GOVERNMENT COLLEGE TECHNOLOGY.COIMBATORE

Laser Security System

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Introduction:

Security is crucial for homes and businesses, but many security systems are expensive and difficult to install. The challenge is to create a simple, low-cost security system that can detect intruders in real-time and send instant alerts to the user. This project focuses on developing a laser-based security system that can be easily installed to monitor entry points such as doors or windows.

Problem Statement:

Traditional security systems are often costly and complex to set up, making them inaccessible to many. Our laser security system aims to provide an affordable and easy-to-install solution that triggers alarms and sends alerts when Traditional security systems are often costly and complex to set up, making a laser beam is interrupted, making it ideal for securing homes, offices, and restricted areas.

Objectives:

- Detect intruders using a laser-based system.
- Trigger an alarm when the beam is interrupted.
- Send real-time notifications to the user's mobile device via WiFi.

Components Description:

- Laser Module: Emitted focused light beam to create an invisible tripwire.
- LDR Sensor: Detects changes in light intensity from the laser beam. 3. Arduino: Processes input from the LDR and triggers the alarm.
- WiFi Module (ESP8266 or ESP32): Sends alerts to the user's mobile device.
- Breadboard: Simplifies circuit assembly.
- Jumper Wires: Connects the components on the breadboard.
- Buzzer: Sounds an alarm when triggered.
- Mirror Piece: Extends the laser's range by reflecting it.

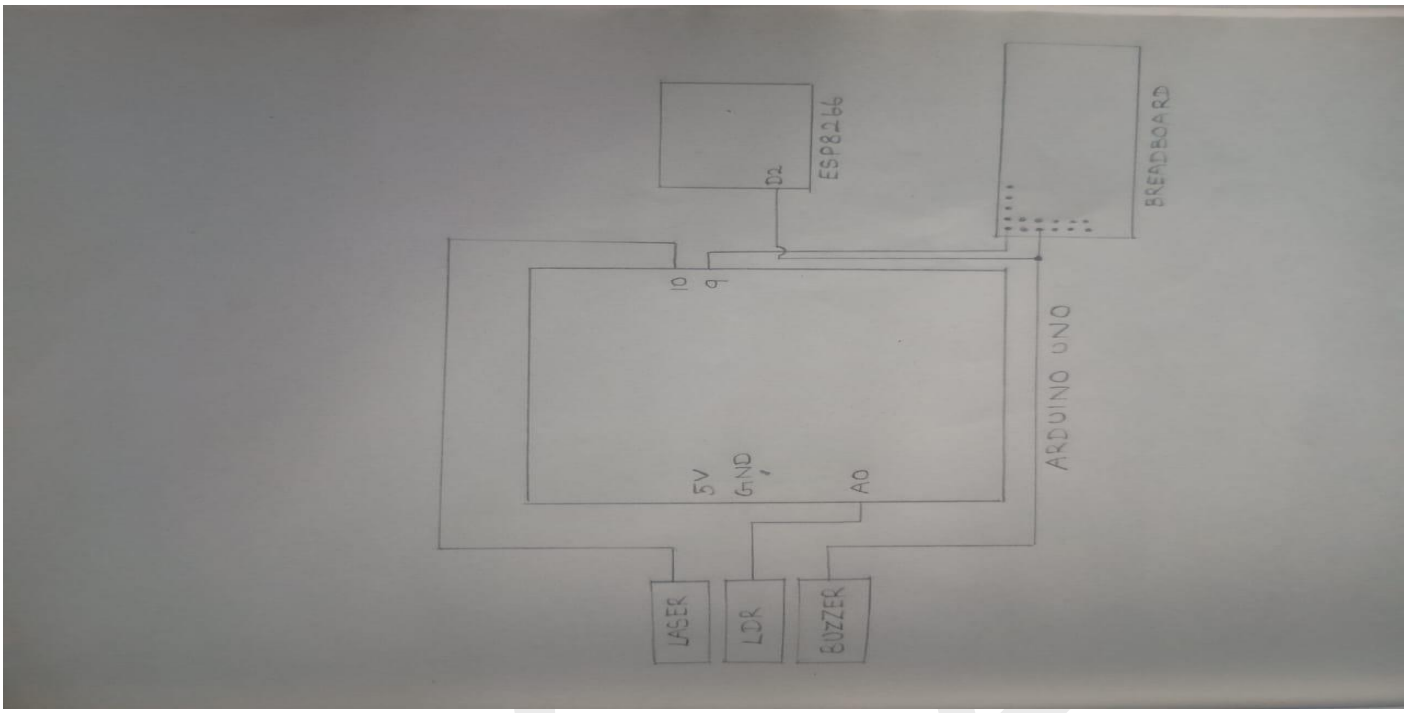
System Design:

The laser security system involves a laser beam, an LDR sensor, and a microcontroller (Arduino). When the laser beam hits the LDR, it maintains a low resistance. If the beam is interrupted, the resistance increases, signaling the Arduino to activate the alarm and send alerts via WiFi. The mirror extends the system's range by reflecting the laser beam to cover more area.

Working Principle:

When the laser beam is interrupted, the Arduino detects this through the LDR sensor's resistance change. The system triggers a buzzer alarm to alert nearby individuals and sends notifications through the WiFi module to the user's mobile device, ensuring remote awareness of the intrusion.

Circuit Diagram:



Applications:

- Home security
- Office protection
- Museum or gallery protection
- Restricted area monitoring

Conclusion:

The Laser Security System is an affordable, simple, and effective way to secure entry points in homes or businesses. It combines traditional alarm systems with modern WiFi connectivity, enabling users to monitor and respond to security breaches remotely. This project emphasizes the use of readily available technology to improve security measures.