PROJECT REPORT ON

REPLICATE TRAFFIC LIGHT USING ARDUINO

GRAPHIC ERA

DEEMED TO BE

UNIVERSITY

Submitted to :Department of Computer Applications

partial fulfillment for

the award of the degree of

Bachelor of Technology-CSE

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Submitted by

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GraphicEra
UNIVERSITY
University under section 3 of UGC Act, 1956
Accredited by NAAC with Grade A

ACKNOWLEDGEMENT

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B.Tech CSE

2020-2024

Semester -4

Graphic Era (Deemed To Be University)

Problem Statement

- Replicate Traffic Light using Arduino

Development Environment

- Arduino IDE

Language used

- Arduino Programming Language(The Arduino Code is Written in C++ with an addition of special methods and functions).

GOAL AND APPROACH

The traffic light is very essential when it comes to controlling the traffic in the major cities. The use of traffic makes the issue of managing the traffic very easy. Modern traffic comes with various new technologies like infrared cameras which issues the challan immediately if someone is find violating the traffic rules. In earlier times and in many cities currently there is no system of traffic light installed as compared to the major cities like Delhi, Mumbai etc. In these places the traffic is monitored and managed manually with the help of Traffic Police Department.

The approach of this project is to replicate the traffic light with the help of a microcontroller device i.e. Arduino with some various electrical components to make the traffic lights available to the various places of the country at low cost and it will also relieve the Police in various fields.

NEED FOR TRAFFIC LIGHT SYSTEM

Roads without any supervision or guidance can lead to traffic conflicts and accidents. Traffic signals are required for an orderly flow of traffic. A traffic signal is used as an instructing device that indicates the road user to act as per the displayed sign.

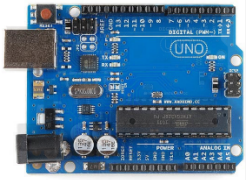
Traffic lights allow everyone to cross the intersection point one by one, reducing conflicts between vehicles entering intersection points from different directions. It provides road safety, also helps to solve traffic in simple manners.

There are different colours in traffic lights. Each light has a meaning, and these lights tell drivers what to do.

- Red light ON- A driver should stop.
- Yellow light ON- A driver has to slow down and be ready to stop.
- Greenlight ON- A driver can start driving or keep driving.

COMPONENTS USED

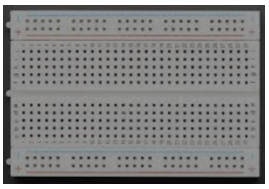
- Arduino UNO



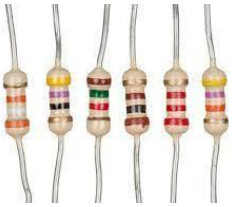
- Jumper Wires

- LEDs

- Breadboard

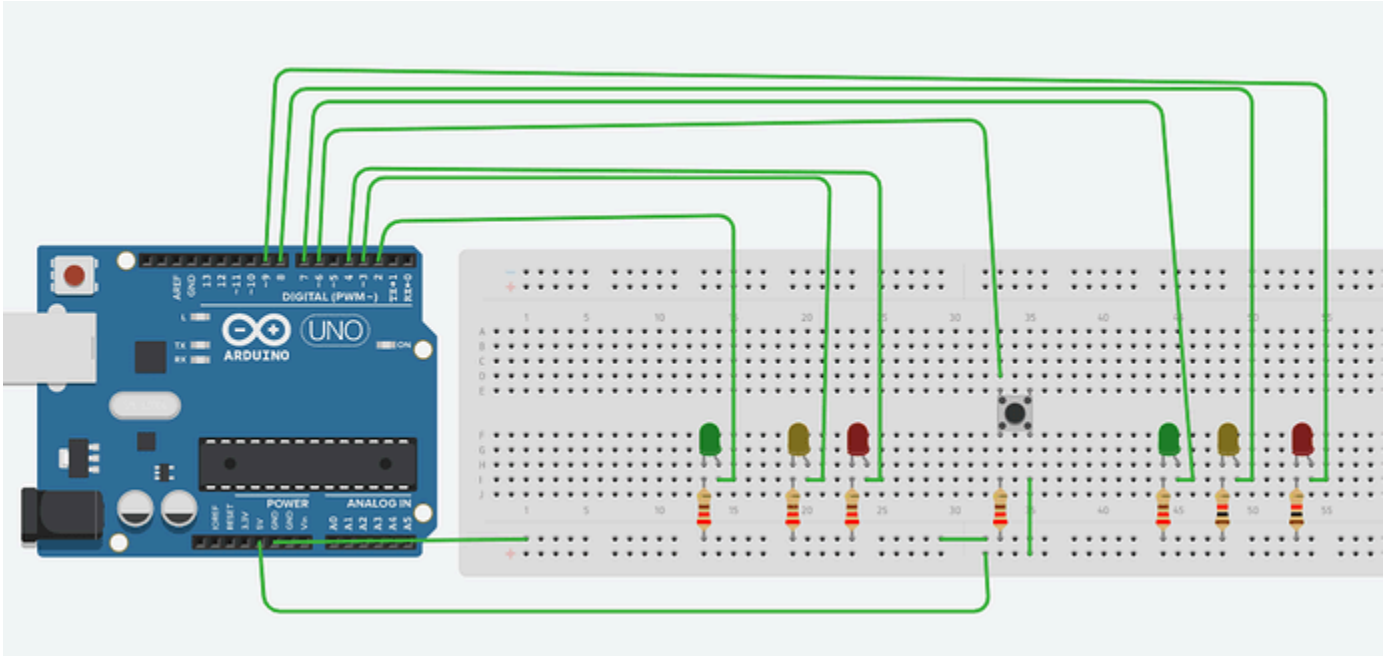


- Resistors



- Push Button Switch

CIRCUIT DIAGRAM



LOGIC BEHIND THE CONTROLLING OF TRAFFIC LIGHT

The changeLights function consists of four distinct steps:

Green on, yellow off
Yellow off, red on
Yellow on, red on
Green on, red off, yellow off
These four steps replicate the process used in real traffic lights. For each step, the code is very similar. The appropriate LED gets turned on or off using digitalWrite. This is an Arduino function used to set output pins to HIGH (for on), or LOW (for off).

After enabling or disabling the required LEDs, the delay makes the Arduino wait for a given amount of time.

At a point of time in a day usually at night there is not much traffic so there is no need to have the traffic control all day. So to regulate this a push button switch is there which will change the colour of the lights to yellow.