



A Mini Project Report on

Light Dependent Resistor Based Laser Security System

Project work submitted in partial fulfillment of the requirement for the award
of the degree of

BACHELOR OF TECHNOLOGY

In

Electronics And Telecommunication Engineering (ENTC)

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PROJECT REPORT

Light Dependent Resistor Based Laser Security System

Introduction:

Arduino UNO Board is one of the most popular and useful electronic components. It is a circuit board that is used to design a various electronic device and working projects.

In this project, we have used Arduino UNO board to design a **Light Dependent Resistor (LDR) based laser security system.**

There are three essential components to a laser security system: a laser, an Arduino and LDR module. The laser is a concentrated light source that puts out a straight line, pencil beam, of light of a single colour. The LDR is sensitive to light. The LDR is connected to the Arduino UNO. When the laser beam is interrupted and can't reach the LDR, its voltage output changes, and the circuit senses the change and puts out a warning signal and then the buzzer starts alert signals.

Working Principle of Circuit:

The assignment mainly works on the norm of interruption. If by any means the Laser light is interrupted the buzzer will start unless it is reset with push button. The laser is concentrated light source that puts out a straight beam of light of a single colour. The Arduino UNO has provided a power supply. Implement the program and upload it to the Arduino UNO with the help of cable. Then the laser is connected with the Arduino UNO and to the opposite side of the laser an LDR module is placed. The LDR is connected to the Arduino Uno. The buzzer is connected to the Arduino UNO as an output so that it can intimate to the owner.

Hardware Components:

Sr. No.	Components Used	Quantity Required
1.	Arduino UNO Board	1
2.	5 mm LED: Red	1
3.	5 mm LED: Blue	1
4.	Buzzer	1
5.	LDR	1
6.	Laser Diode Module KY-008	1
7.	Resistor 10k / 330 ohm	3

8.	Push Button Switch	1
9.	Breadboard (generic)	1
10.	Jumper Wires (generic)	As per connection need
11.	Mirrors	4

Software used: Arduino IDE

Circuit Diagram:

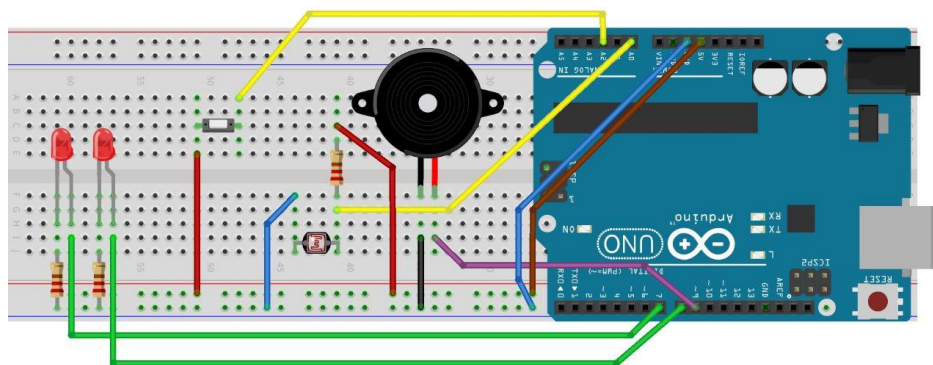


Figure: Frizzing circuit connection

Program Code:

```
const int sensivity = 400; // 0-1023 a lower value means a more powerful laser

#define ldr A0
#define redLed 7
#define blueLed 8
#define buzzer 9
#define buttonPin A2
int buttonState;
int state = 0;

void setup() {
  alarmOFF();
  Serial.begin(9600);
  pinMode(redLed, OUTPUT);
  pinMode(blueLed, OUTPUT);
  pinMode(buzzer, OUTPUT);
}

void loop() {
  int light = analogRead(ldr);
```

```

int button = analogRead(buttonPin);
Serial.print("button = ");
Serial.print(button);
Serial.print("\n");

Serial.print("light = ");
Serial.print(light);
Serial.print("\n");

Serial.print("state = ");
Serial.print(state);
Serial.print("\n");

Serial.print("\n");

if (button >= 1020) {
    state = 0;
}
if (light > sensivity) {
    state = 1;
}
if ((light <= sensivity) && (state == 0)) {
    alarmOFF();
}
if (state == 1) {
    alarmON();
}
}

// For alaram ON state
void alarmON() {
    tone(buzzer, 1760);
    digitalWrite(redLed, HIGH);
    digitalWrite(blueLed, LOW);
    delay(500);
    tone(buzzer, 1319);
    digitalWrite(blueLed, HIGH);
    digitalWrite(redLed, LOW);
    delay(500);
}

// For alaram Off state
void alarmOFF() {
    noTone(buzzer);
    digitalWrite(redLed, LOW);
    digitalWrite(blueLed, LOW);
}

```

Our Project:

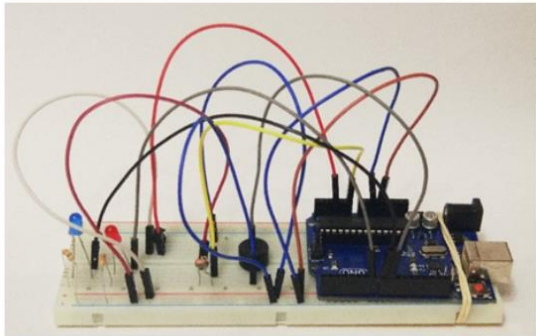


Figure: Breadboard Connections

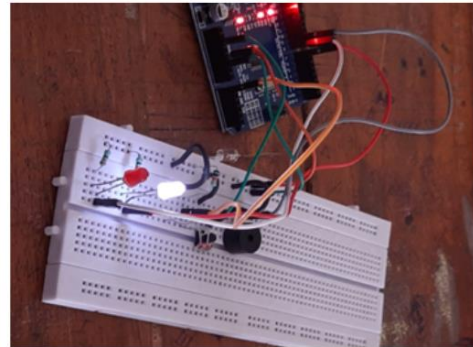


Figure: The Overall circuitry

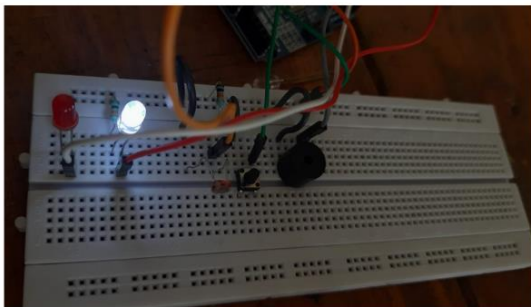


Figure : Circuit working, at stable state

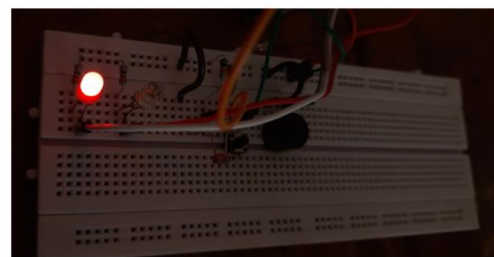


Figure : Circuit working, at some obstruction at LDR

Applications:

1. It can be used in safety lockers of homes and offices.
2. It can be used to check if pets and babies cross a certain limit of the boundary.
3. It can also be used in jails for keeping criminals within certain boundaries.

Conclusion:

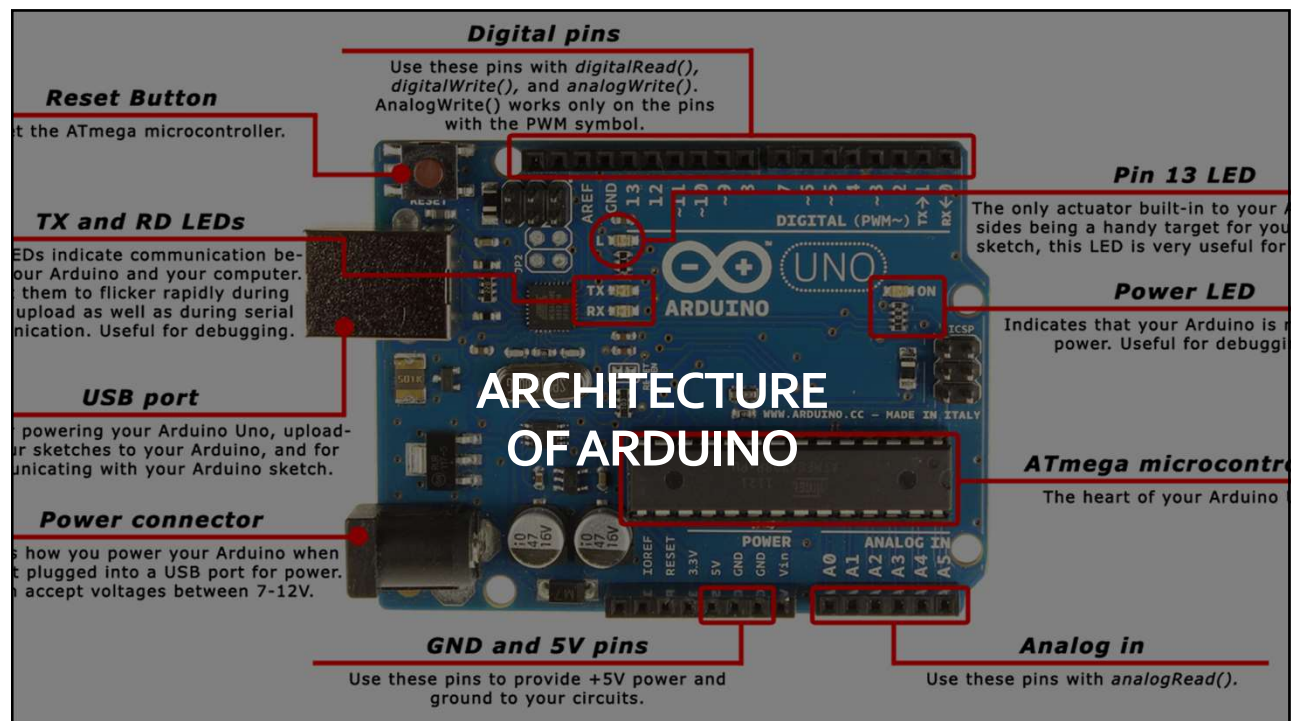
Laser Security System gives us the protection from any crime, theft in our everyday life thus individuals are installing them so as to remain sheltered, secure and sound. Various electronic security systems can be used at home and other important working places for security and safety purposes. It is one of the best opportunity and source of saving man power contributing no wastage of electricity. The “Laser Security System” is an important and helping system. Using this system robbery, thefts and crime can be avoided to large extent. Avoiding thieves’ results in the safety of our financial assets and there by their system provides us protection against all. The laser beam and LDR module system is highly sensitive with a great range of working. The system senses the light emitted by the laser falling over the LDR connected with the circuit. Whenever the beam of light is interrupted by any means, it triggers the alarm or siren. This highly reactive approach has low computational requirement therefore it is well suited to surveillance, industrial application and smart environments.

- ARDUINO IS AN OPEN-SOURCE ELECTRONICS PLATFORM THAT ENABLES INDIVIDUALS TO CREATE INTERACTIVE PROJECTS.
- IT CONSISTS OF A PROGRAMMABLE MICROCONTROLLER BOARD, A DEVELOPMENT ENVIRONMENT, AND A VAST COMMUNITY OF USERS AND LIBRARIES.
- ARDUINO IS WIDELY USED IN VARIOUS FIELDS, INCLUDING ROBOTICS, HOME AUTOMATION, AND PROTOTYPING.
- ARDUINO BOARDS ARE DESIGNED WITH SIMPLICITY AND ACCESSIBILITY IN MIND, MAKING IT EASY FOR BEGINNERS TO GET STARTED WITH ELECTRONICS AND PROGRAMMING.
- THE BOARDS CAN BE CONNECTED TO VARIOUS SENSORS, ACTUATORS, AND OTHER ELECTRONIC COMPONENTS, ALLOWING USERS TO BUILD A WIDE RANGE OF PROJECTS AND PROTOTYPES.

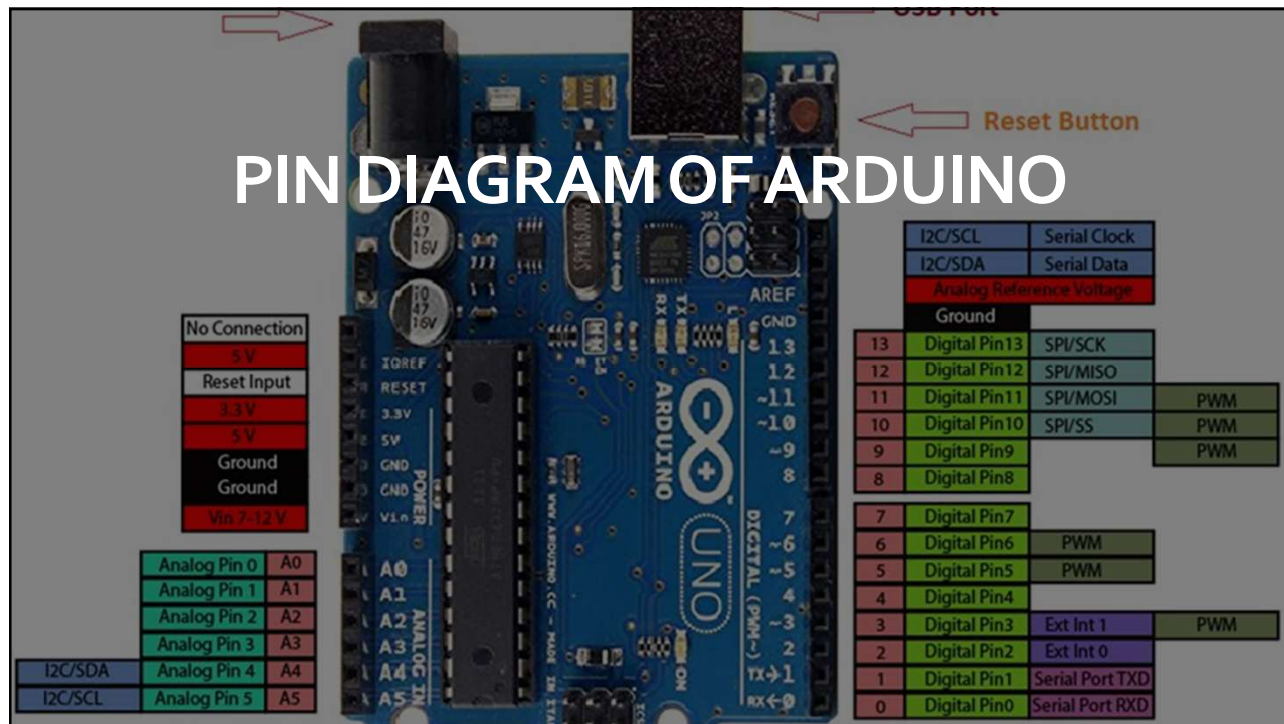


OVERVIEW OF ARDUINO

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OUR PROJECT

- An LDR (Light Dependent Resistor) based Laser security system using Arduino can be implemented by placing an LDR as a light sensor and a laser module as the light source.

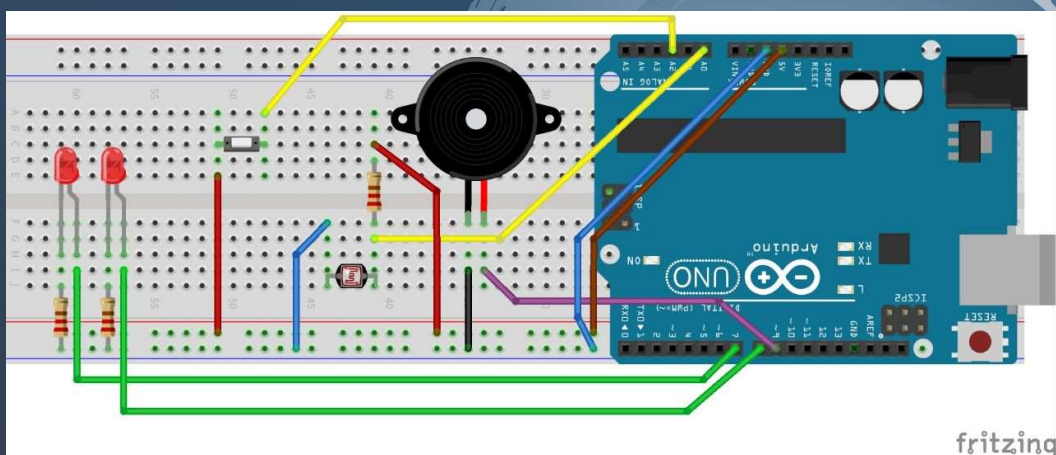
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- AN LDR (LIGHT DEPENDENT RESISTOR) BASED LASER SECURITY SYSTEM USING ARDUINO CAN BE IMPLEMENTED BY PLACING AN LDR AS A LIGHT SENSOR AND A LASER MODULE AS THE LIGHT SOURCE.
- THE ARDUINO CONTINUOUSLY READS THE LDR'S ANALOG VALUE AND TRIGGERS AN ALARM OR ACTIVATES A SECURITY MECHANISM WHEN THE LASER BEAM IS INTERRUPTED, INDICATING A BREACH.
- THIS SYSTEM PROVIDES A COST-EFFECTIVE AND RELIABLE SOLUTION FOR SECURING RESTRICTED AREAS OR VALUABLE OBJECTS WITH THE ADDED FLEXIBILITY OF ARDUINO FOR CUSTOMIZATION AND INTEGRATION WITH OTHER COMPONENTS.

ABOUT PROJECT

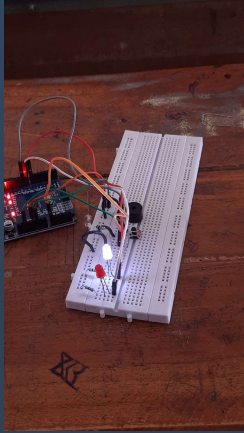
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CIRCUITRY

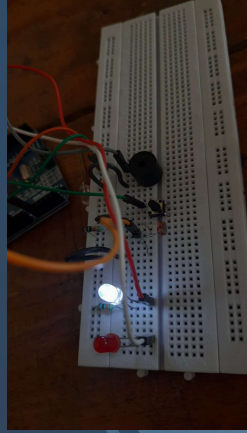


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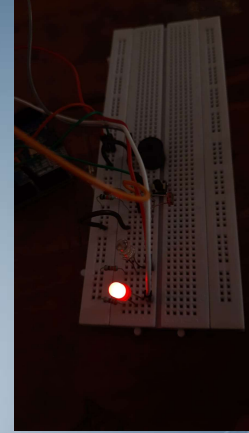
WORKING OF OUR PROJECT



THE GENERAL STATE
(STABLE)



THE ALARMING STATE
(UNSTABLE)



THE ALARMING STATE
(UNSTABLE)

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THANKYOU

Project made by:

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- 4. Mukti. L. Purohit - 28*

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