



# Project Proposal on LDR and Motion Sensor Controlled Security System

Submitted by Group D

EEE 305: Control System  
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# LDR and Motion Sensor Controlled Security System

## 1. Overview

The project is designed as a security system based on photo sensing arrangement. It uses a 14-stage ripple carry binary counter to sense the light intensity through LDR. The output drives a buzzer and a relay for necessary action. This concept is very useful to deter burglars from banks, malls, jewelry stores and also in homes. The system is based on an electronic eye which is an LDR sensor, called light dependent resistor. When light falls on the sensor, its resistance drastically decreases which lead to triggering an alarm to alert the user. This system best suits in the application of providing friendly security system for cash boxes and lockers, which can be found in malls, jewelry shops, and banks. The circuit is placed inside the cash box or locker in such a way that, when the burglar opens the locker and uses a torch light to find the valuables, the light falls on the circuit which contains an electronic eye (LDR) and gives a signal to the ripple counter. This activates the alarm, and indicates a burglary attempt. Also a lamp is used to indicate the theft when the light falls on the LDR.

## 2. Components

### 9V Battery

The nine-volt battery, or 9-volt battery, is a common size of battery that was introduced for the early transistor radios. It has a rectangular prism shape with rounded edges and a polarized snap connector at the top. This type is commonly used in walkie-talkies, clocks and smoke detectors. The nine-volt battery format is commonly available in primary carbon-zinc and alkaline chemistry, in primary lithium iron disulfide, and in rechargeable form in nickel-cadmium, nickel-metal hydride and lithium-ion. Mercury-oxide batteries of this format, once common, have not been manufactured in many years due to their mercury content.



Fig 1: 9V Battery

## Slide switch

Slide switches are mechanical switches using a slider that moves (slides) from the open (off) position to the closed (on) position. They allow control over current flow in a circuit without having to manually cut or splice wire. This type of switch is best used for controlling current flow in small projects.



Fig 2: Slide Switch

## Light Dependent Resistor (LDR)

A photoresistor is a light-controlled variable resistor. The resistance of a photoresistor decreases with increasing incident light intensity; in other words, it exhibits photoconductivity. A photoresistor can be applied in light-sensitive detector circuits, and light-activated and dark-activated switching circuits.

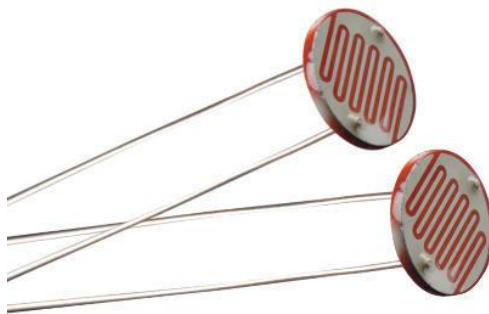


Fig 3: Light Dependent Resistor

## Ripple Counter IC

A ripple counter is an asynchronous counter where only the first flip-flop is clocked by an external clock. All subsequent flip-flops are clocked by the output of the preceding flip-flop. Asynchronous counters are also called ripple-counters because of the way the clock pulse ripples it way through the flip-flops.



Fig 4: Ripple Counter IC

## Buzzer

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.



Fig 5: Buzzer

## Arduino

Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world.



Fig 6: Arduino

## PIR motion sensor

A motion detector is a device that detects moving objects, particularly people. Such a device is often integrated as a component of a system that automatically performs a task or alerts a user of motion in an area.

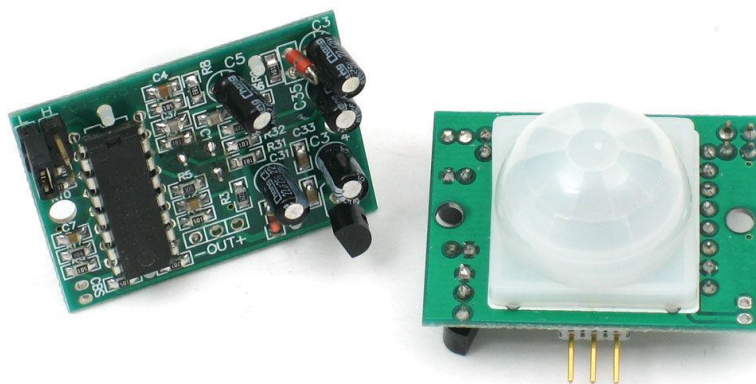


Fig 7: PIR Motion Sensor

## Transistors

A transistor is a semiconductor device used to amplify or switch electronic signals and electrical power. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit.

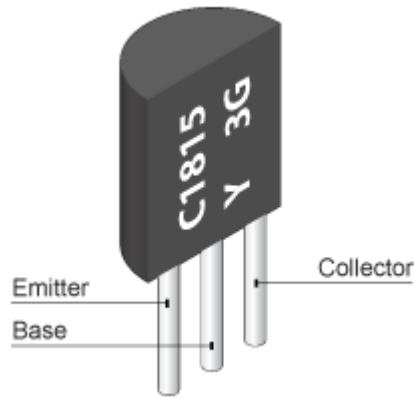


Fig 8: Transistor

## Relay

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays.

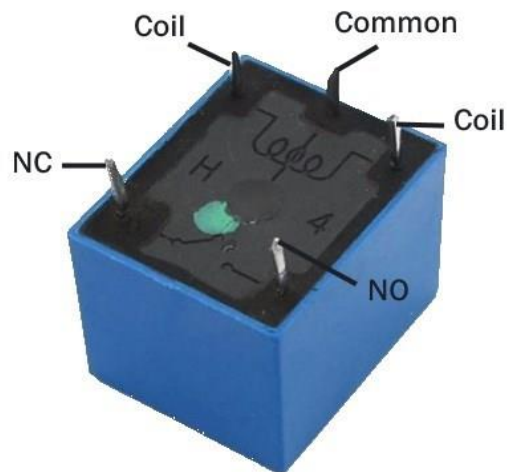


Fig 9: Relay

## LED

A light-emitting diode is a two-lead semiconductor light source. It is a p–n junction diode that emits light when activated. When a suitable current is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons.



Fig 10: LED

### 3. Block Diagram

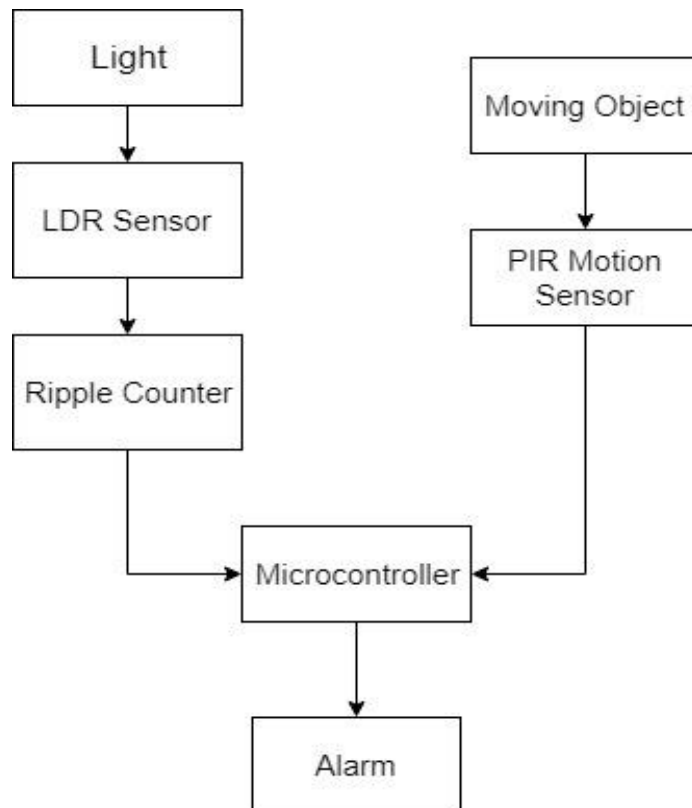


Fig 11: LDR and Motion Sensor Controlled Security System



#### 4. Budget for the project

Product	Quantity	Price
9V Battery	01	25
Slide Switch	01	11
Light Dependent Resistor (LDR)	01	6
Ripple Counter IC	01	30
Buzzer	01	75
Arduino Uno	01	900
PIR Motion Sensor	01	1,100
Transistor	01	30
Relay	01	30
LED	01	2
Total		2,209 (BDT)