LASER SECURITY SYSTEM USING ARDUINO

Project report

Submitted in partial fulfillment of the requirements for

Laser security system Using Arduino

B Tech

Presidency University

Carried out at

Presidency University

Bengaluru

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Certificate

This is to certify that the project entitled "LASER SECURITY SYSTEM USING ARDUINO**" has** been successfully completed by MR VINAY KUMAR M, MR NITHIN KUMAR REDDY M, MR PRANEETH REDDY P V, MR SUBHASH REDDY P, MR BONI DARHAS of sixth semester B Tech at **Presidency University. Bengaluru,** as the Internet of Things project in partial fulfilment for the award of B tech Degree course conducted by the Presidency University. The Project Report presented here is the bonafide work of the student.

Guide: **Head of the Department**

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Acknowledgement

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We are highly indebted to MS DIPALI DHAKOLE, for their guidance, constant supervision and for their support in completing our project.

We would like to express our gratitude to our parents for their kind co-operation and encouragement.

ABSTRACT

As we have submitted the synopsis, in our project the laser security system, in which the alarm or siren starts buzzing when the laser loose contact with the ldr. Laser Security alarm is a device used for security purposes. rt has a wide application in fields of security and defence starting from the security of a simple house hold material to a very high valued material of an organization. They once used to be expensive solutions for security needs. owing to cost cutting and fast technological advancements, this form of security system is becoming more affordable.

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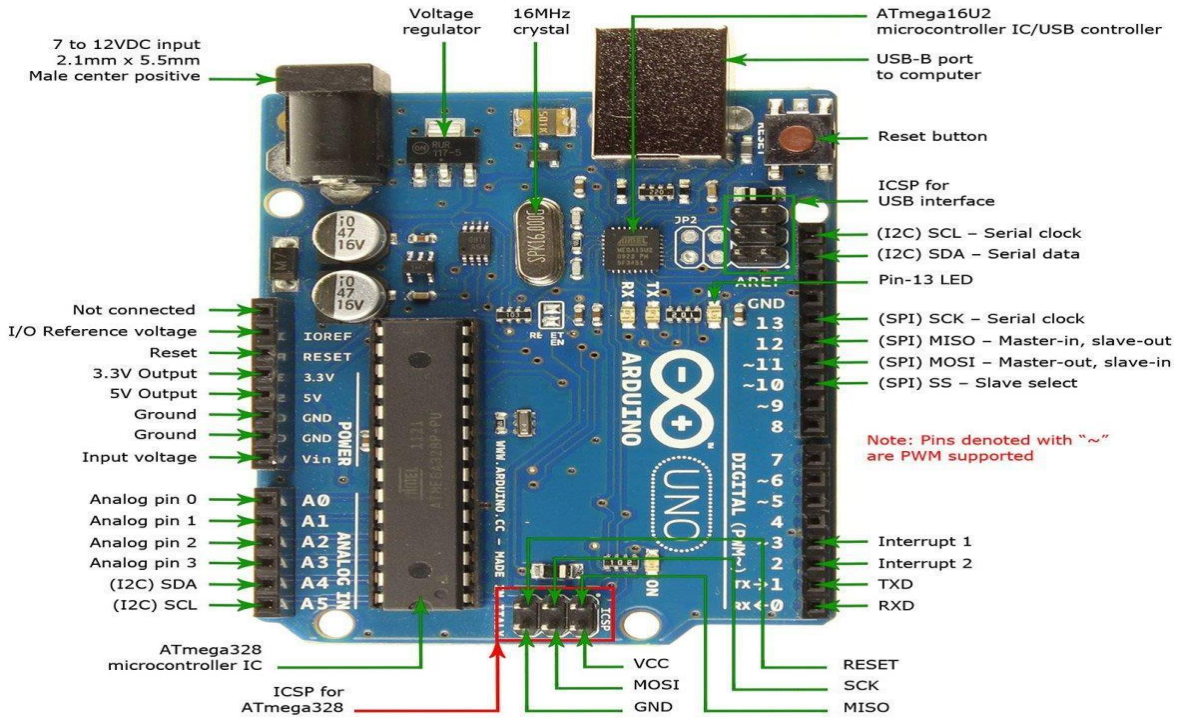
FEATURE OF COMPONENTS USED

1. Arduino Board

Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programed (referred to as a microcontroller) and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

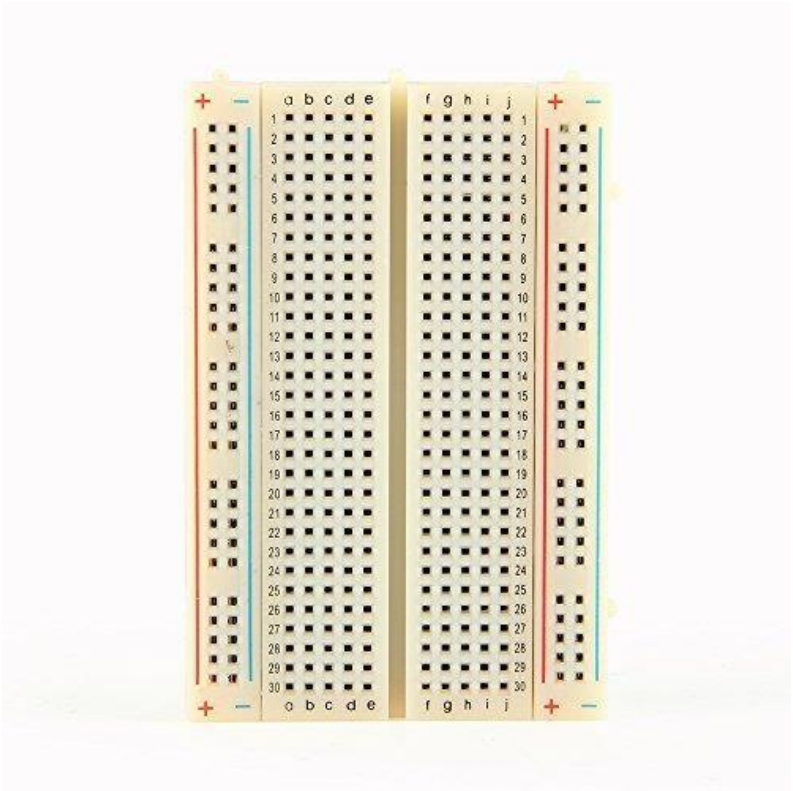
Arduino provides a standard form factor that breaks the functions of the micro-controller into a more accessible package.

Arduino Pin Out Diagram



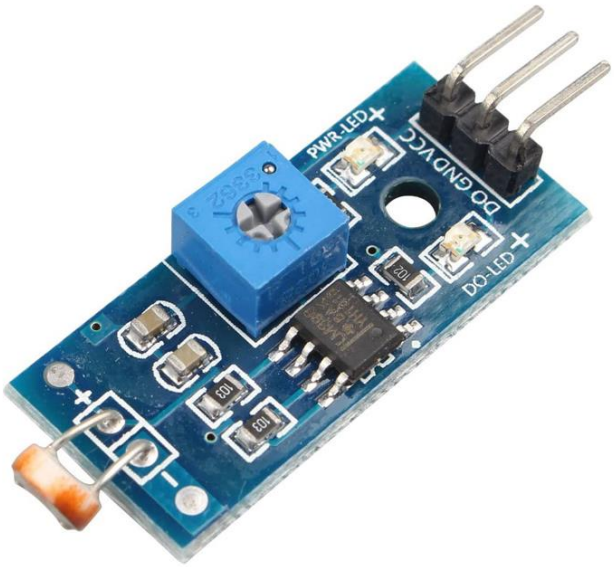
2. BreadBoard

A breadboard is a construction base for prototyping of electronics. Originally the word referred to a literal bread board, a polished piece of wood used for slicing bread.[1] In the 1970s the solderless breadboard (a.k.a. plugboard, a terminal array board) became available and nowadays the term "breadboard" is commonly used to refer to these.Because the solderless breadboard does not require soldering, it is reusable. This makes it easy to use for creating temporary prototypes and experimenting with circuit design. For this reason, solderless breadboards are also popular with students and in technological education. Older breadboard types did not have this property. A stripboard (Veroboard) and similar prototyping printed circuit boards, which are used to build semi-permanent soldered prototypes or oneoffs, cannot easily be reused. A variety of electronic systems may be prototyped by using breadboards, from small analog and digital circuits to complete central processing units (CPUs).



3.LDR MODULE

The **LDR** Sensor **Module** is used to detect the presence of light / measuring the intensity of light. The output of the **module** goes high in the presence of light and it becomes low in the absence of light. The sensitivity of the signal detection can be adjusted using potentiometer.



4.LASER

This laser module can be programmed and integrated with an Arduino board to be used with a variety of real-life applications.

5.Jumper Wires

A jump **wire** (also known as **jumper wire**, or **jumper**) is an electrical **wire**, or group of them in a cable, with a connector or pin at each end (or sometimes without them – simply "tinned"), which is normally **used** to interconnect the components of a breadboard or other prototype or test circuit, internally or with other

Male to Male Jumper Wires

Female to Female Jumper Wires

Male to Female Jumper Wires

6.KEYPAD

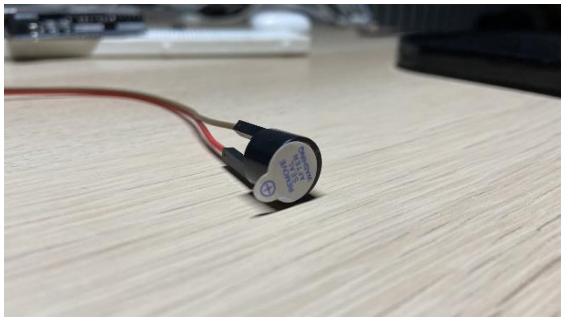
A 12-button keypad has three columns and four row. Pressing a button will short one of the row outputs to one of the column outputs. From this information, the Arduino can determine which button was pressed. For example, when key 1 is pressed, column 1 and row 1 are shorted.

7.LED

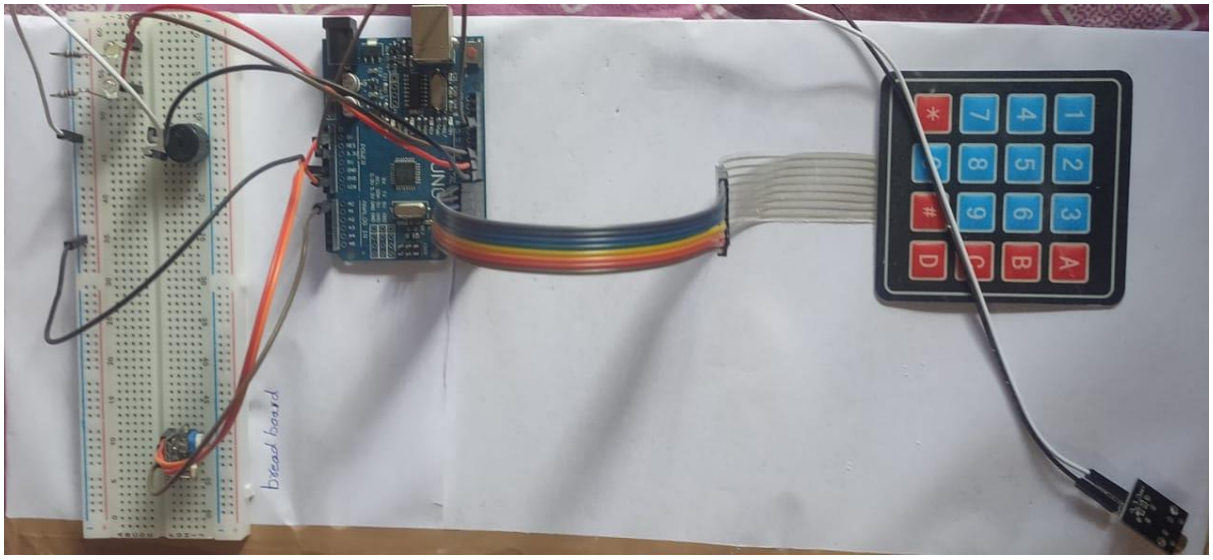
A **light-emitting diode** (**LED**) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons

8.BUZZER

You can use a buzzer whenever you want to make some noise. As a type of electronic buzzer with integrated structure, buzzers, which are supplied by DC power, are widely used in computers, printers, photocopiers, alarms, electronic toys, automotive electronic devices, telephones, timers and other electronic products for voice devices.



Manual Connection of the Project:



CODE

```
#include <SPI.h>
#include <Wire.h>
#include <Keypad.h>
int ldrpin=0;
int buzzer=8;
int led1=9;
int led2=10;
short a=0;
short code[4]={'0','0','0','0'};
const byte numRows= 4;
const byte numCols= 4;
 char keymap[numRows][numCols]=
        {
        {'1', '2', '3', 'A'},
        {'4', '5', '6', 'B'},
        {'7', '8', '9', 'C'},
        {'*', '0', '#', 'D'}
        };

byte rowPins[numRows] = {7,6,5,4}; //Keypad 8 pins
byte colPins[numCols]= {3,2,1,0};

Keypad myKeypad= Keypad(makeKeymap(keymap), rowPins, colPins,
numRows, numCols);
```

```
void setup() {
  Serial.begin(9600);
  pinMode(ldrpin, INPUT);
  pinMode(buzzer, OUTPUT);
  pinMode(led1, OUTPUT);
  pinMode(led2, OUTPUT);
}

void loop() {
  int ldrStatus = analogRead(ldrpin);
  if (ldrStatus > 200) {
      digitalWrite(buzzer, HIGH);
      ledBlink();
      digitalWrite(buzzer, LOW);
    }
  char keypressed = myKeypad.getKey();
  if (keypressed == '*') {    //if '' is pressed go to Getpass function
    Getpass();
  }

}
void ledBlink() {
  for(int i=0;i<5;i++) {
      digitalWrite(led1, HIGH);
      digitalWrite(led2, LOW);
```

```
    delay(100);
    digitalWrite(led1, LOW);
    digitalWrite(led2, HIGH);
    delay(100);
   }
  }

void Getpass(){
  tone(buzzer, 200);
  digitalWrite(led1, HIGH);
  digitalWrite(led2, HIGH);
  for(short i=0 ; i<4 ; i++) {
      char keypressed = myKeypad.waitForKey();
      if (keypressed==code[i])
      a++;
         }
  if(a==4) {
   tone(buzzer, 100);
   delay(100);
   digitalWrite(led1, HIGH);
   digitalWrite(led2, HIGH);
   noTone(buzzer);
   delay(10000);
   a=0;
   } else {
```

```
    for(int i=100;i<=5000;i+=200) {
      tone(buzzer,i);
      delay(50);
    }
    noTone(buzzer);
    }
}
```

README

1) First give the power supply to the Arduino board.

2) When ever laser falls on ldr module it won’t buzzer.

3) If the laser is not falling on ldr module or if any object passes through laser it will start buzzing.

4) Then to deactivate it we need to enter the password.

5) When the password is entered it won’t buzzer.

6) After the delay of 10sec it again comebacks to normal case.

CONCLUSION

Through this project we came across various components which gave us more insight about the subject “Internet Of Things”. Our project was about Laser security system using Arduino.

The main objective of this is to build an IOT based laser security system which is based on the principle of voltage divider circuit. when the laser beam continuously falls on the LDR, the voltage drop across it is very low as the resistance of LDR becomes less. And as soon as the laser beam is interrupted by any means of object or a barrier the voltage drop across it becomes high due to change in the LDR's resistance. This triggers the alarm or siren in the circuit. This project is very simple and helped us to learn more about the components we generally use in our labs and has increased our knowledge to a certain extend.