VISVESVARAYA TECHNOLOGICAL UNIVERSITY

MINI PROJECT REPORT ON

"Speed detector of vehicles"

SUBMITTED BY:

K.Vamsi krishna	1NH18EC054
K.Abishek vardhan	1NH18EC051
K.Somasekhar	1NH18EC057
G.Manoj kumar	1NH18EC144
B.Satya manoj	1NH17EC140

Under the guidance of

Mamatha B Savadatti

Assistant Professor, Dept. of ECE, NHCE, Bengaluru.

NEW HORIZON COLLEGE OF ENGINEERING

(ISO-9001:2000 certified, Accredited by NAAC 'A', Autonomous college permanently affiliated to VTU)Outer Ring Road, Panathur Post, Near Marathalli, Bengaluru-560103

NEW HORIZON COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CERTIFICATE

Certified that the mini project work entitled "**Speed detector of vehicles**" carried out by**,** **K.VamsiKrishna(1NH18EC054),K.Abishekvardhan(1NH18EC051),K.Somasekhar (1NH18EC057) , G.Manoj kumar (1NH18EC144B), B.Satya manoj (1NH17EC140)**

bonafide students of Electronics and Communication Department , New Horizon College of Engineering, Bangalore.

The mini project report has been approved as it satisfies the academic requirements in respect of mini project work prescribed for the said degree.

Project Guide	HOD ECE
Mamtha B Savadatti	----------

External Viva

Name of Examiner	Signature with Date
1.	
2.	

ACKNOWLEDGEMENT

The satisfaction that accompany the successful completion of any task would be, but impossible without the mention of the people who made it possible, whose constant guidance and encouragement helped us succeed.

We thank **Dr. Mohan Manghnani**, Chairman of **New Horizon Educational Institution**, for providing necessary infrastructure and creating good environment.

We also record here the constant encouragement and facilities extended to us by **Dr.Manjunatha**, Principal, NHCE and **Dr. Sanjeev Sharma**, head of the department of Electronics and Communication Engineering. We extend sincere gratitude to them.

We sincerely acknowledge the encouragement, timely help and guidance to us by our beloved guide **Mamatha B Savadatti** to complete the project within stipulated time successfully.

Finally, a note of thanks to the teaching and non-teaching staff of electronics and communication department for their co-operation extended to us, who helped us directly or indirectly in this successful completion of mini project.

K.Vamsi Krishna(1NH18EC054)

K.Abishek vardhan(1NH18EC051)

K.Somasekhar (1NH18EC057)

G.Manojkumar(1NH18EC144B)

B.Satya manoj (1NH17EC140)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Road accidents have been normal in the current world with the prime reason being the imprudent driving. The need to check this has been fundamental and various strategies have been utilized up until this point. Notwithstanding, with the progression in the innovation, distinctive overseeing bodies are requesting a type of electronic innovation to control this issue of over speed driving. At this situation, we are proposing a framework to distinguish the vehicle which are being driven previously the given most extreme speed limit that the separate roads or road limits. This undertaking is partitioned into parts one is speed recognition and another is the showing the speed of the vehicle, on the off chance that the speed is surpassed than the breaking point on a specific road, at that point the bell rings and the speed is shown on the lcd screen alongside the over speeding.

CHAPTER 01

INTRODUCTION

Rash driving is the reason for some street accidents everywhere on the world. An absolute 449,002 accidents happened in India in 2019, causing 151,113 Deaths and 451,361 wounded. One more stressing pattern that raised its head again in the Road Accidents in India in 2019 report had to do with National Highways, represent 2.03 percent of the complete street network in the nation. The traffic population has expanded significantly in India as there is no way to control or screen the speed of vehicles running on streets. This framework demonstrates profoundly viable in location of over speed driving. It isn't at all fundamental that such accidents are aftereffects of driving affected by liquor as even an individual who hasn't burned-through liquor can drive in a wild way. To defeat this issue and lessening demise rate because of accidents, there are sure standards. These days, rash driving makes a genuine risk the driver just as overall population. Regardless of the way that rash driving is a difficult issue, its present strategies for identification by watch officials need adequacy. Most importantly, given the colossal mileage of garages, the quantity of watch officials is a long way from enough to notice and investigate each driver's practices. Second, the rules of rash driving examples are just clear and visual perceptions can't determine the subtleties of driving around evening time or in helpless climate. In the current framework, to distinguish rash driving police needs to utilize a handheld radar firearm and focus on the vehicle to record its speed. In the event that the speed of the vehicle surpasses as far as possible, the closest police headquarters is educated to stop the quickly moving vehicle. This is an inadequate cycle as in the wake of identifying one needs to educate the equivalent and a great deal regarding time is squandered. With the quantity of vehicles expanding step by step, this strategy can't be trusted with the lives of individuals. There are unmistakable standards spread out by specialists about driving vehicles on streets. The most well-known guideline in any nation is speed limit in specific streets i.e., you will be infringing upon the law if your vehicle speed surpasses this breaking point. To identify the speed of a moving vehicle, the watching officials generally rely upon a handheld weapon that chips away at Radar Technology or Lidar Technology. This is a repetitive

cycle as the official needs to physically check for over speeding for every vehicle. Imagine a scenario in which the Car Speed Detection is made programmed. A basic programmed discovery of speed of a vehicle is planned in Arduino Car Speed Detector project, where you can place the system in one place and view the results instantly without any human intervention.

CHAPTER 02

LITERATURE SURVEY

Title of the paper	Author & Year of Publication	Outcome
Design and implementation of pc based over speed violation management for vehicles	Ni hlain,Zawmin htun --07/July/2015	Designing and idea of project
Autonomous speed control of over speeding vehicles using radio frequency	Vishal pande,malharmohite, supriya Mhatre,siddesh desai,Anjali kumari – 04/April/2015	Speed controlling of vehicles

Table 2.1: Literature survey

CHAPTER 03

PROPOSED METHODOLOGY

IR Sensors are the fundamental parts of the project that distinguish the speed of a vehicle. Basically, you can actualize the arrangement of IR Sensors from multiple points of view yet in this undertaking, I have utilized two intelligent sort IR Sensors and put them 10cm separated. At the point when a vehicle arrives at the main sensor, the IR Sensor gets actuated. From this second ahead, a clock is started and will keep on keeping time until the vehicle arrives at the second IR Sensor. By maintaining the distance between the two sensors to be 10cm, you can compute the speed at which the vehicle went from IR Sensor 1 to IR Sensor 2 as you definitely know the hour of movement. All the figuring's and information gathering are finished by Arduino and the end-product is shown on a 16X2 LCD Module.

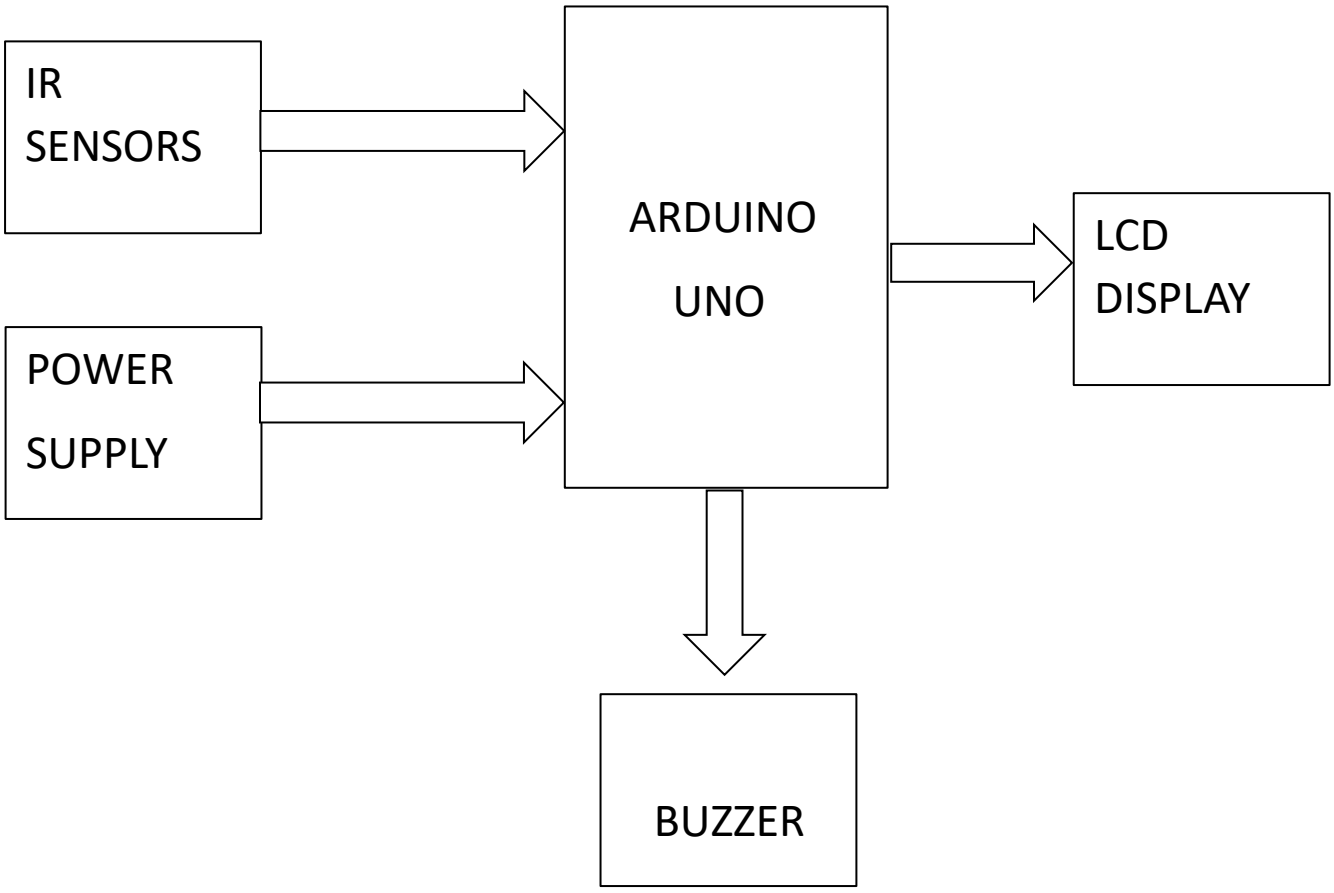

Fig 3.1: Flow of the project

Starting with ir sensors the detect the vehicle passing Infront of it and calculate the time taken by the vehicle to cross the two ir sensors and the information is sent to the Arduino and the whole circuit is connected to a power supply. The data that collected from the ir sensors is sent to the Arduino and there it will calculate the speed and compare with the limited speed which we can set and if the speed of the vehicle got exceeded the Arduino send the information to the lcd display and it got displaced on the screen if the speed is exceeded the it displays overspeed and then it rings the buzzer.

Working

IR Sensors are the principle part of the project that distinguish the speed of a vehicle. In this task, we have utilized two intelligent sort IR Sensors and put them 10cm separated. At the point when a vehicle voyaging arrives at the principal sensor, the IR Sensor gets actuated. From this second ahead, a clock is started and will keep on keeping time until the vehicle arrives at the second IR Sensor. By mimicking the distance between the two sensors to be 5 meters, you can compute the speed at which the vehicle went from IR Sensor 1 to IR Sensor 2 as you definitely know the hour of movement. All the figuring's and information gathering are finished by Arduino and the end-product is shown on a 16X2 LCD Module. On the off chance that vehicles surpassed as far as possible, at that point the buzzer rings. With the assistance of the speed formula, we can ascertain the speed of the vehicle and where the distance is as of now fixed.

$$\text{SPEED} = \frac{\text{DISTANCE}}{\text{TIME}} \quad \text{km/hr}$$

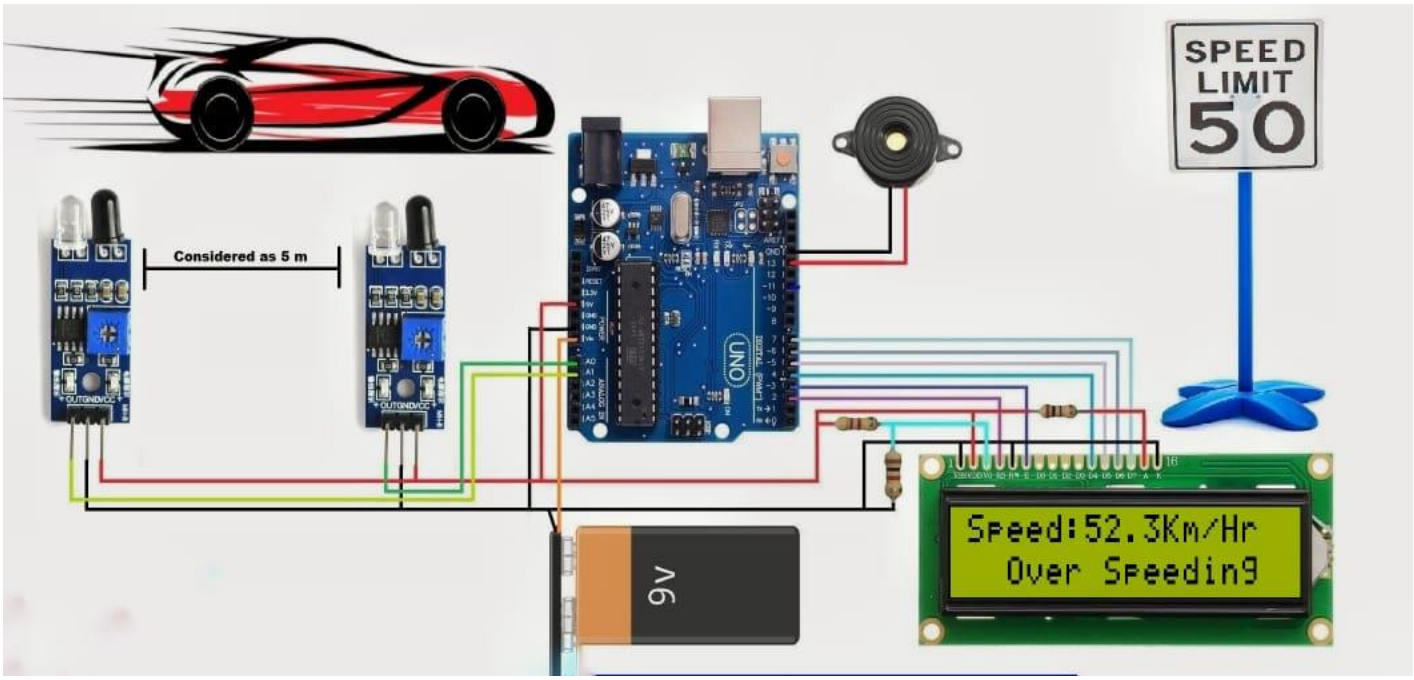

Fig3.2: Circuit diagram

Flow chart of the speed detector of the vehicles

In this flow chart starts with when the vehicle crosses the first ir sensor then the timer starts and if the vehicle crosses the second sensor then the timer stops and the time is calculated and it checks with the limited speed if the speed is exceeded then the over speeding is displayed and the buzzer will ring. If the speed is in the limit then the normal speed will be displayed and the speed of the vehicle is displayed and the process will be continuing and it bidirectional it will calculate the speed of the either sides passing vehicles from left to right and from right to left.

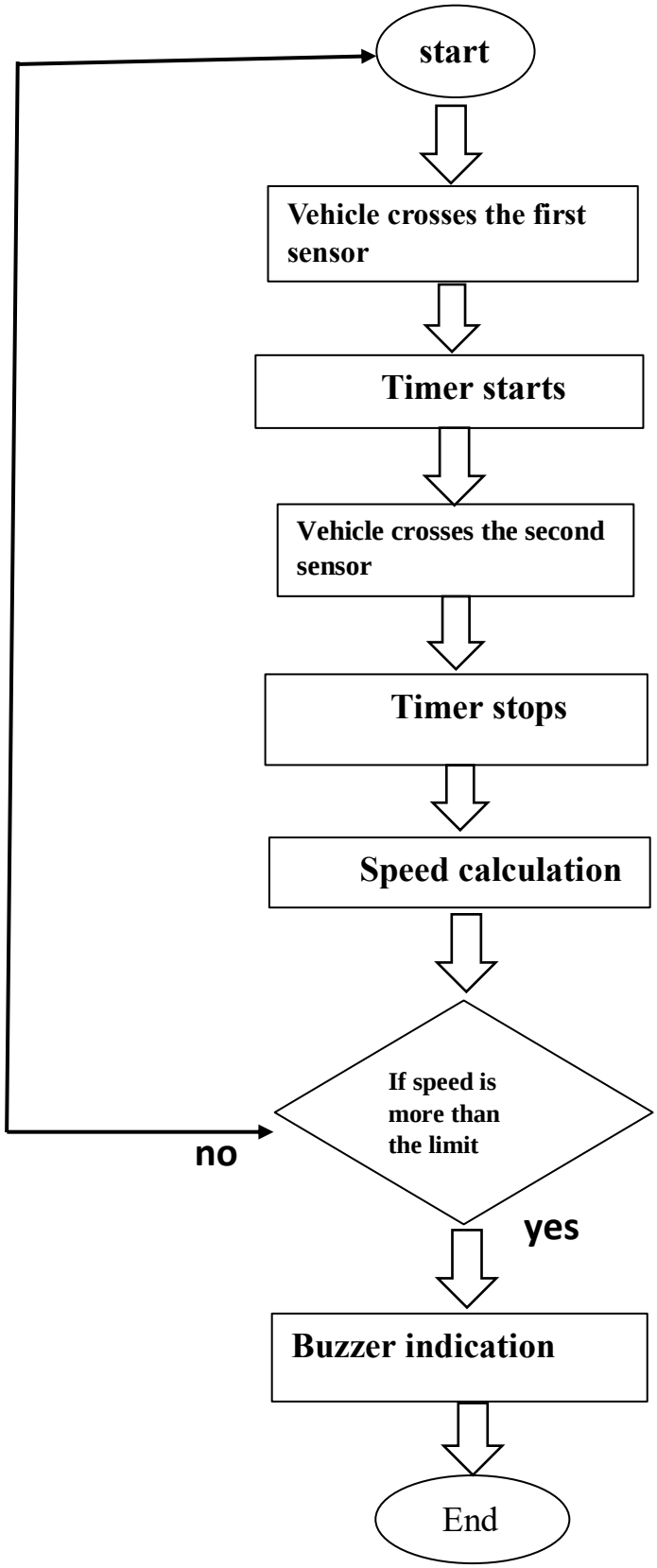

Fig3.3: Flow chart of the speed detector of the vehicles

CHAPTER 04

PROJECT DESCRIPTION

4.1 HARDWARE COMPONENTS

	COMPONENTS	QUANTITY
1	Solderless Breadboard	2
2	Arduino Uno	1
3	IR Sensor	2
4	16×2 LCD Display	1
5	100R Resistor	1
6	4.7k Resistor	1
7	1k Resistor	1
8	Male to Male Jumper Wires,	
9	Battery 9v	1
10	Battery clip	1

Table 4.1.1: Hardware Components

4.2 SOLDERLESS BREADBOARD

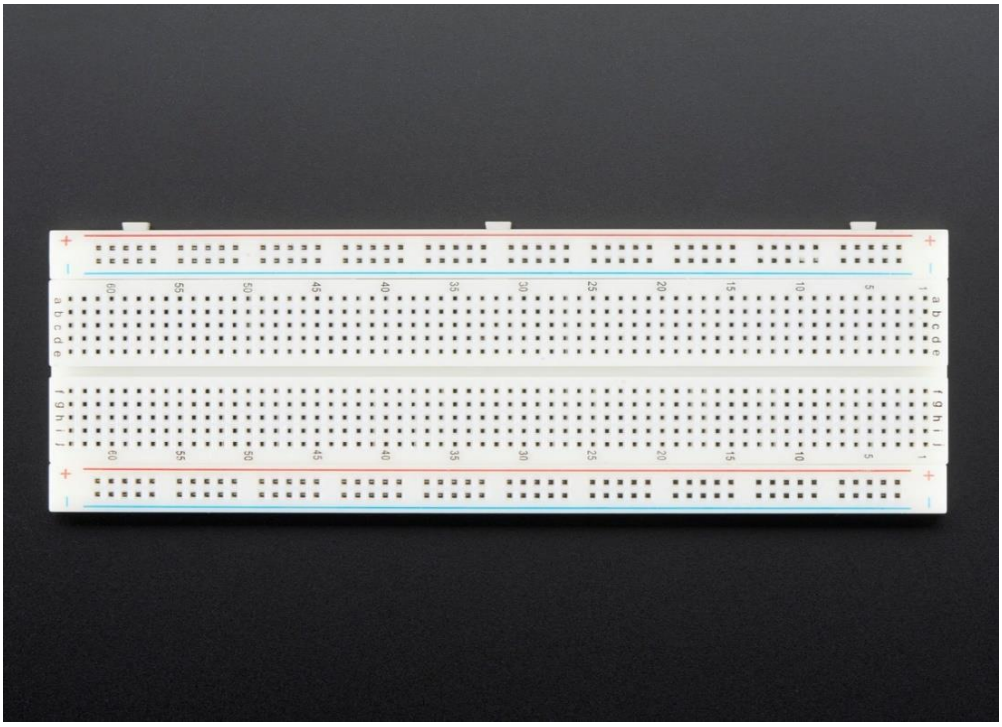

Fig4.2.1: Bread Board

This is a 'full-size' breadboard, 830 tie focuses. Useful for little and medium activities. It's 2.2" x 7" (5.5 cm x 17 cm) with a standard twofold strip in the center and two force rails on the two sides. You can pull the force rails off effectively to make the breadboard as slim as 1.4" (3.5cm). You can likewise "snap" these breadboards together whichever way to make longer or potentially more extensive breadboards. The back is made of froth twofold sided tape, in the event that you eliminate the defensive paper you can append it to a level clean surface.

Why Use Breadboards?

A gadgets breadboard (rather than the sort on which sandwiches are made) is really alluding to a solderless breadboard. These are extraordinary units for making impermanent circuits and

prototyping, and they require positively no welding. Prototyping is the way toward testing out a thought by making a primer model from which different structures are created or replicated, and it is perhaps the most widely recognized utilizations for breadboards. On the off chance that you don't know how a circuit will respond under a given arrangement of boundaries, it's ideal to fabricate a model and test it out. For those new to gadgets and circuits, breadboards are regularly the best spot to begin. That is the genuine excellence of breadboards- - they can house both the most straightforward circuit just as mind boggling circuits. As you'll see later in this instructional exercise, if your circuit grows out of its present breadboard, others can be appended to oblige circuits, all things considered, and complexities. Another normal utilization of breadboards is trying out new parts, for example, Integrated circuits (ICs). At the point when you are attempting to sort out how a section functions and continually revamping things, you would prefer not to need to bind your associations each time.

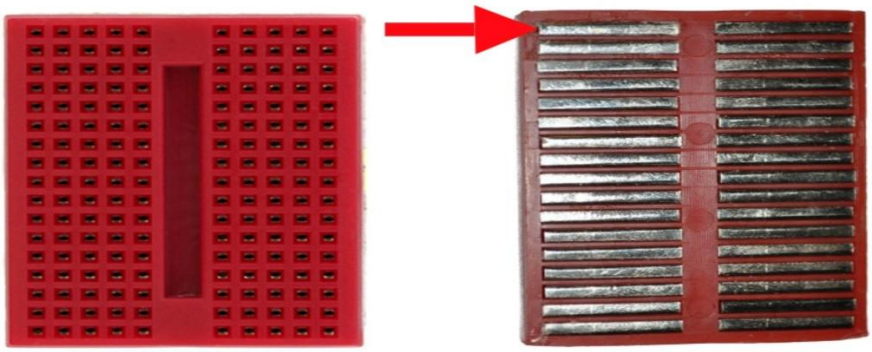

Fig 4.2.2: Bread Board Internal structure

As referenced, you don't generally need the circuit you work to be lasting. When attempting to copy a client's concern, SparkFun's Technical Support group will frequently utilize breadboards to construct, test, and dissect the circuit. They can associate the parts the client has, and whenever they've gotten the circuit arrangement and sorted out the issue, they can dismantle everything and set it aside for whenever they need to do some investigating.

4.3 ARDUINO UNO:

Fig 4.3.1: ARDUINO UNO

"Uno" signifies **"one"** in Italian and was picked to stamp the underlying arrival of Arduino programming. The Uno board is the first in a progression of USB-based Arduino sheets; it and form 1.0 of the Arduino IDE were the reference variants of Arduino, which have now advanced to fresher deliveries. The ATmega328 on the board comes pre-customized with a bootloader that permits transferring new code to it without the utilization of an outside equipment software engineer. While the Uno conveys utilizing the first STK500 convention, it contrasts from all previous sheets in that it doesn't utilize the FTDI USB-to-chronic driver chip. All things being equal, it utilizes the Atmega16U2 (Atmega8U2 up to variant R2) customized as a USB to chronic converter.

Technical specifications:

Microcontroller	ATmega328P
Operating Volt.	5V
Input Volt. (recommended)	7-12V
Input Volt. (limit)	6-20V
Digital I/O Pins	14 (6 PWM output)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	32 KB (ATmega328P) of which 0.5 KB used by bootloader
SRAM	2 KB (ATmega328P)
EEPROM	1 KB (ATmega328P)
Clock Speed	16 MHz
LED_BUILTIN	13
Length	68.6 mm
Width	53.4 mm

Table 4.3.1: SPECIFICATIONS OF ARDUINO UNO

Communication:

The Arduino Uno has various offices for speaking with a PC, another Arduino board, or other microcontrollers. Nonetheless, on Windows record is required. Arduino Software (IDE) incorporates a chronic screen which permits straightforward literary information to be shipped off and from the board. The RX and TX LEDs on the board will streak when information is being sent through the USB-to sequential chip and USB association with the PC (however not for sequential correspondence on pins 0 and 1). A Software Serial library permits sequential correspondence on any of the Uno's computerized pins.

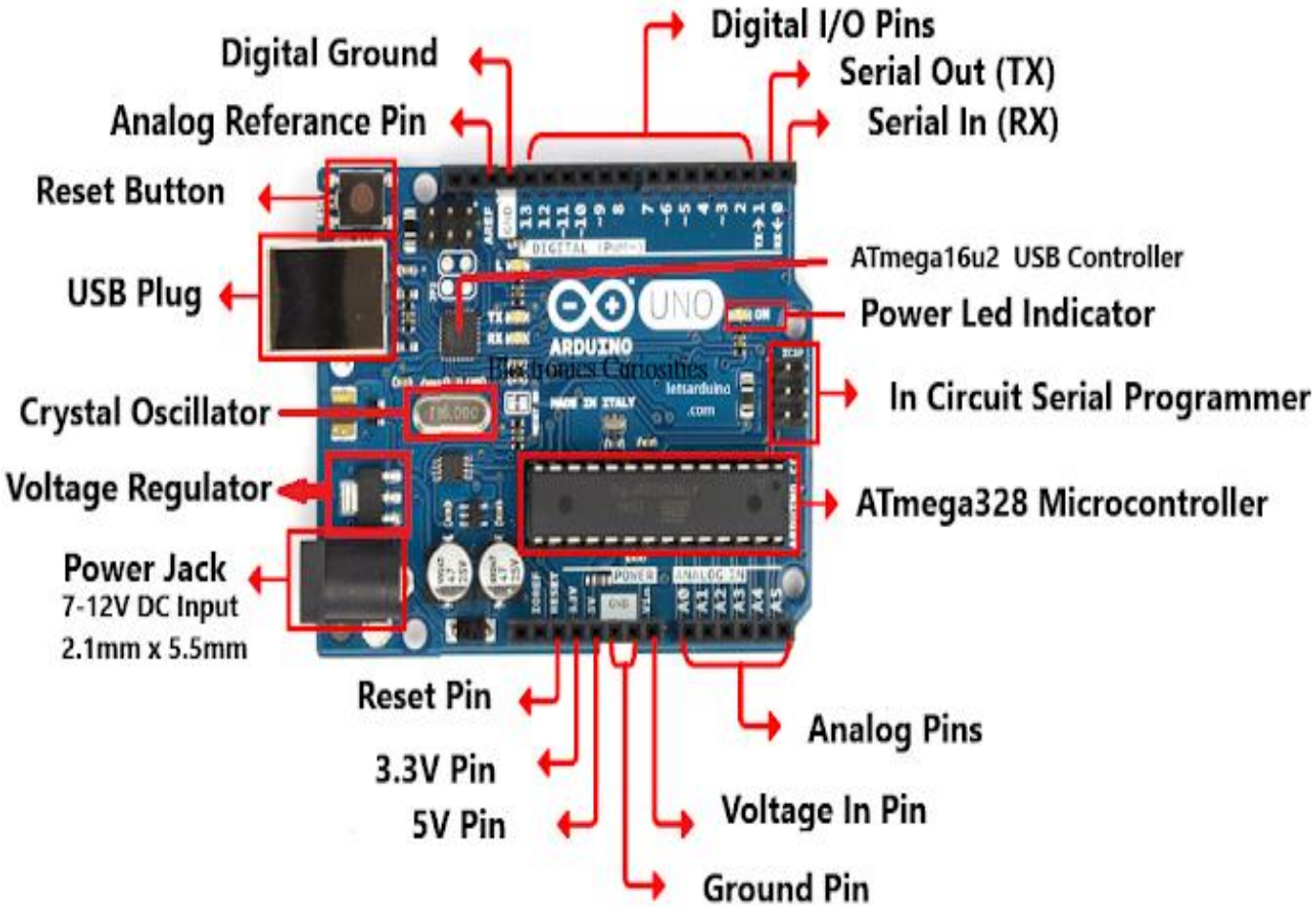

Fig 4.3.2: PIN DESCRIPTION OF ARDUINO UNO

Difference between Arduino UNO and NANO:

- Both Arduino UNO and Arduino NANO come with similar functionality with a little difference in terms of PCB layout, size and form factor.
- Arduino UNO is a microcontroller board based on at mega 328 and has 14 digital pins out of which 6 are PWM pins. It has 6 analog pins interfaced on the board. No extra peripheral is required. It is a complete ready to use that requires no prior technical skills to get on hands-on experience. Arduino UNO can be powered by using DC power jack, battery or simple plug to the computer using USB cable.
- Arduino Nano is small and compact when compared to Arduino UNO. It doesn't have DC power jack and comes with Mini US instead of regular USB Nano has 2 extra analog pins than UNO. Nano is breadboard friendly whereas UNO lacks this nature. However, both devices run at5V, 40 mA and 16MHz frequency.

Name	Arduino Nano	Arduino Uno
MCU	Atmega328p/Atmega 168.	Atmega328p
Power	5V	5V
Input Voltage	7 -12 V	7 – 12 V
Maximum Current Rating	40mA	40mA
Clock Frequency	16MHz	16MHz
Flash Memory	16KB/32KB	32KB
USB	Mini	Standard
USART	Yes	Yes
SRAM	1KB/2KB	2KB
PWM	6 out of 14 digital pins	6 out of 14 digital pins
GPIO	14	14
Analog Pins	8	6
EEPROM	512bytes/1KB	1KB

Difference between Arduino Uno and Arduino Nano

Fig 4.3.3: DIFFERENCE BETWEEN ARDUINO UNO AND ARDUINO NANO

Arduino Architecture

Essentially, the processor of the Arduino board utilizes the Harvard engineering where the program code and program information have separate memory. It comprises of two recollections, for example, program memory and information memory. Wherein the information is put away in information memory and the code is put away in the blaze program memory. The Atmega328 microcontroller has 32kb of glimmer memory, 2kb of SRAM 1kb of EPROM and works with a 16MHz clock speed. It's an electronic gadget its utilized for seeming well and good and control more actual world then the work stations and ARDUINO is open source electronic prototyping Platform dependent on a basic microcontroller board we can build up the climate for composing programming for the board to permitting make intelligent electronic gadget.

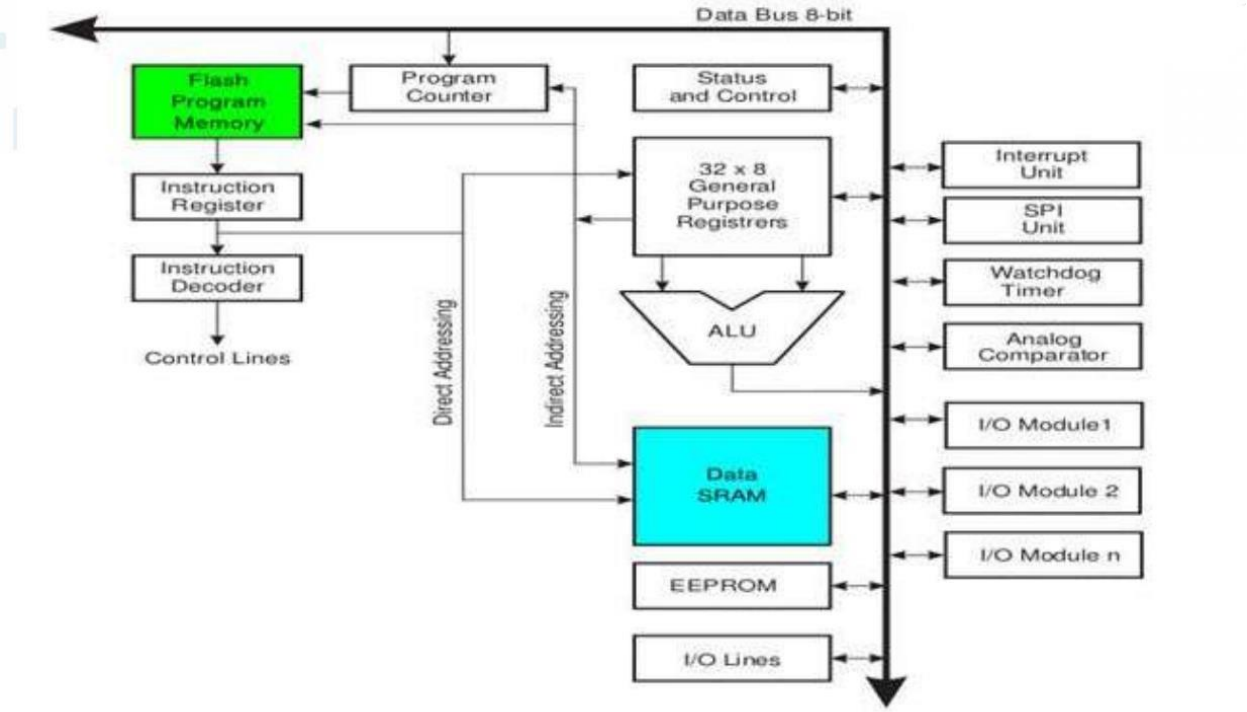

Fig4.4.4: Arduino Architecture

ARDUINO can be utilized to create intelligent articles, taking contributions from a verity of switcher or sensor and controlling an assortment of lights, engines and other actual yield, ARDUINO they can speak with programming running your PC .The ARDUINO programming language is an execution of wiring a comparable actual registering stage .which depends on the preparing interactive media programming climate .For programming the microcontrollers ARDUINO stage give an incorporated improvement climate (IDE) in view of the handling venture .it incorporates uphold for c and C++ programming dialects.

4.4 IR SENSORS

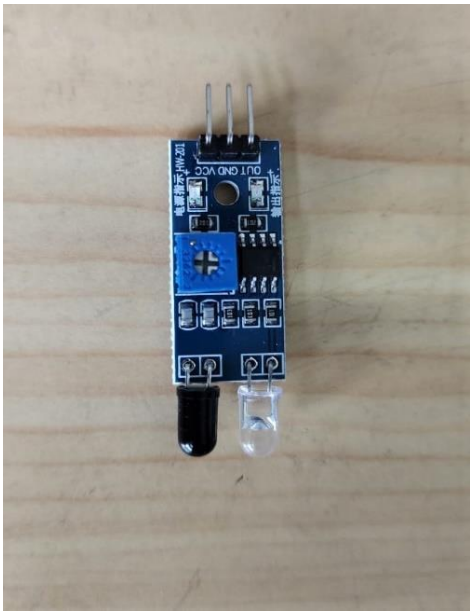

Fig 4.4.1: IR Sensors

Most importantly, I have utilized two computerized IR Sensors, which comprises of an IR Transmitter (IR LED), an IR Receiver (Photo Diode), a Comparator IC and a couple of supporting segments. The IR Transmitter and Receiver Pair are put one next to the other with the goal that they structure a Reflective Type IR Sensor. In this sort, the IR Transmitter consistently produces

Infrared radiations and if there is no article before the sensor, none of the Infrared radiation gets reflected back to the IR Receiver. Yet, in the event that there is an item before the sensor, a portion of the infrared radiation hits the article and gets reflected back. This pondered radiation falls the IR Receiver, which implies that the sensor has distinguished the article. Some IR Sensors has the choice to create both Analog and Digital Outputs yet the module I have utilized has just Digital Output i.e., the yield is HIGH when an item is recognized and LOW when there is no article. The IR sensor incorporates an IR LED and a phototransistor. At the point when an article passes between the sensors, light reflects from the item and falls on the phototransistor. An operational enhancer IC (LM358) is utilized and the phototransistor is associated with it. At the point when article come before sensor, it imparts a legitimate HIGH sign to Arduino.

4.5 16*2 LCD DISPLAY:

16*2 LCD means it has 16 columns and 2 rows. Thus, in total it has 32 characters in total and each character is made with 5*8-pixel dots. Therefore 16*2 Lcd has of 1280 pixels. In order to handle all these pixels, this LCD display is interfaced with some sort of IC's to control the functionality. Here in our circuit, it is interfaced with I2C module.

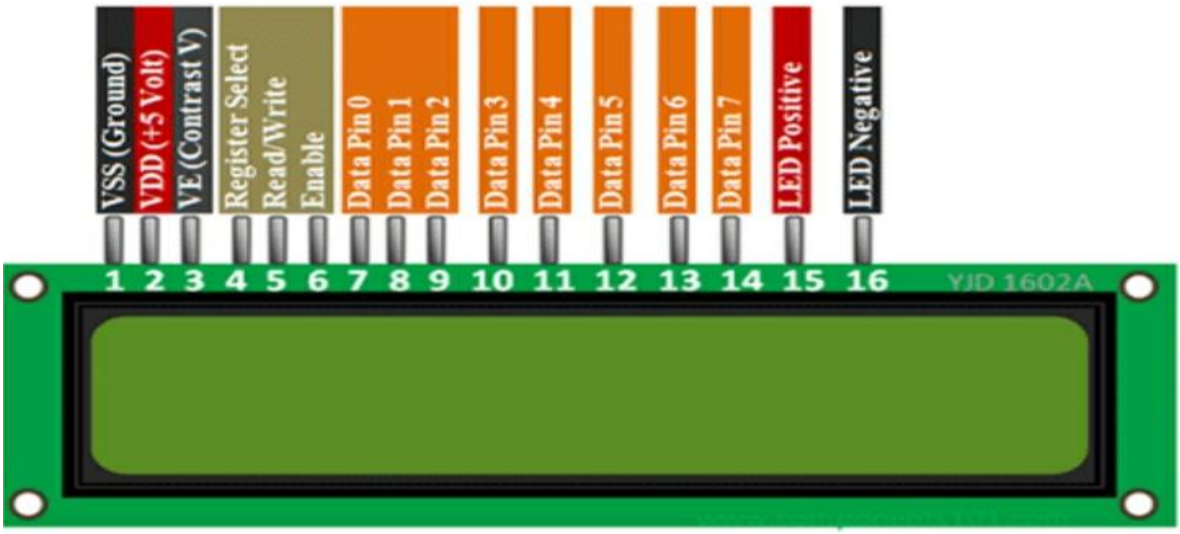

Fig 4.5.1: 16*2 LCD Display

FEATURES:

- Operating voltage of 4.7V -5.3v
- Current consumption is 1mA without backlight
- Alphanumeric LCD display module means can display both alphabets and numbers.
- Consists of 2 rows
- It is used to either read or write the data.

4.6 Resistors

Resistors of various types are utilized in immense amounts in assembling electronic hardware. Truth be told, the resistor is likely the most well-known kind of electronic part utilized in electrical and electronic circuits. There is an enormous number of various kinds of resistor that can be purchased and utilized. The properties of these various resistors change, and it assists with getting the correct kind of resistor for some random plan to guarantee that the best presentation is acquired. Albeit numerous resistors will work in an assortment of utilizations the sort of resistor can be significant sometimes. In like manner, it is important to think about the distinctive resistor types, and in which applications each kind of resistor can be utilized. Choice of fixed leaded resistors or different sorts

Resistors are utilized in practically all electronic circuits and numerous electrical ones. Resistors, as their name shows oppose the progression of power, and this capacity is vital to the activity most circuits. Here we have utilized one 100ohm,4.7k and 1k resistors.

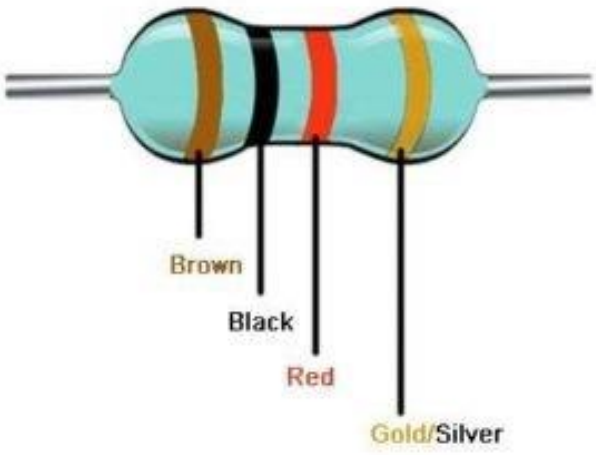

Fig 4.6.1:1K Resistor

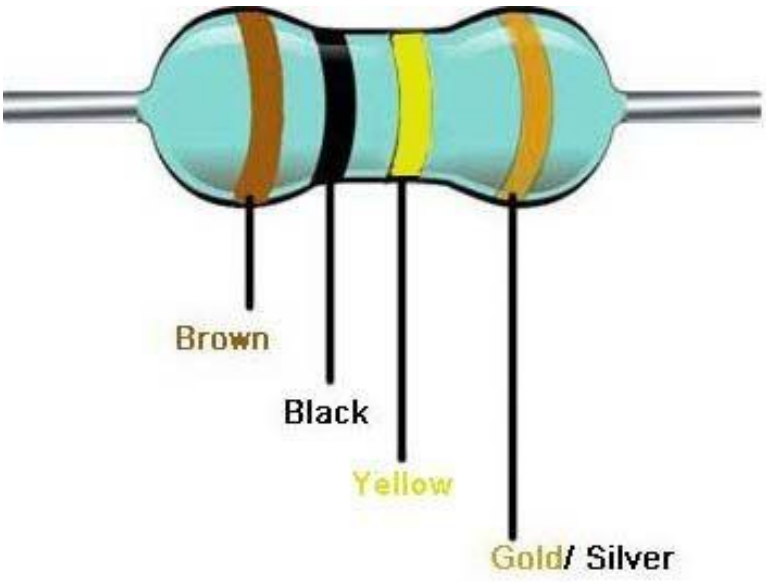

Fig 4.6.2:100 ohms Resistor

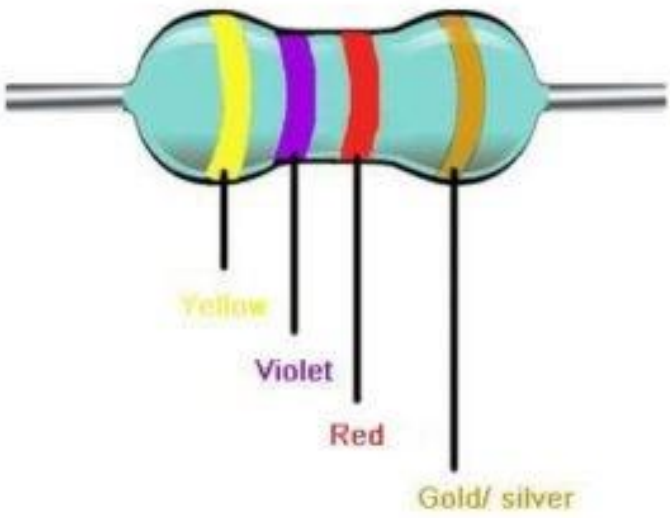

Fig 4.6.3: 4.7K Resistor

4.7 SOFTWARE DESCRIPTION:

We are using Arduino develop environment. This software works in windows, Linux and mac OS. The programming can be written in java, C, C++. Arduino IDE provides software library for wiring programs as well. We can view output on the screen in the form of values or in the form of graph depending on what the user wants. The source code for the IDE is delivered under the GNU General Public License, variant 2. The Arduino IDE underpins the dialects C and C++ utilizing unique principles of code structuring. Additionally, included with the IDE distribution. The Arduino IDE utilizes the program to change over the executable code into a book document. By default, is utilized as the transferring apparatus to streak the client code onto official Arduino boards.

Arduino Pro IDE

Developers: Arduino

Software Review

discharge v0.1.2/14

September 2020

github.com/arduino/Ard

uino

Composed in: C, C++

Working system : Windows, macOS, Linux

Platform: IA-32, x86-64, ARM

Type: Integrated improvement climate

License: LGPL or GPL permit

Website :blog.arduino.cc/2020/08/24/cli-and-ide-improve together/

With the rising prevalence of Arduino as a product stage, different sellers began to actualize custom open-source compilers and apparatuses (centers) that can assemble and transfer portrayals to other microcontrollers that are not upheld by Arduino's authentic line of microcontrollers. In October 2019 the Arduino affiliation began giving early induction to another Arduino Pro IDE with troubleshooting and other advanced features.

Advantages of using Arduino:

- No experience required to begin
- Genuinely ease, contingent upon shields you need
- Loads of representations and shields accessible
- No outside developer or force supply required

Disadvantages of using Arduino:

- AVR microcontroller is not understandable

- Sketches and shields are tough to change
- Debugger is not included for syntax verification
- C experience and some developer tools experience is not obtained

Code Explanation:

First starting here, we have used (Liquid Crystal) library because we are working lcd display related applications reading and writing. The lcd display is connected to the pins (2,3,4,5,6,7)

And then timer 1 and timer 2 is declared as integer and time as float and flag 1, flag 2 is declared as integer and initialize as zeros and then the distance and speed are declared as floats and the distance are initialized as 10m.

Then the ir-s1 the ir sensor 1 pin is declared as an integer and connected to the A0 pin and the ir-s2 the ir sensor 2 pin is connected to A1 and the buzzer is declared as integer and then connected to the 13 pin of the Arduino the void setup starts and ir s1, ir s2 are declared as the input pins and the buzzer is initialized as the output.

Then the lcd display is a 16*2, first we will clear the screen and the cursor is set to (0,0) and the “speed detector” is displayed and at (0,1) “of the vehicles” will get displayed and we have created a delay of 2000 after that the lcd screen will get cleared.

Then the void loop begins if the ir-s1 ==low and the flag 1 ==0 the timer 1 stores the value in the Millis and the flag 1 becomes 1 and same for the ir-s2 ==0 and flag 2==0 and then flag 2 becomes 1.

If both the flags are 1 then only it will enter into the loop and then it will check whether timer 1is greater or the timer 2 is greater then if timer 1 is greater then the time =timer 1-timer 2 else if timer 2 is greater, then time =timer 2-timer 1 further time is converted into millisecond to second and velocity /distance is calculated by speed /time. Then speed is calculated into km /hr.

If speed is 0 then at (0,1) and both the flags should be 0 in the lcd screen “no car is detected “or else “searching….” will be displayed.

Else first the lcd screen will be cleared and the cursor (0,0) “speed: “is displayed and the speed of the vehicle is displayed in km/hr. if the speed of the vehicle crosses 50 “over speeding” get displayed and the buzzer set to high else if the car doesn’t cross the speed “normal speed “

Is displayed and the buzzer is in low and we have set a delay of 3000m buzzer is set is 0and the speed =0, both the flags to 0. This will keep on continuing the speed of the vehicles.

CHAPTER 05

RESULT AND DISCUSSION

- Finally, in this project it detects the speed of the vehicle, if the vehicle exceeds the speed than the limited speed then the buzzer rings and in the lcd display it shows that the vehicle is over speeded.
- If the vehicle doesn’t exceed the speed it just shows the speed of the vehicle and normal speed is displayed in the lcd display. After that the circuit continuously checks the speed of the vehicles crossing it
- It helps the traffic police instead of that hand gun this circuit made the speed detection automatic. Which doesn’t require more human intervention.

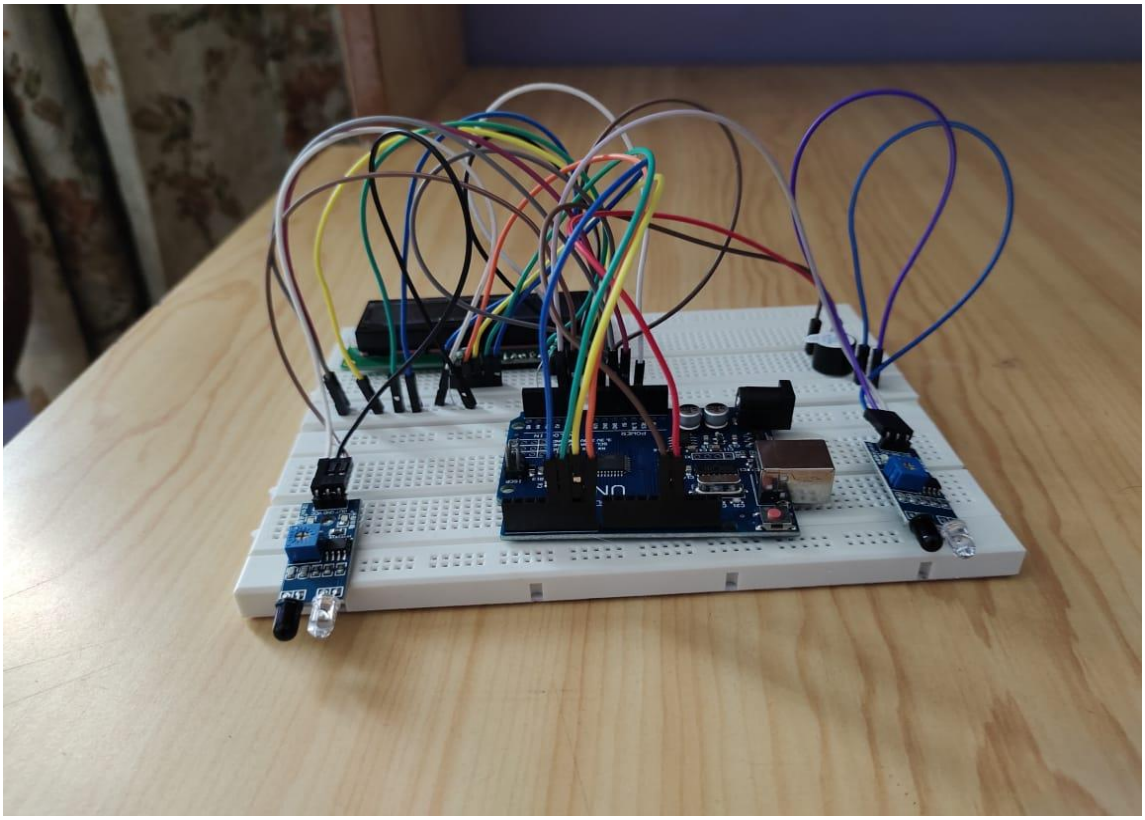

Fig 5.1: Working Model of Speed detector

ADVANTAGES

- The circuit is running on +9v which is easier to generate.
- They reduce the risk of accidents.
- It is easy to implement.
- It reduces the man effect.
- It is affordable

CHAPTER 06

CONCLUSION AND FUTURE SCOPE

Conclusion

Our project is working fine and we are getting accurate results. We used two IR sensors for capturing speed at the two ends and displayed the output in LCD screen, we used Arduino UNO board along with certain connections helped us in capturing the speed of the vehicles automatically without any human involvement

Future Scope

In future we can connect a camera to the device and which automatically captures the number plate of the vehicle and it stores the image.

We can implement G.S.M technology to inform the relatives or owner of the vehicle about Over speed.

REFERENCES

[1] Ni hlain,Zawmin htun ,” **Design and implementation of pc based over speed violation management for vehicles**”, 07/July/2015.

[2 Vishal pande,malharmohite, supriya Mhatre,siddesh desai,Anjali kumari,” **Autonomous speed control of over speeding vehicles using radio frequency**”, 04/April/2015

[3] **https://www.electronicshub.org/arduino-car-speed-detector/**

[4]**https://www.circuitstoday.com/car-speed-detector-arduino**

[5]**https://create.arduino.cc/projecthub/embeddedlab786/car-speed-detector-d60ea0**

APPENDIX

```
#include<LiquidCrystal.h>

LiquidCrystal lcd(2, 3, 4, 5, 6, 7);

int timer1;

int timer2;

float Time;

int flag1 = 0;

int flag2 = 0;

float distance = 5.0;

float speed;

int ir_s1 = A0;

int ir_s2 = A1;

int buzzer = 13;

void setup(){

 pinMode(ir_s1, INPUT);

  pinMode(ir_s2, INPUT);

  pinMode(buzzer, OUTPUT);

  lcd.begin(16,2);
```

```
 lcd.clear();
 lcd.setCursor(0,0);
 lcd.print(" speed detector ");
 lcd.setCursor(0,1);
 lcd.print("of vehicles");
 delay (2000);
 lcd.clear();
}
void loop () {
if (digitalRead (ir_s1) == LOW && flag1==0) {timer1 = millis(); flag1=1;}
if (digitalRead (ir_s2) == LOW && flag2==0) {timer2 = millis(); flag2=1;}
if (flag1==1 && flag2==1){
    if(timer1 > timer2){Time = timer1 - timer2;}
else if(timer2 > timer1){Time = timer2 - timer1;}
 Time=Time/1000;//convert millisecond to second
 speed=(distance/Time);//v=d/t
 speed=speed*3600;//multiply by seconds per hr
 speed=speed/1000;//division by meters per Km
}
```

```
if(speed==0){
lcd.setCursor(0, 1);
if(flag1==0 && flag2==0){lcd.print("No car  detected");}
                else{lcd.print("Searching...    ");}
}
else{
   lcd.clear();
   lcd.setCursor(0, 0);
   lcd.print("Speed:");
   lcd.print(speed,1);
   lcd.print("Km/Hr  ");
   lcd.setCursor(0, 1);
 if(speed > 50){lcd.print("  Over Speeding  "); digitalWrite(buzzer, HIGH);}
         else{lcd.print("  Normal Speed   "); }
   delay(3000);
   digitalWrite(buzzer, LOW);
   speed = 0;
   flag1 = 0;
```

```
    flag2 = 0;

  }

}
```