

CHAPTER-1

INTRODUCTION

In metropolitan cities, the street lights square measure one in all the main power overwhelming factors. It's additionally one in all the most important energy expenses in cities. It's accounting over 35-45% of price for a municipality utility budget. The manual based mostly street light weight management involves several disadvantages which has the road lights being remained on once there's a comprehensible spectrum of sunshine, manual shift operation, high power consumption, less reliable thanks to amendment in season and climate. The final word goal of machine-controlled street light-weight is to scale back the facility consumption once there's no vehicle movement on the road. Power saving and cash saving and cash saving square measure the benefits of this good street light-weight.

Giving road lighting is one in all the chief imperative and exorbitant duties of a town. Lighting will represent 10– 38% of the absolute vitality bill in run of the mill urban areas around the world. Road lighting is a remarkably significant worry for open experts in creating nations because of its key significance for financial and social solidness.

The current framework is High Intensity Discharge light (HID). It depends on the standard of gas release. The impediment of this framework is that it devours more power and its life time is less. So as to beat this shrewd road light is utilized. Brilliant Street light depends on the rule of force of light and development of vehicles out and about amid evening.

To beat every one of these issues a framework essentially comprises of Light Dependent Resistor (LDR) and IR sensor. Amid evening time when the force of light is low, the LDR is initiated and it actuates the IR sensor. The force of LED is kept at low at first when there is no vehicle development.

Traffic signals are utilized to deal with the progression of vehicles. In the ongoing years the need of transportation has increase extensive significance for supply(trading) additionally with respect to normal human. This has given extraordinary ascent to the amount of vehicles out and about which made an extensive clog. Traffic lights, conjointly alluded to as traffic signals, traffic lights, flag lights, robots are specialized gadgets situated at or near street convergences, walker intersections and elective areas to manage focused progressions of traffic.

Driven traffic lights utilize practically 85% less vitality. Thus, the city is sparing \$2.55 million every year in vitality investment funds and \$100,000 every year in materials. It is likewise decreasing 23,000 CO₂ tons yearly. This program has conveyed prompt and supported decreases in the city's emanations.

The point of our examination is to lessen the issue of traffic clog which is turning into an extremely serious issue nowa– days. As we as a whole realize that the present traffic light framework comprises of a predefined equipment which possesses a fixed energy for green light and red light. To improve this issue we have made a structure for a shrewd traffic control framework.

By and large we have seen that the ordinary traffic light framework isn't relies on the thickness of the traffic. So we proposed a plan in which the timespan of green light and red light is relegated based on the thickness of the traffic present around then. This should be possible by utilizing IR sensors. When the thickness is determined, the sparkling time of green light is doled out by the assistance of the microcontroller. The sensors which are available on either sides of the street will identify the nearness of the vehicles and sends the data to the microcontroller. Based on those informations, micro– controller will settle on a choice and after that allocate the sparkling time of green light and red light. It implies that the planning of the traffic lights is set by the thickness of the vehicles.

CHAPTER-2

LITERATURE SURVEY

2.1 STREET LIGHT CONTRIOL

2.1.1 Street light control system with effective utilization of solar energy

In the year 2010, a traffic stream based road light control framework with compelling usage of sun oriented vitality. This framework utilizes the sustainable wellspring of vitality for example the sunlight based power for road lighting. This was actualized by M.Abhishek.

2.1.2 Street light control using sensor and LED lamps

In the year 2012, S.Suganya have proposed a vehicle development based road light utilizing sensor and LED lights. It is utilized to control the exchanging of LED by the differing force of the light. It was executed by utilizing PIC microcontroller.

2.1.3 Auto tracking system with increased conversion efficiency of the solar power

In the year 2014, C.Bhuvaneshwari have analyzed auto following framework by which one can expand the change productivity of the sun oriented power age. Sun following sensor is utilized as a detecting gadget. LM324 is utilized as an enhancer.

2.1.4 Comparative analysis of Photovoltaic street lighting system

In the year 2015,Somchai Hiranvarodom reports a near examination of Photovoltaic road lighting framework in three distinct lights. All the three frameworks have been composed with a similar module type and wattage.

2.2 TRAFFIC LIGHT CONTROL

2.2.1 Simple Traffic Management Scheme

Here the traffic is control by one individual as it were. On the off chance that there are four streets from where vehicles are coming from, at that point the man should to have the control of traffic. He needs to discharge the vehicles one by one. In this strategy there is especially utilization of manpower and it is difficult to deal with when there is a circumstance of more traffic.

2.2.2 Automatic Traffic Management Scheme

The most generally utilized programmed framework. Utilizations straightforward time put together framework which works with respect to time interim premise which is currently wasteful for irregular and non-uniform traffic. in any case, time interim premise is very time squandering it is anything but a quick procedure.

2.2.3 Intelligent Traffic Management Scheme

This is utilized to detect nearness of traffic close to any circle and intersection and after that ready to course the traffic dependent on the thickness wanted way.

2.2.4 A Statistical Multiplexing Method for Traffic Signal Timing Optimization

Ben Ahmed Mohamed, Boudhir Anouar Abdelhakim, Bouhorma Mohammed, Ben Ahmed Kaoutar propose an arrangement of control of traffic lights using measurable multiplexing procedure dependent on fixed and vehicular dependent on remote systems in the time of 2015.

2.2.5 Traffic Light Using Arduino Uno and LabVIEW

This framework will be fabricated utilizing the Arduino Uno improvement stage, and programming will be finished utilizing the LabVIEW graphical

programming. The outcomes will be shown through the sequential interface on the PC in the LabVIEW program, and furthermore on the three LEDs on the breadboard. This work was executed in the time of 2017 by Bogdan Mihai.

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PROPOSED METHODS AND COMPONENTS

3.1 PROPOSED METHOD

The proposed system is to provide a simple easy clean implementable solution to avoid traffic jam and to lessen the strength consumption of avenue lighting fixtures.

Traffic light is automatically managed via using Arduino coding which glows LED's on all the three sides in a particular collection, in which the actual Traffic Lights works. Like, at a time, there may be two Red alerts on any of the two sides and one Green light on the remaining facet. In the program, first we have announced pins (2,3... 10) as yield in void setup() for 9 LEDs. First the forward side is opened (green), while the other opposite sides (for example left side and right side) stays shut with Red flag, with a deferral of 5 seconds. And yellow light will even glow, for 1 second whenever, in between transition from Red to Green, means first red-light glows for 5 second then yellow light glows for 1 second and then in the end green light can be turned on.

The streetlights also are controlled by automated ON handiest below any vehicle movement and rancid below no movement of vehicle with the assist of IR sensors and Arduino coding. The force of LED is stayed at low at first (when there is no development of vehicles or article) by Arduino utilizing Pulse Width Modulation (PWM) method. In this method simple flag is changed over into computerized motion, ON/OFF of the LEDs occur so quickly and consequently the LEDs appear to sparkle diminish when seen by unaided eye.

3.2 COMPONENTS SPECIFICATION

3.2.1 INFRARED SENSOR



Fig 3.2.1 IR Sensor

An infrared sensor is an electronic device that emits infrared rays good way to experience a few particular factors of the environment. The emitter is absolutely an IR LED and the detector is virtually an IR photodiode. When IR light falls on the photodiode, the resistances and these output voltages, change in proportion to the significant of the IR light received.

FEATURES- excessive reliability; Wavelength of 940nm; Excessive radiant intensity

3.2.2 ARDUINO

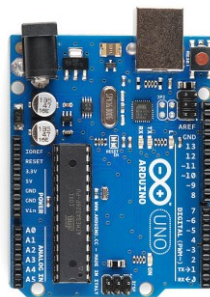


Fig 3.2.2 Arduino

Arduino is an open source software application with hardware corporation. It acts as a microcontroller. Arduino Uno is a microcontroller board and it's miles based totally at the ATmega328. It includes 14 digital pins, can be used as each input and output pins(out of 14, 6 may be used as PWM pins), 6

analog pins and it can be used solely for input, energy jack, 16MHz quartz crystal, ICSP header, USB connection and reset button. It can be connected with the system with the usage of USB cable and used to load the program.

FEATURES- Microcontroller: ATmega328;Working voltage: 5v;virtual input output pins: 14;Analog input pins: 6;Flash memory: 32 KB.

3.2.3 LIGHT DEPENDENT RESISTOR(LDR)



Fig 3.2.3 LDR

A Light Dependent Resistor (LDR) or photo resistor is a mild managed variable resistor. Its resistance varies in keeping with the intensity of the light. LDR are made by means of way of depositing a film of cadmium sulphide or cadmium selenide on a substrate of ceramic containing no or few free electrons while now not illuminated. Relying on the exposure of light the resistance may additionally range from 15K ohm to 500 ohms.

FEATURES- Used to feel mild; extensively used with microcontrollers and everyday virtual/Analog IC; Small, cheap and easily to be had.

3.2.4 LIGHT EMITTING DIODE(LED)



Fig 3.2.4 LED

A light Emitting Diode (LED) is a lead semiconductor mild source. it's far p-n junction diode that emits light while activated. The lengthy terminal is tremendous and the shorter terminal is negative. LEDs have greater lifespan than CFL lamps. It consumes less power.

features- LEDs are impermeable to warmness, bloodless, surprise and vibration; It do no longer incorporate breakable glass; Low power intake; It reaction fast (on/off).

3.2.5 RESISTOR



Fig 3.2.5 Resistor

A resistor is a passive two terminal electrical additives that limits or regulates the waft of electrical current and used to lessen current flow, alter signal stages within digital circuit. It is used to provide a selected voltage for an active tool. Fixed resistor modifies barely with temperature, time or voltage.

CHAPTER-4

CIRCUIT DIAGRAM AND WORKING

4.1 CIRCUIT DIAGRAM

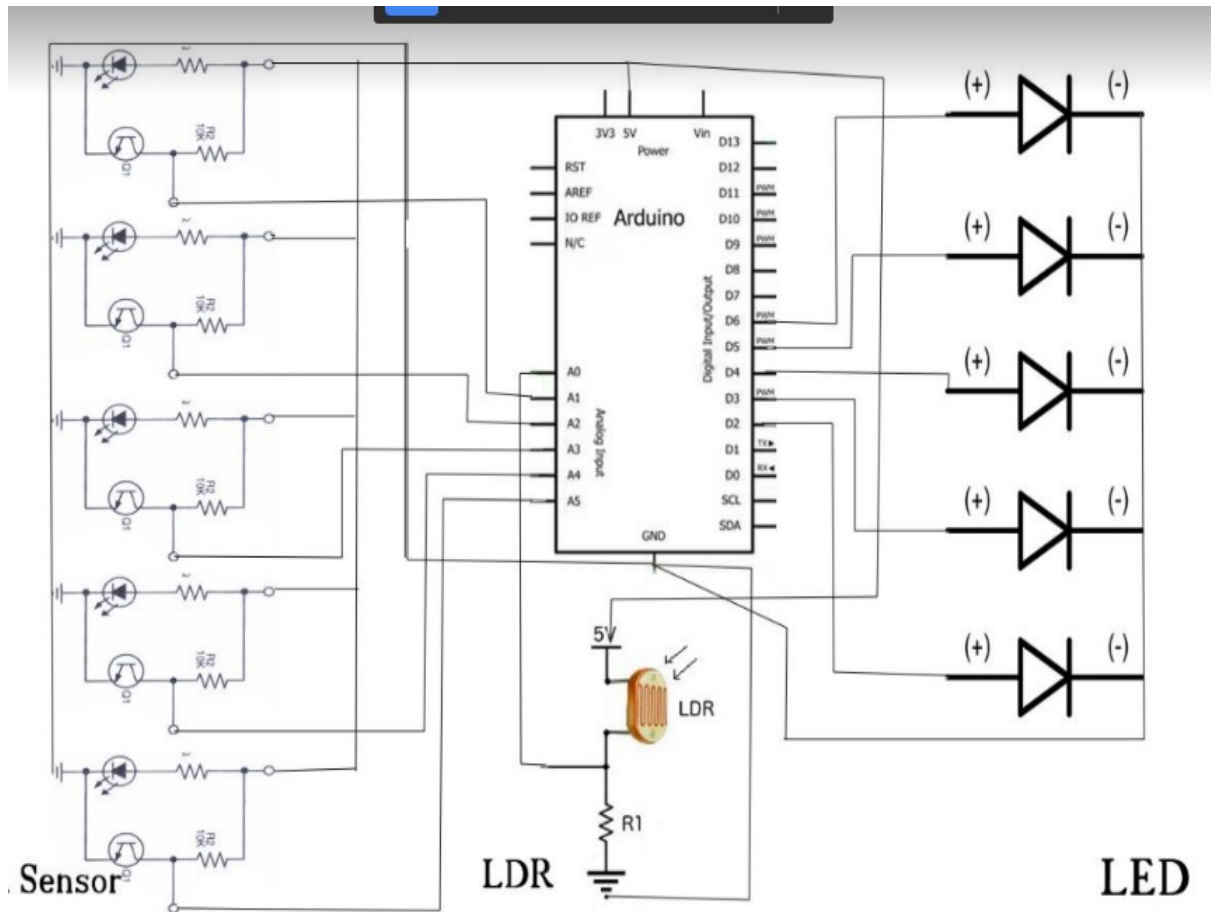


Fig 4.1.1 Circuit diagram of street light control

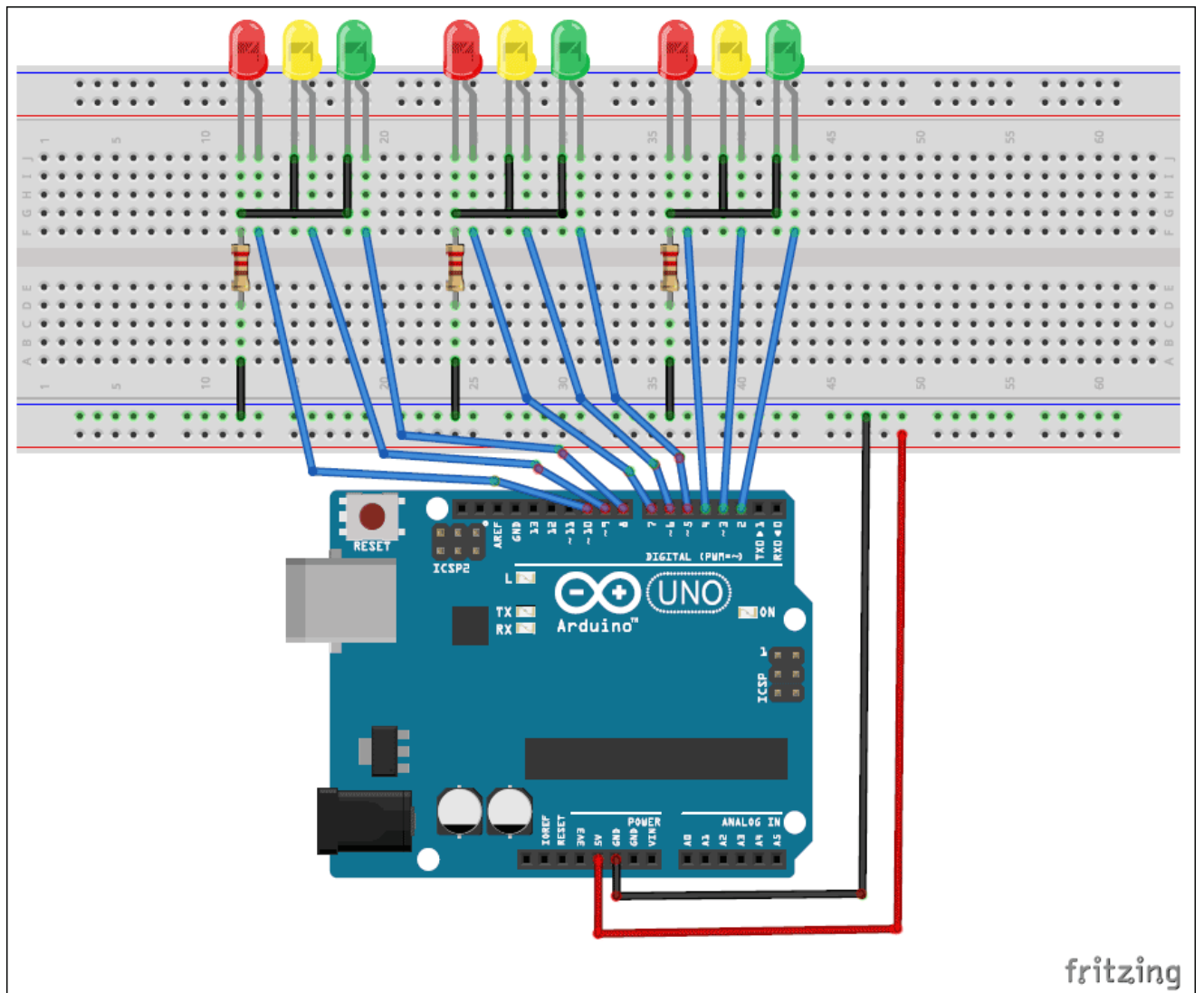


Fig 4.1.2 Circuit diagram of traffic light control

4.2 FLOW CHART

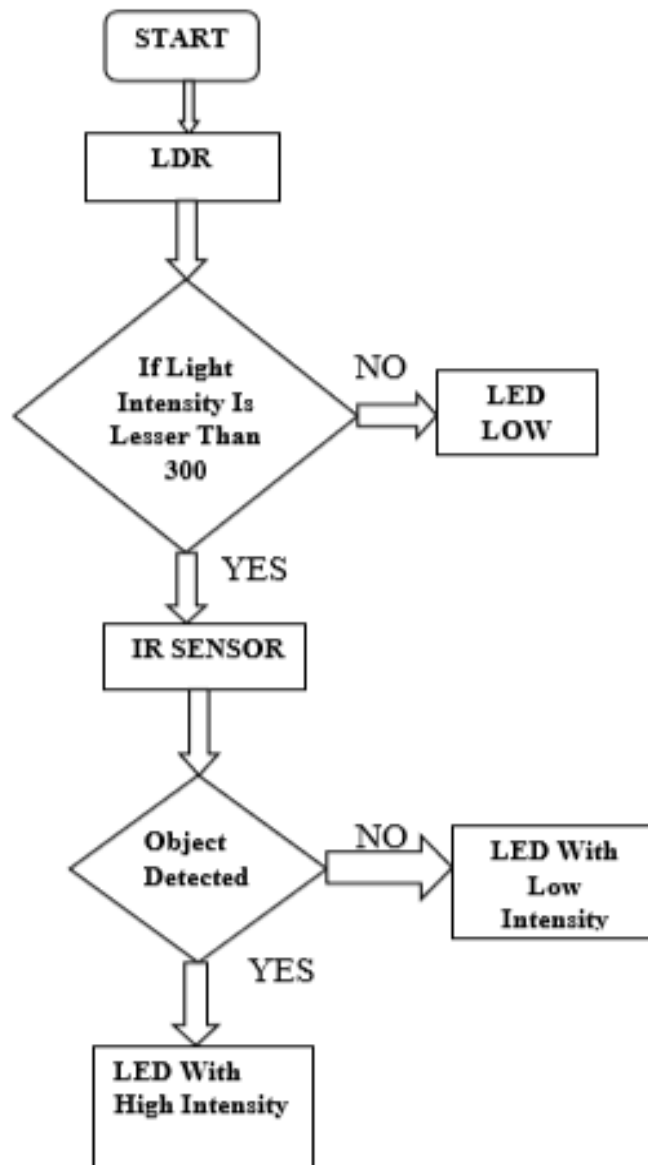


Fig 4.2.1 Flow chart of street light control

4.3 BLOCK DIAGRAM AND EXPLANATION

A power supply of 5 volts is given to the circuit through arduino. Connections are given for 3 way traffic light control system. In the program, we have set the pins (2,3... 10) as yield in void setup() for 9 LEDs as it is for 3 way traffic light control system. First the forward side is opened (green), while the other inverse sides (for instance left side and right side) remains shut with Red banner, with a deferral of 5 seconds And yellow light will even gleam, for 1 second at whatever point, in the middle of progress from Red to Green, implies first red-light sparkles for 5 second at that point yellow light shines for 1 second and after that at last green light can be turned on.

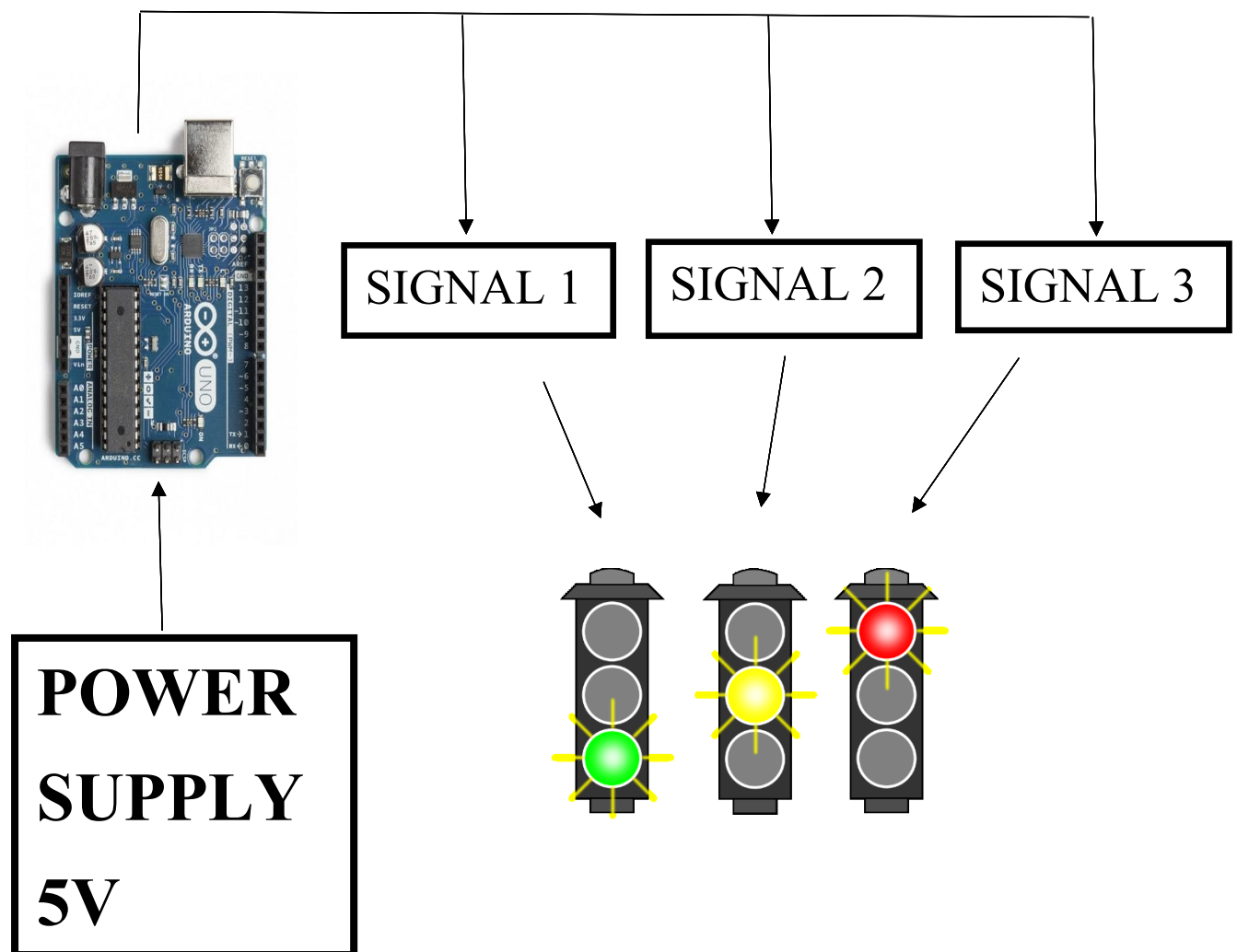


Fig 4.3.1 Block diagram of traffic light system

4.4 WORKING

4.4.1 STREET LIGHT CONTROL

The IR sensor is utilized to recognize the development of vehicles. At the point when the LDR is actuated it enacts the IR sensor. LDR displays high obstruction and acts an encasing toward the beginning of the day. Amid night the LDR shows low opposition and permits the progression of power. At that point the IR sensor is actuated.

The force of LED is stayed at low at first (when there is no development of vehicles or article) by Arduino utilizing Pulse Width Modulation (PWM) method. In this method simple flag is changed over into computerized motion, ON/OFF of the LEDs occur so quickly and consequently the LEDs appear to sparkle diminish when seen by unaided eye.

At the point when there is any development of vehicles or hindrances are distinguished the LEDs will shine with high force. The exchanging of LED is worked through coding connected in Arduino utilizing programming.

4.4.2 TRAFFIC LIGHT CONTROL

Here is shown Traffic lights for the 3 different ways street and the code shines LED's on all the three sides in a specific arrangement, in which the real Traffic Lights works. Like, at once, there will be two Red signs on any of the opposite sides and one Green light on the staying side. Also, yellow light will likewise gleam, for 1 second each time, in the middle of progress from Red to Green, implies first red light sparkles for 5 second at that point yellow light shines for 1 second and after that at long last green light will be turned on.

In the program, first we have announced pins (2,3... 10) as yield in void setup() for 9 LEDs .First the forward side is opened (green), while the other

opposite sides (for example left side and right side) stays shut with Red flag, with a deferral of 5 seconds. At that point the yellow light gets turned on at the correct side for 1sec pursued by the Green light, leaving other opposite sides (for example upside and left side is red) shut with Red Light and 5seconds postponement. At that point yellow on the left side sparkles for 1sec pursued by green one, leaving upside and right side Red with 5sec postponement. This procedure is circled in void circle() work for constant procedure. Here we can change delays for which the Red, yellow and Green light stay on and off.

CHAPTER -5

OUTPUT

5.1 AUTOMATIC STREET LIGHT CONTROL

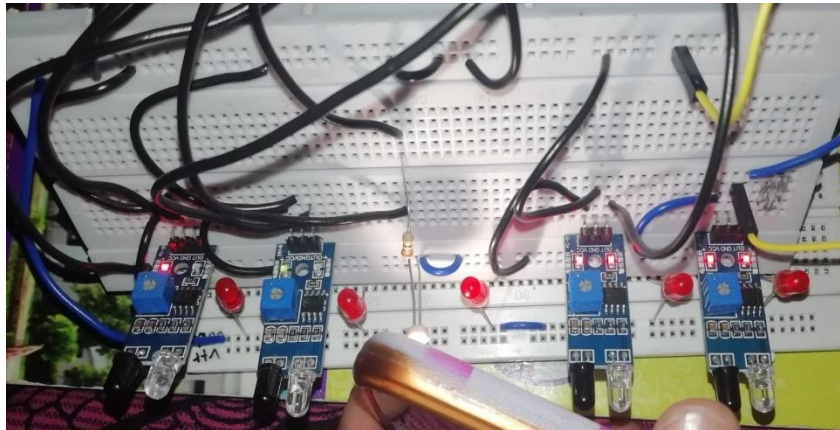


Figure 5.1.1 During day time

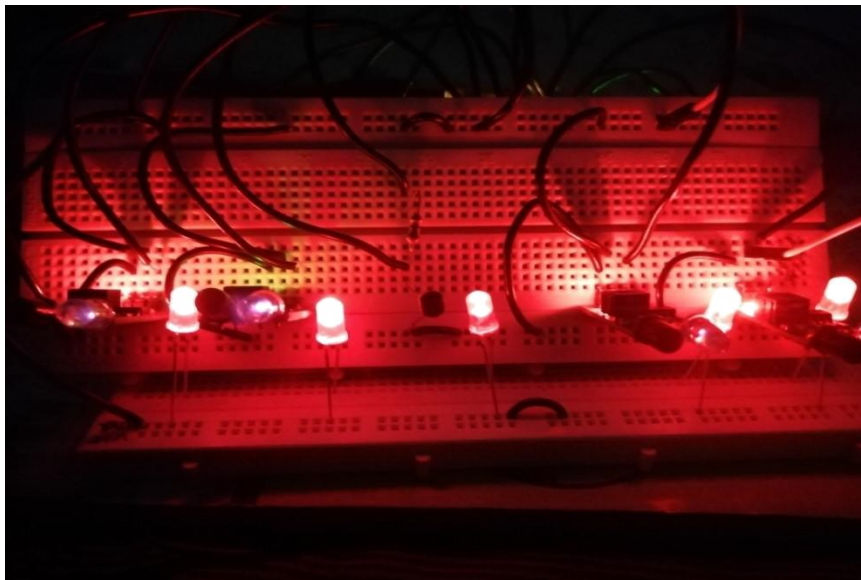


Figure 5.1.2 During night time under vehicle movement

5.2 TRAFFIC LIGHT CONTROL

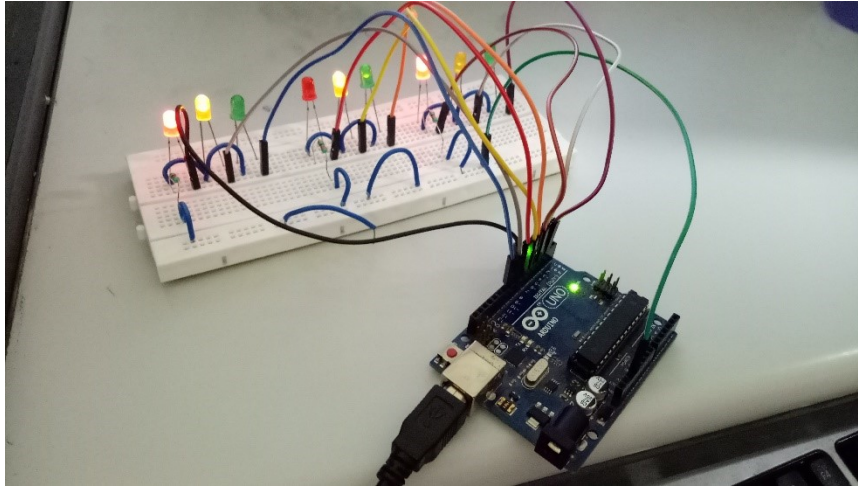


Figure 5.1.3 Traffic light control

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CONCLUSION

On account of programmed road light control, amid evening time when there is no vehicle development the power of LED is low for example Driven stays diminish. At the point when there is a vehicle development the LED will sparkle with high power. By embracing vehicle development based Smart Street light, we can spare colossal vitality. It is additionally cost proficient. The keen light framework can be reached out to make the framework in two-manner traffic, making the framework increasingly customizable if there should arise an occurrence of rainy seasons.

This framework tackles the issues of groups on the streets in the present and future on the grounds that the expansion of populace and advancement produce overwhelming traffic in the avenues. The utilization of The Arduino give a reasonable stage to executing an implanted control framework and it is conceivable to adjust it to meet our future prerequisites effectively and rapidly. A few contemplations might be accomplished for future augmentation of this work like utilizing GSM (Global System for Mobile Correspondences) to give administrations to drivers, adding remote to control the entire and send flag to jams level presentation, and nourishing the framework with solar based cell to make the framework autonomously.

CHAPTER-7

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