

ABSTRACT

One of the safety methods in public safety is road safety. People who don't follow the road safety rules are the cause for loss of lives. The existing methods in road safety are traffic cones, speed breakers, traffic lights, traffic police. The idea proposed by us is the use of sensor triggered road blocker system that is triggered automatically by red lights that block the movement of the vehicles and thus reduce and prevent the accidents. Sensor technology is used for this. This road safety technique is related to public safety as the public are the main victims of these accidents. This idea and its implementation would reduce the accidents thereby ensuring the safety of the public.

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LIST OF ABBREVIATIONS

SYMBOLS

ABBREVIATIONS

CHAPTER I

INTRODUCTION

Road safety as an activity has been inseparable from the aim of preventing injuries. This aim is an important public health issue in itself. Local authorities have a statutory duty under the Road Traffic Act 1988 to carry out road safety activity because of this aim and the success of road safety policy is usually measured against it. Road safety activity can also improve health and prevent diseases in other ways. How road safety activities fit into the wider picture is, therefore, an important consideration. Where road safety activities with the aim of preventing injuries have a positive impact on other areas of health, it can be referred to as a co-benefit. Identifying and understanding these co-benefits are a key consideration when working in partnership between road safety and public health. The co-benefits to road safety activities can be assessed at any stage and ideally can be considered early on during the planning of an activity, and measured during the evaluation. During the research for this report several road safety officers talked about how they were considering these co-benefits, either to increase the opportunities for partnership working with public health or because they had taken on a wider brief around sustainable travel. Conversely, it is essential to consider any potential unintended negative effect of activities on wider health. For instance, some cycling safety campaigns could increase the perception of danger and put people off cycling, preventing the health gains achievable when people switch some of their journeys from motorised transport to cycling or walking.

CHAPTER II

EXISTING SYSTEM

Existing methods that are employed in road safety is the use of traffic lights, traffic police, traffic cones, surveillance system, road signs, blockwalls, speed breakers. These methods are said to be effective in controlling and preventing the road accidents. But still there are many accidents happening due to vehicle failures, unawareness of drivers, and also a fair amount of them due to negligence of laws, specifically running in red lights. This situation could not be controlled by the effective measures which are undertaken now. Few drivers find a way to escape the rules laid by any opportunity. They are very risky to be handled by the traffic police. The method to overcome this scenario is by using a blocker system that do not let any vehicle pass until the red light is down.

CHAPTER III

PROBLEM IDENTIFICATION

Now a days even though there are many awareness to obey the rules in roads, many people are showing less interest to understand it. They just think that nothing will happen , but in most cases they likely don't even have chance to think again . It is proved by the no of accidents happening every where anytime. Even now some innocent pedestrians could have met with an accident by mistake of the one who drove the vehicles where they had not obeyed the rules . As a measure to reduce and prevent the life loss and to feel aware of the rules that have been kept we propose an idea of using a road blocker which is triggered when the red light is lit. Also a buzzer alerts the incoming vehicles before and after the rod blocker is triggered . By this people will try to obey the rules and ensure the safety of fellow people.

CHAPTER IV

PROPOSED SYSTEM

The system proposed by us is the use of automated road blocker system .This is achieved with the help of arduino board ,relay circuit,motor mechanism powered by a battery .The system is that,whenever red light is being lit a rod is triggered and blocks the vehicles .The rod is activated by a rack and pinion motor mechanism from a relay circuit controlled by the arduino board which detects the red light and also controls the traffic lights.This system not only reduces the accidents but also will make an awareness about the road safety and thus ensures public safety .

CHAPTER V
BLOCK DIAGRAM / DESIGN

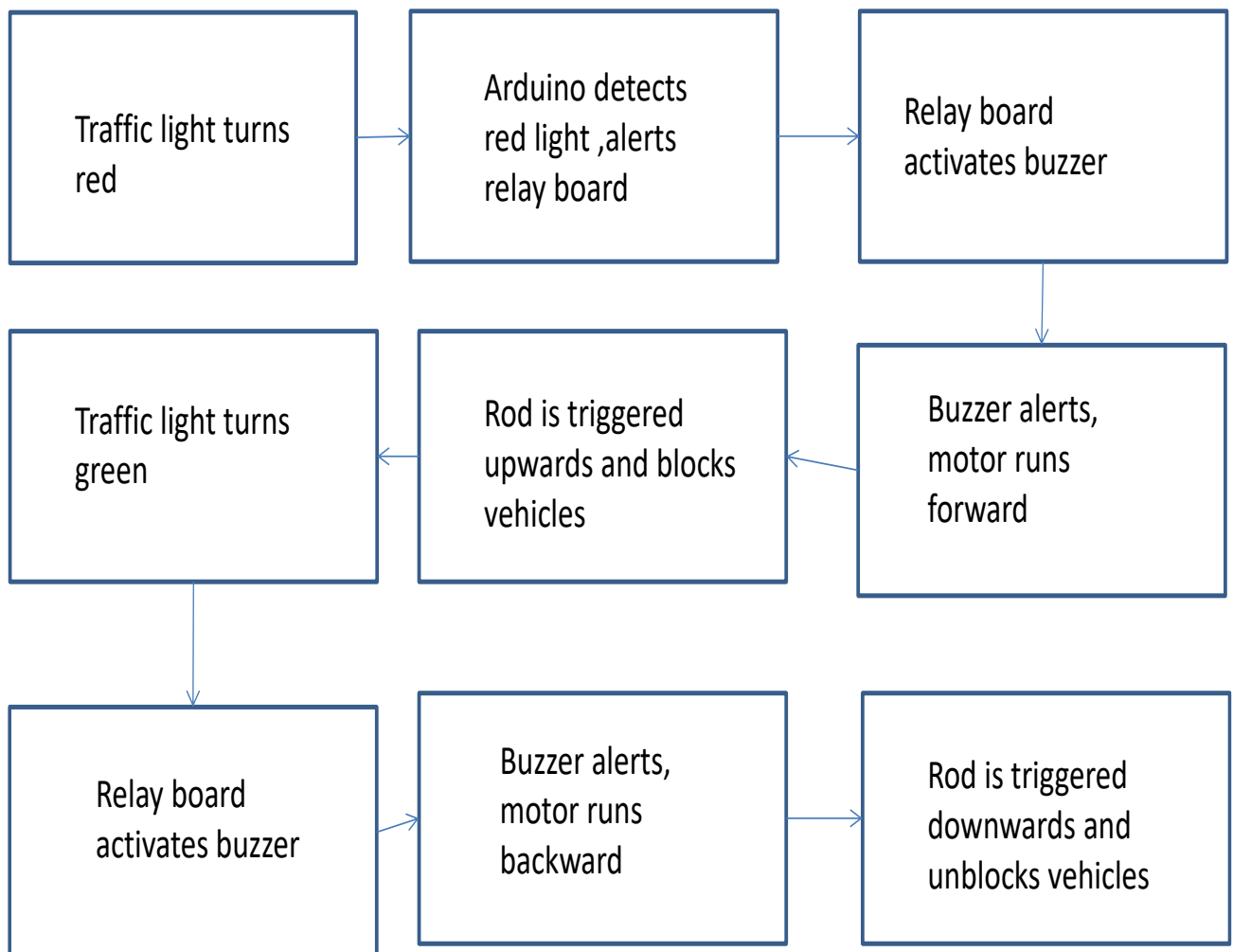


Fig.1:Arduino with traffic light setup

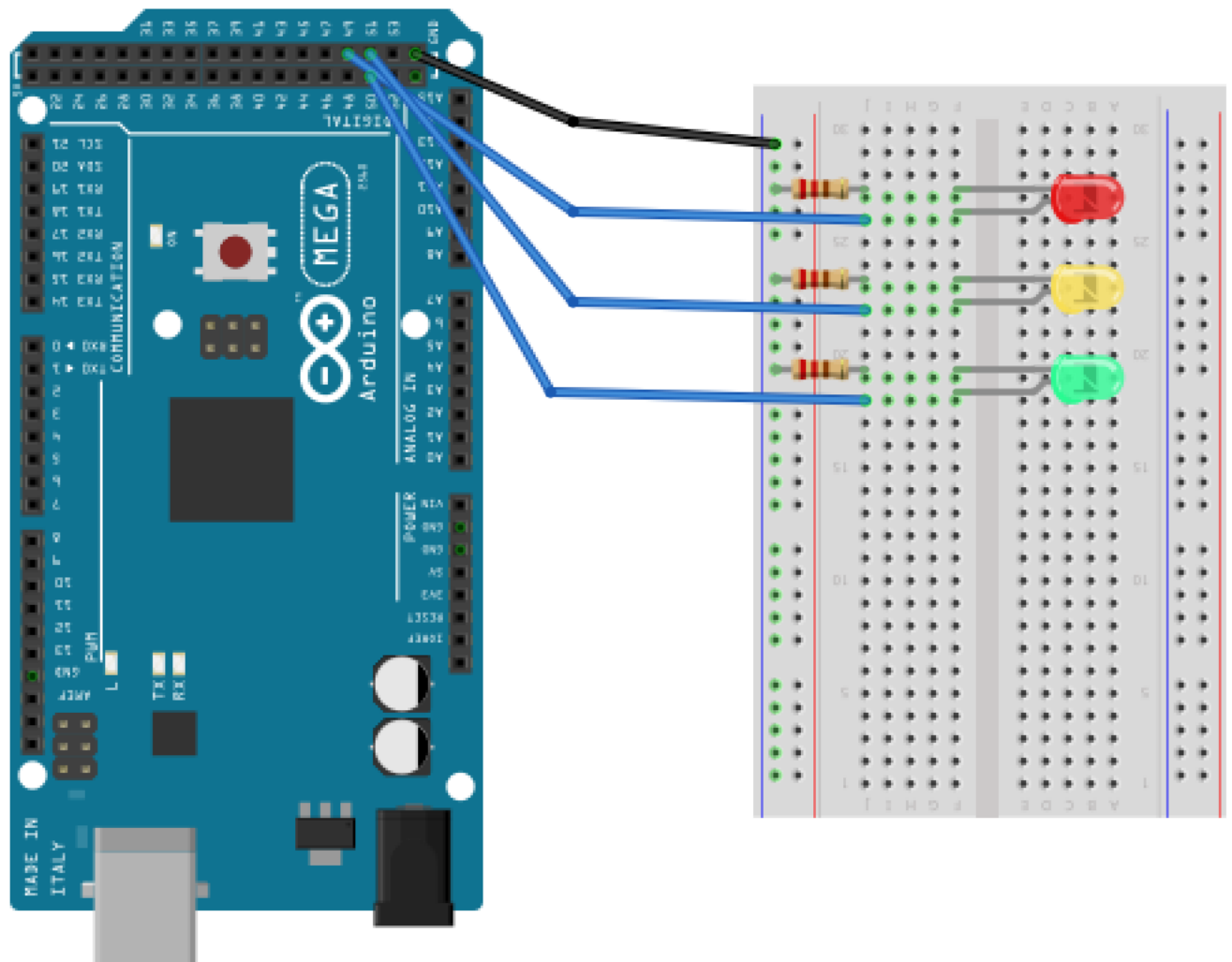


Fig.2:Relay with motor setup

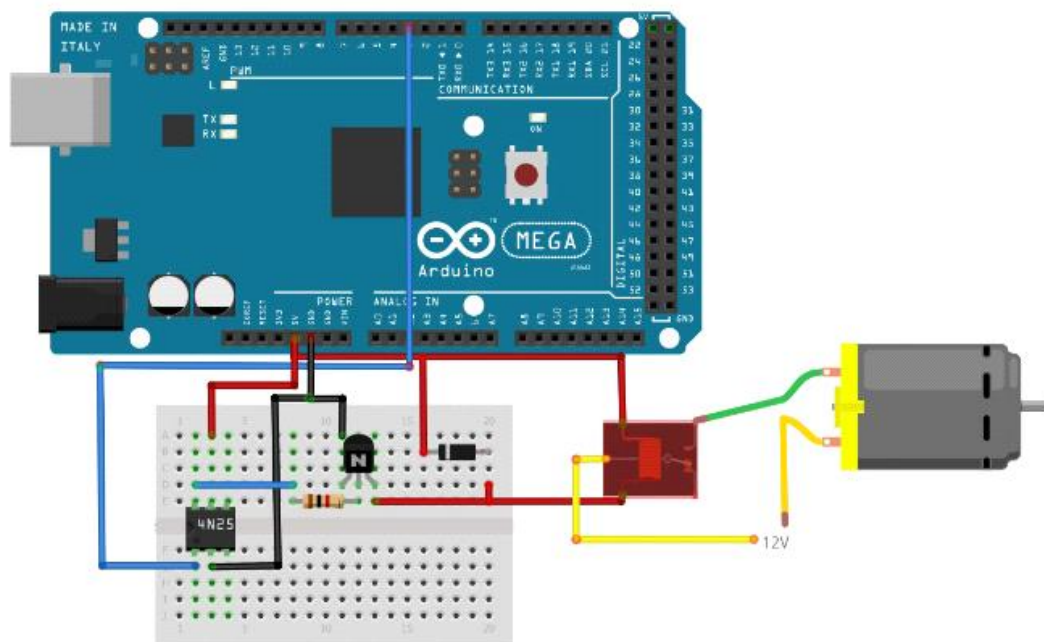
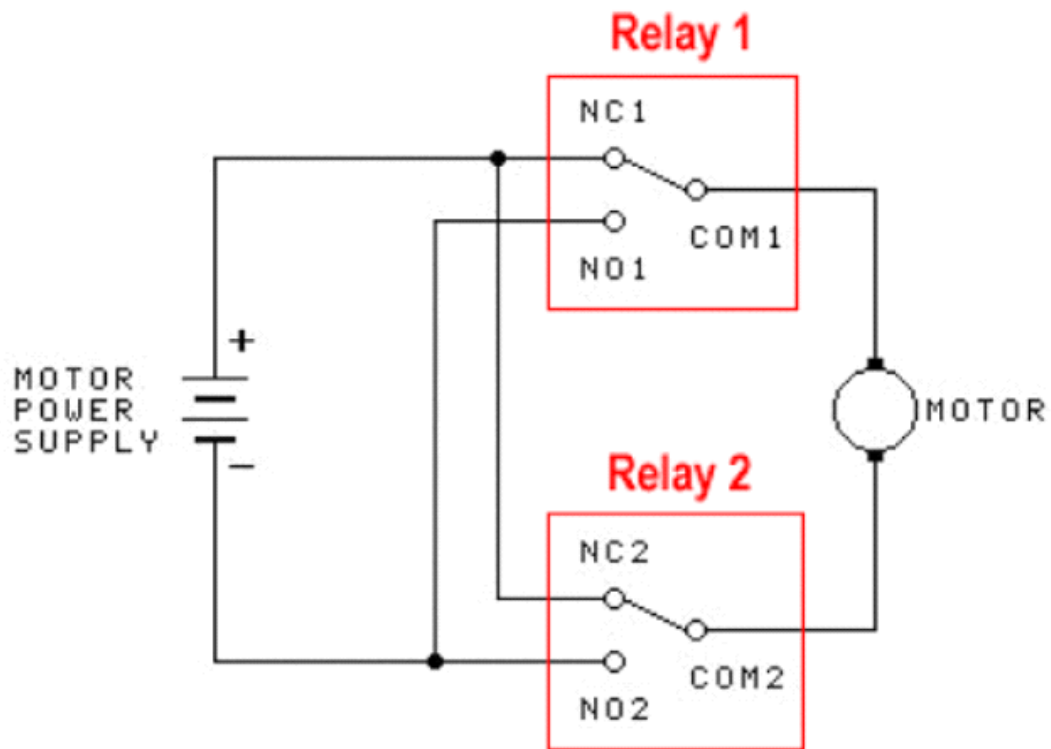
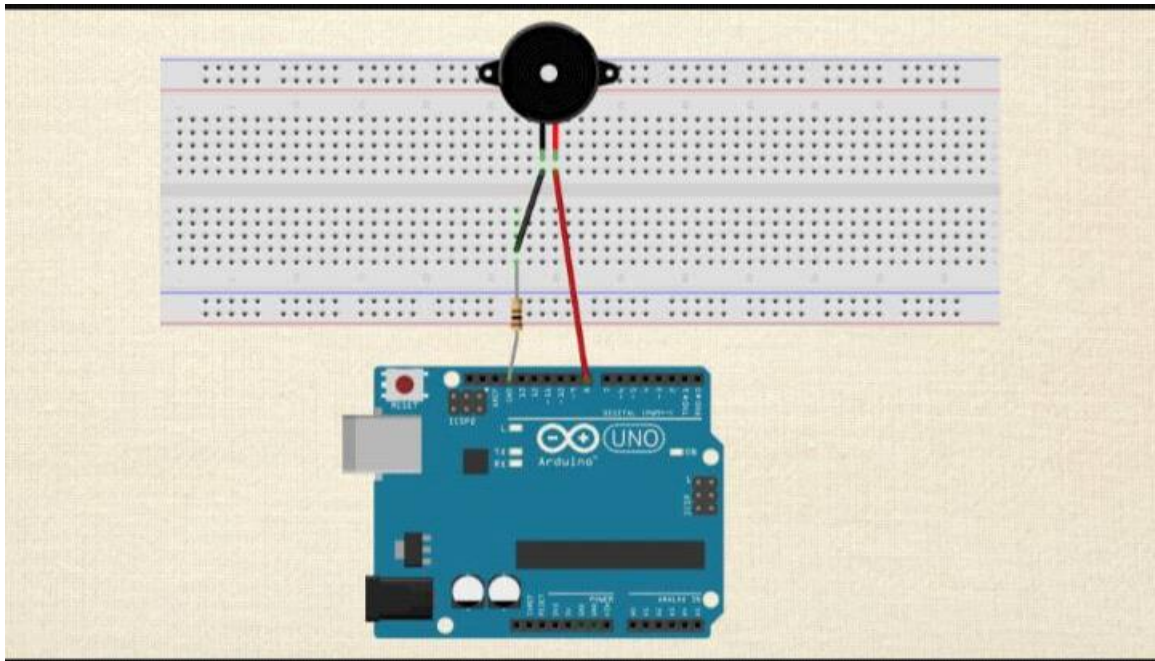


Fig.3:Buzzer connection



CHAPTER VI

MATERIALS

Fig.4:ARDUINO BOARD



Fig.5:LED'S/TRAFFIC LIGHT SETUP

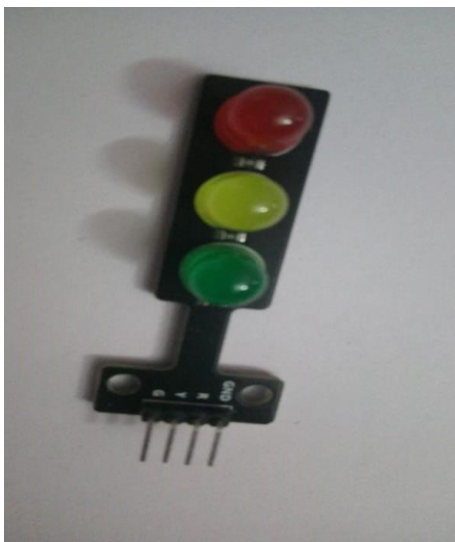


Fig.6:JUMPER WIRES[M-M,M-F,F-F]-20 nos. each



INSULATING TAPE

Fig.7:BREAD BOARD

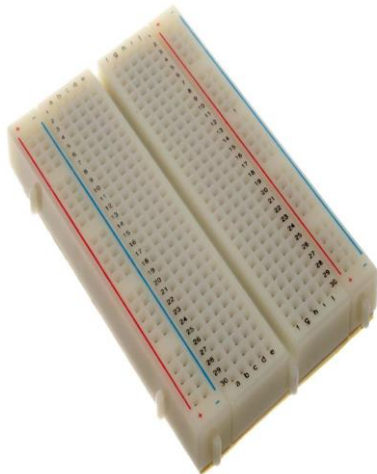


Fig.8:12V DC MOTOR



Fig.9:7805 IC



Fig.10:12V RECHARGEABLE BATTERY 1.3 AMPS



RODS[CUSTOM]

GLUE GUN

VEHICLE TOYS

Fig.11:RELAY 12V

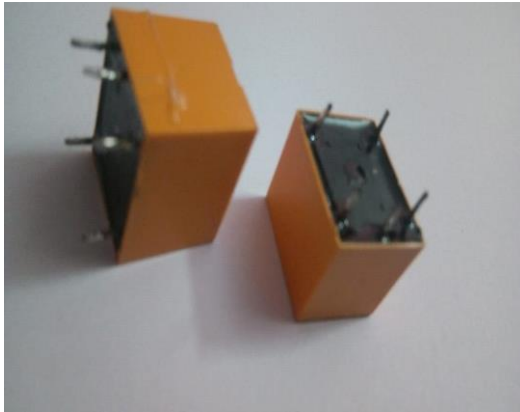
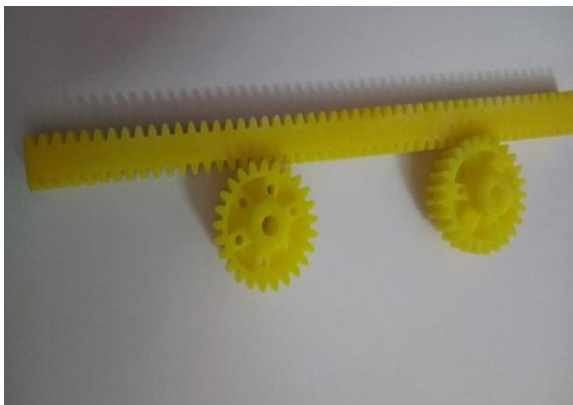


Fig.12:RELAY BOARD



Fig.13:RACK AND PENION



CHAPTER VII

WORKING

Arduino mega board is used to control the traffic light setup .With the help of it,red light is lit.Thenwhen the red light is lit.The arduino board signals the relay circuit to run a motor mechanism that is accompanied with a buzzer .The buzzer buzzes as the motor circuit performs a rack and pinion mechanism and trigger the rod upwards and a reverse mechanism (trigger) is achieved when the red light is turned off.These operations are powered by a rechargeable battery .The traffic system ,buzzer and motor operations are coded and loaded in the arduino prior the initiation process .

CHAPTER VIII

SOFTWARE DETAILS

The **Arduino Integrated Development Environment (IDE)** is a cross-platform application (for Windows, macOS, Linux) that is written in functions from C and C++[2]. It is used to write and upload programs to Arduino compatible boards, but also, with the help of 3rd party cores, other vendor development boards. Arduino IDE supports the languages C and C++ using special rules of code structuring.[5] The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that are compiled and linked with a program stub *main()* into an executable cyclic executive program with the GNU toolchain, also included with the IDE distribution.[6] The Arduino IDE employs the program *avrdude* to convert the executable code into a text file in hexadecimal encoding that is loaded into the Arduino board by a loader program in the board's firmware.[7] By default, *avrdude* is used as the uploading tool to flash the user code onto official Arduino boards.

CHAPTER IX

PROGRAM CODING

```
int GREEN = 11;
int YELLOW = 12;
int RED = 13;
int DELAY_GREEN = 5000;
int DELAY_YELLOW = 2000;
int DELAY_RED = 5000;
const int i1 = 2 ;//yellow
const int i2 = 3 ;//black
const int i3 = 4 ;

void setup()
{
    pinMode(i1,OUTPUT) ; //Logic pins are also set as output
    pinMode(i2,OUTPUT) ;
    pinMode(i3,OUTPUT) ;
    pinMode(GREEN, OUTPUT);
    pinMode(YELLOW, OUTPUT);
    pinMode(RED, OUTPUT);
```

```
}
```

```
void loop()  
{ int piezoPin = 8;  
digitalWrite(i3,HIGH) ;  
  green_light();  
  delay(DELAY_GREEN);  
  tone(piezoPin, 200, 2000);  
  yellow_light();  
  delay(DELAY_YELLOW);  
digitalWrite(i1,HIGH) ;  
digitalWrite(i2,LOW) ;  
//Clockwise for 3 secs  
delay(500) ;  
digitalWrite(i1,HIGH) ;  
digitalWrite(i2,HIGH) ;  
delay(4500) ;  
  red_light();  
  delay(DELAY_RED);  
  tone(piezoPin, 200, 2000);  
digitalWrite(i1,LOW) ;  
digitalWrite(i2,HIGH) ;  
delay(500) ;
```

```
    yellow_light();  
    delay(DELAY_YELLOW);  
    digitalWrite(i1,HIGH) ;  
    digitalWrite(i2,HIGH) ;  
    delay(4500) ;  
}
```

```
void green_light()  
{  
    digitalWrite(GREEN, HIGH);  
    digitalWrite(YELLOW, LOW);  
    digitalWrite(RED, LOW);  
}
```

```
void yellow_light()  
{  
    digitalWrite(GREEN, LOW);  
    digitalWrite(YELLOW, HIGH);  
    digitalWrite(RED, LOW);  
}
```

```
void red_light()
{
    digitalWrite(GREEN, LOW);
    digitalWrite(YELLOW, LOW);
    digitalWrite(RED, HIGH);
}
```

CHAPTER X

HARDWARE DISCUSSION

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. Its products are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form or as do-it-yourself (DIY) kits.

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards ('shields') or breadboards (For prototyping) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers can be programmed using C and C++ programming languages. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.

By connecting an L298 bridge IC to an Arduino, you can control a DC motor.

A direct current, or **DC motor** is the most common type of motor. DC motors normally have just two leads, one positive and one negative. If you connect these two leads directly to a battery, the motor will rotate. If you switch the leads, the motor will rotate in the opposite direction. To control the direction of

the spin of DC motor, without changing the way that the leads are connected, you can use a circuit called an HBridge. An H bridge is an electronic circuit that can drive the motor in both directions. H-bridges are used in many different applications, one of the most common being to control motors in robots. It is called an H-bridge because it uses four transistors connected in such a way that the schematic diagram looks like an "H." You can use discrete transistors to make this circuit, but for this tutorial, we will be using the L298 H-Bridge IC. The L298 can control the speed and direction of DC motors and stepper motors and can control two motors simultaneously. Its current rating is 2A for each motor. At these currents, however, you will need to use heat sinks.

A **relay** is an electrically operated switch. It consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals. The switch may have any number of contacts in multiple contact forms, such as make contacts, break contacts, or combinations thereof.

Relays are used where it is necessary to control a circuit by an independent low-power signal, or where several circuits must be controlled by one signal. Relays were first used in long-distance telegraph circuits as signal repeaters: they refresh the signal coming in from one circuit by transmitting it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

CHAPTER XI

ADVANTAGES / DISADVANTAGES

ADVANTAGES

- Decreases cost of traffic system
- Prevents accidents effectively
- Promotes awareness in obeying traffic lights
- Negligible error since automated
- Negligible labor
- Have addable features like camera and alert system

DISADVANTAGES

- Initial cost could be high
- Setup takes a lot of time and planning

APPLICATIONS

- Decreases cost of traffic system
- Prevents accidents effectively
- Promotes awareness in obeying traffic lights
- Negligible error since automated
- Decreases cost of traffic system
- Prevents accidents effectively
- Promotes awareness in obeying traffic lights

CHAPTER XII

CONCLUSION

Thus we have completed our project .This project is asmall thing which will make a big step towards public safety and be an initiative step in the modernization of the world .