***Theory:***

A **light dependent resistor** works on the principle of photo conductivity. Photo conductivity is an optical phenomenon in which the materials conductivity is increased when light is absorbed by the material.  
When light falls i.e. when the photons fall on the device, the electrons in the valence band of the semiconductor material are excited to the conduction band. These photons in the incident light should have energy greater than the band gap of the semiconductor material to make the electrons jump from the valence band to the conduction band. Hence when light having enough energy strikes on the device, more and more electrons are excited to the conduction band which results in large number of [charge carriers](https://www.electrical4u.com/mobility-of-charge-carrier/). The result of this process is more and more [current](https://www.electrical4u.com/electric-current-and-theory-of-electricity/) starts flowing through the device when the circuit is closed and hence it is said that the [resistance](https://www.electrical4u.com/electrical-resistance-and-laws-of-resistance/) of the device has been decreased. This is the most common **working principle of LDR**.

***Concept Used : -***

An [LDR](https://kitronik.co.uk/components/switches-and-sensors/light-sensors.html) is a component that has a (variable) resistance that changes with the light intensity that falls upon it. This allows them to be used in light sensing circuits.

***Learning and Observations : -***

* Making circuits using Arduino.
* Connecting switch and LDR with arduino.
* Ground has least resistance.
* Working of LDR.
* Coding to be done on Arduino.exe for stimulation of the experiment.

***Problems & Troubleshooting: –***

No problem occurred during the execution of the experiment.

***Precautions :–***

1. The circuit made can be wrong.
2. Any Element used may be defective.
3. The coding done can be incorrect due to which stimulation can be failed.
4. Port Selection for Arduino can be incorrect due to which it won’t upload on Arduino Board and resulting in failure of experiment.

***Learning Outcomes: –***

1. Setting up circuit on a Arduino.
2. Connecting switch, LDR, LED’S and Arduino.
3. Using switch and LDR.
4. Working and coding of Arduino.

***Result: –***

Working of LDR and switch verified after uploading the program. LDR is ready to sense presence of brightness and darkness.