working of the system.

Components:

1. Solar Pannel (For Prototype we can use a cardboard similar shape of solar pannel)
2. Arduino UNO
3. Resistance(10KΩ)*4
4. LDR*4
5. Servo Motor*2
6. Battery(9v)

About Component:

- **LDR:**Ldr is light depended resistor when there is no light falling on ldr the resistor decreases so current flow through it.When the light falls on ldr the resistance in that sensor increase hence less current will flow through it.
- **Servo Motor:**A servomotor is a actuator whiche uses feedback for its rotation.In ac motor rotation and speed is depended on the frequency and a dc motor speed and rotation depends on its applied voltage.
- **Arduino UNO:**A board which is based on the ATmega 328 microcontroller.

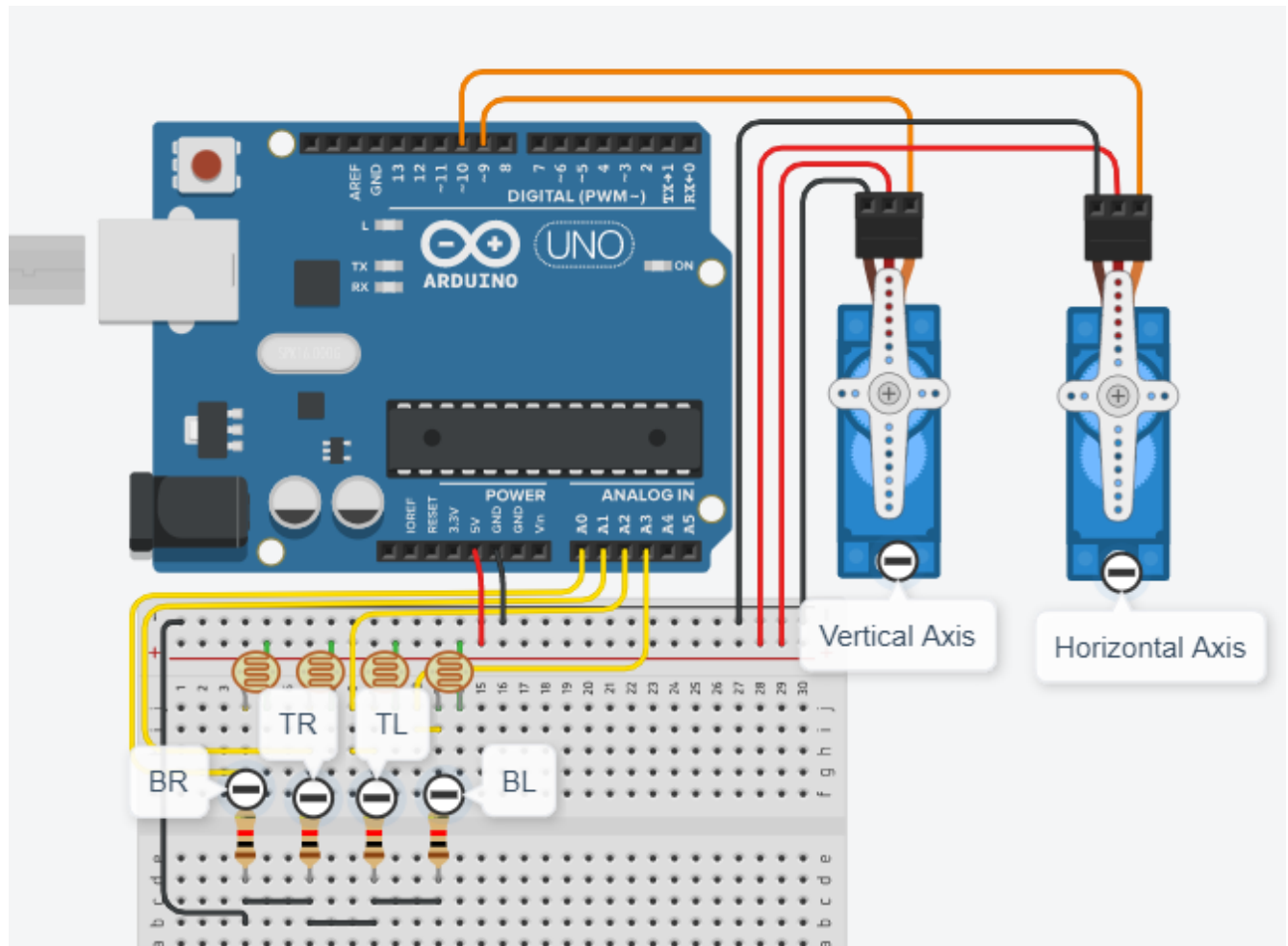**Circuit Diagram:**
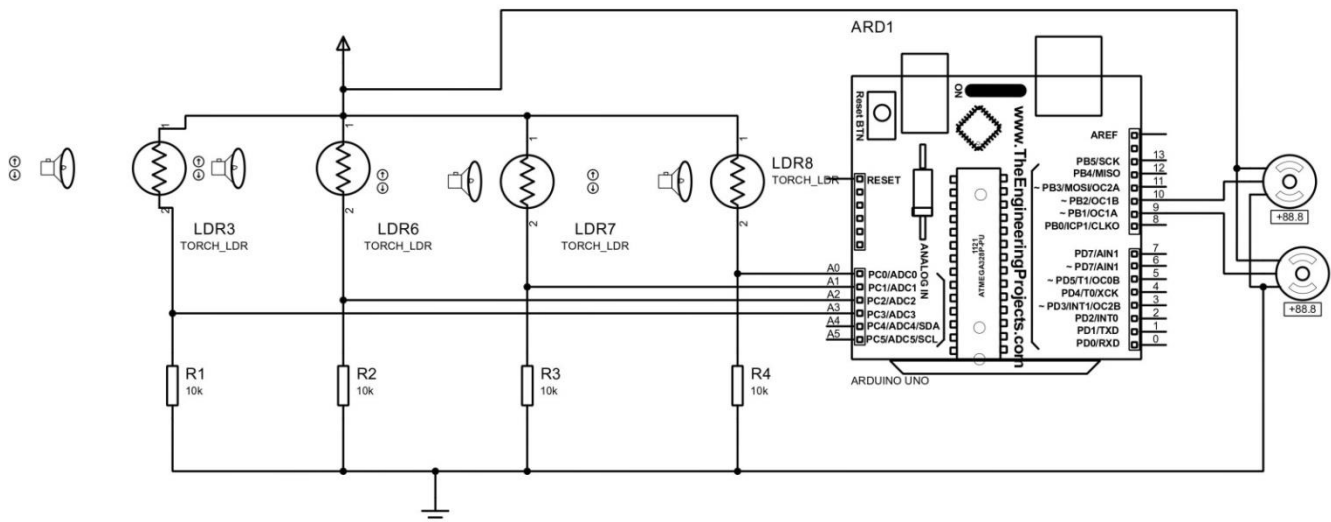
Working:

Fig 2.Implementation on Tinker Cad

Here our panel is fixed with servo motor for its rotation, LDR for sensing the light and accordingly the servo motor is rotating it in the

direction of sunlight.

We used 4 LDRs at the corner of the solar panel. And it will

compare the light falling on it. On the basis of the light it will

move the shaft of servo motor in the direction of light.

First servo motor will have vertical rotation and move the

panel in the East to West direction.
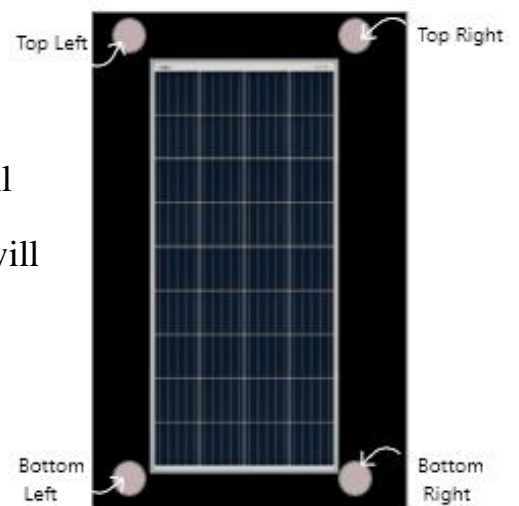
Second Servo motor, is responsible for horizontal rotation

if the direction changes.

Logic for Program:

For vertical movement it will check the average of Top left, Top Right and Bottom Left, Bottom Right.

- If average of Top LDR is more than Bottom LDRs it will move the panel from 20° to 180°.
- If average of top and bottom are same then the panel will move 90° (middle).
- If average of Bottom LDR is more than Top LDRs it will move the panel 180° to $90^{o.}$

For horizontal movement it will check the average of Right LDRs and Left LDRs.

- If the average of Right LDR is more than Left LDRs it will move the panel from 20° to 180° horizontally.
- If average of Right and Left are same then the panel will move 90° (middle).
- If average of Left LDRs is more than Right LDRs it will move the panel 180° to 20° horizontally.

Applications:

1. Street Lights
2. In Farming (As in villages there is problem of power supply).
3. Outdoor Lamp