AUTOMATIC LIGHT SENSOR LAMP

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INTRODUCTION

- In today's world, there is lot of power consumption and wastage of electricity due to carelessness of human beings or unusual circumstances. At this rate scientists have predicted that our energy resources will be available only for the next 30 years . This is a high call for us to consume electricity.
- As a small step toward this call, we are planning to implement "Automatic light sensor lamp", which is a simple and a powerful concept which uses transistor as a switch to on and off the light automatically. By using this system ,the manual works are also reduced . It automatically switches on light when the light source goes below the visible region of our eyes.

PROBLEM DEFINITION

- In cities and villages, sometimes street lights glow in day time without any reason. Also, in mining regions people face many difficulties due to absence of light in the nights. In frontier and hilly areas, people face many problems due to damaged street lights.
- To overcome these problems, we create a device in which the light glows in night and in day time, they get switched off automatically and doesn’t glow.
- Due to the this, we can solve the above mentioned problems and can also save electricity.

OBJECTIVE

- It automatically switches off light under illumination by any other light source . This is done by a light sensor which detects the light similar to our eyes.
- This project can be extended to street lamp as well as night lamp to our homes appliances and many more applications.
- Automatic light lamp does not require much manual operation of switching it on and off. Using sensors ,the system self detects whether there is a need of light or not.
- When darkness rises to a certain value then automatically the light is switched on and when there is another source of light the light turns off.
- We are looking for the cheapest way of implementing this idea. One of the main component which helps us for achieving our idea is LDR.

DISADVANTAGES OF EXISTING SYSTEM

- Manual switching off/on of street lights
- More energy consumption
- High expense
- More manpower

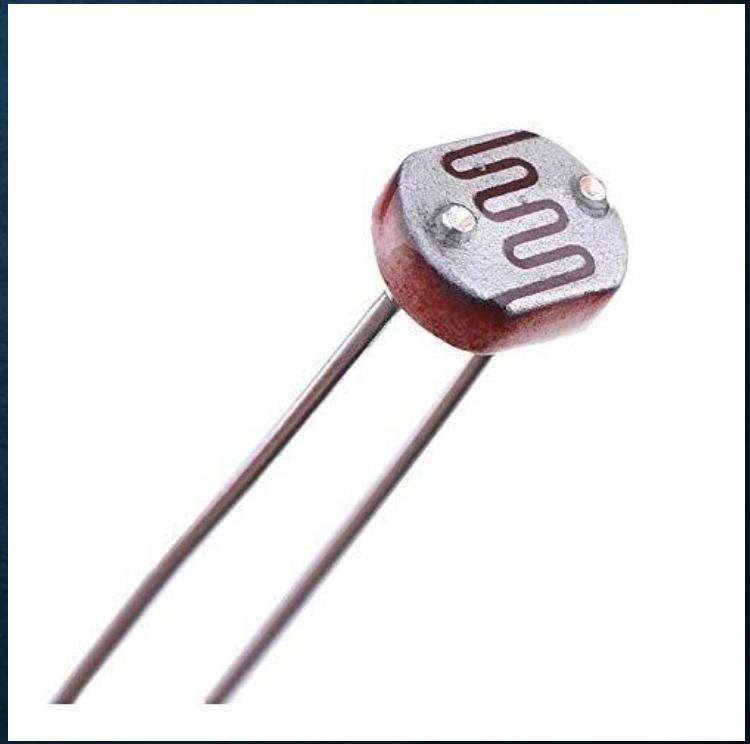
Now moving to the proposed system automated with the use of light sensors, not just the saving of energy and ensuring safety, we can also see a few more advantages following.

ADVANTAGES OF THE PROPOSED SYSTEM

- Automatic switching of street lights
- Maintenance cost reduction
- Wireless communication
- Energy saving
- Reduction of manpower

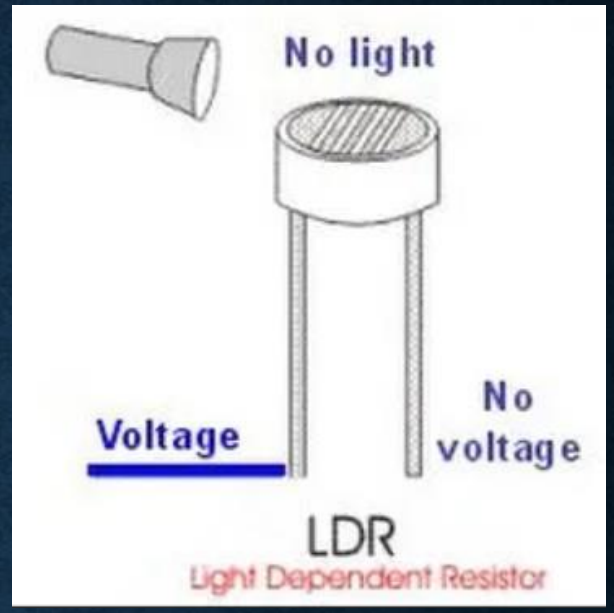
LDR- LIGHT DEPENDENT RESISTOR

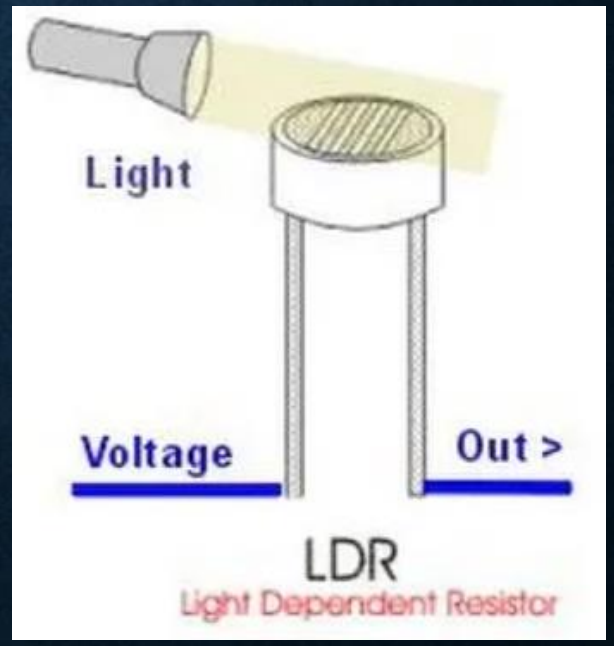
- **LDR** is a component that has a *variable* resistance that changes with the light intensity which falls upon it. This allows them to be used in light sensing circuits.
- A photoresistor (acronymed **LDR** for Light Decreasing Resistance, or light-dependent **resistor**, or photo-conductive cell) is a passive component that decreases resistance with respect to receiving luminosity (light) on the component's sensitive surface.



WORKING PRINCIPLE OF LDR

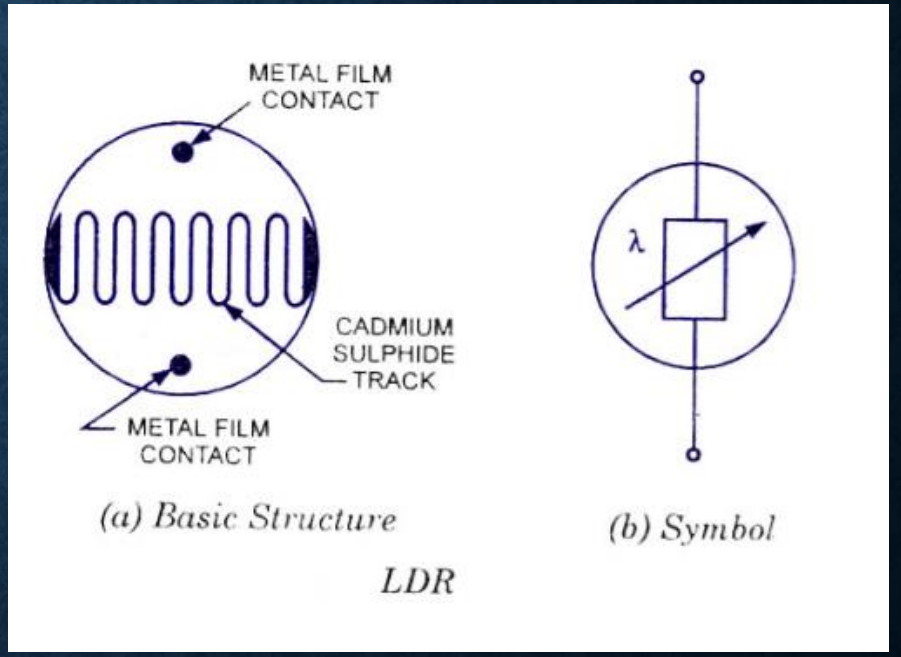
- The working principle of an LDR is photoconductivity, that is nothing but an optical phenomenon. When the light is absorbed by the material then the conductivity of the material reduces. When the light falls on the LDR, then the electrons in the valence band of the material are eager to the conduction band. But, the photons in the incident light must have energy superior than the bandgap of the material to make the electrons jump from one band to another band (valance to conduction).
- Hence, when light having ample energy, more electrons are excited to the conduction band which grades in a large number of charge carriers. When the effect of this process and the flow of the current starts flowing more, the resistance of the device decreases.



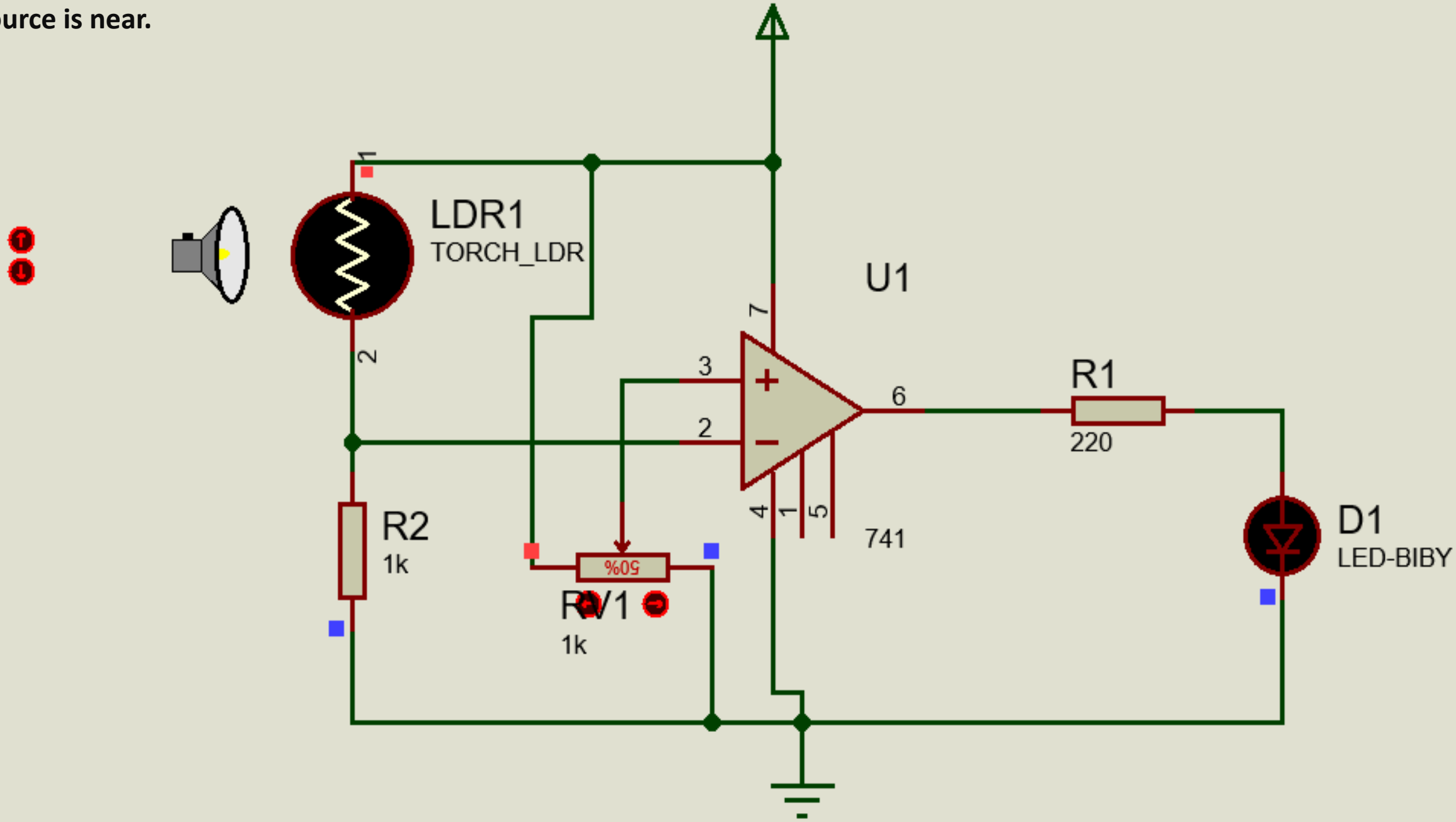


LDR ADVANTAGES

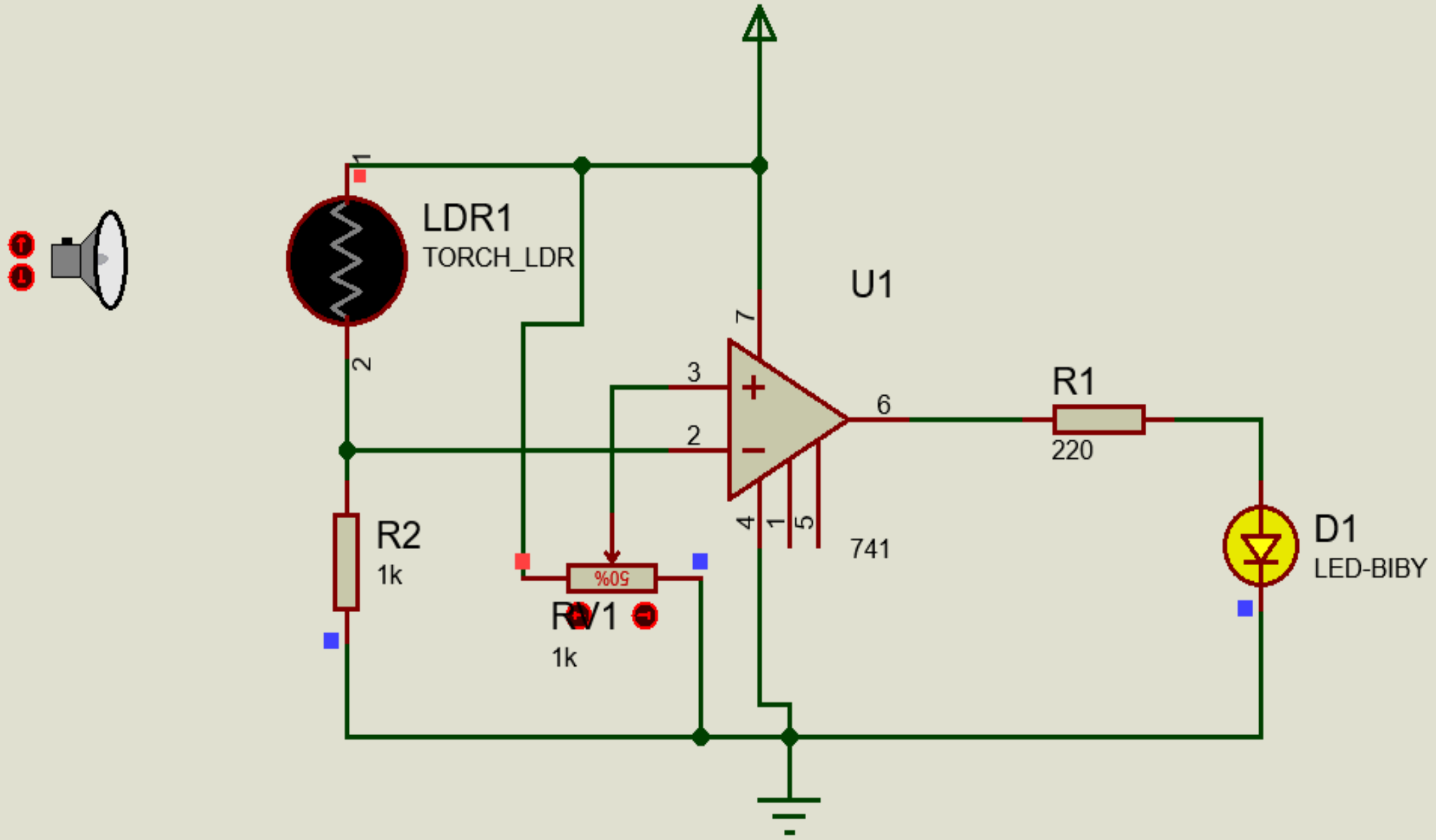
- High sensitivity (due to the large area it can cover).
- Easy **employment**.
- Low **cost**.
- There is no union potential.
- High light-dark resistance ratio.
- These resistors are **used** as light sensors and the applications of **LDR** mainly include alarm clocks, street lights, light intensity meters, burglar alarm circuits.



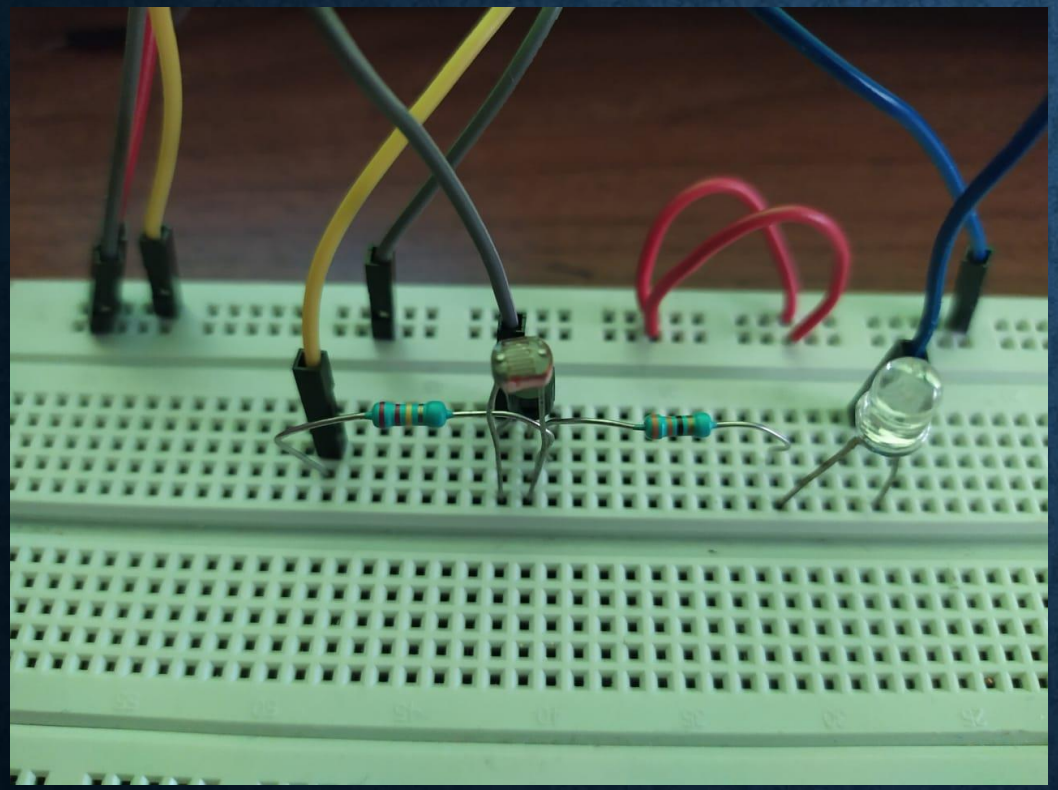
PROTEUS IMPLEMENTATION OF AUTOMATIC LIGHT SENSOR LAMP - The light automatically switches off when the light source is near.



PROTEOUS IMPLEMENTATION OF AUTOMATIC LIGHT SENSOR LAMP - The light automatically switches on when the light source is away or off.



HARDWARE IMPLEMENTATION



- For the working of the project, follow the link:

- https://www.youtube.com/watch?v=nI1Lul-yO5I

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- http://gen.lib.rus.ec/

THANKYOU