Green University of Bangladesh

Department of Computer Science and Engineering

Group Lab project

Course Title: Digital Logic Design Lab

Course code: CSE 204

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Traffic Light Controller

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Abstract : The function of traffic light is to provide sophisticated control and coordination to ensure that traffic moves as smoothly and safely as possible

Introduction : This project uses a LED light as an indicator. A microcontroller for auto change signal after a specific time interval. The LEDs are automatically on and off by making the corresponding port pin of the microcontroller high

Components Required

- Arduino UNO Board
- Red, Green, Yellow(amber) LED's
- Resistors
- Breadboard
- Power supply

Component Description

Arduino UNO: The main part of the Traffic Light Controller is the controller itself. Arduino UNO will serve the purpose in this project to handle all the switching of the LEDs and controlling their timings.

Control Lights indication:

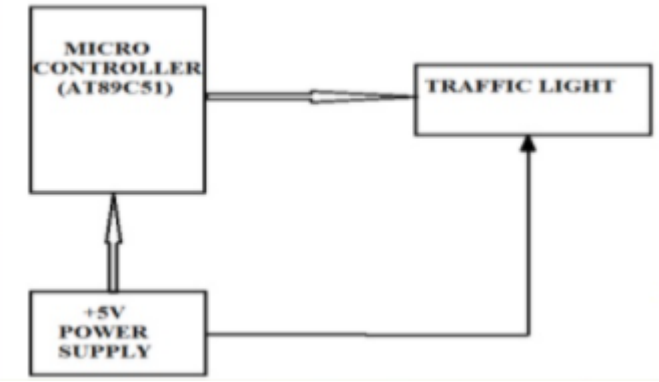
There are three control lights or signals, which will provide the instruction to the driver.

RED light – instructs the driver to STOP at the intersection.

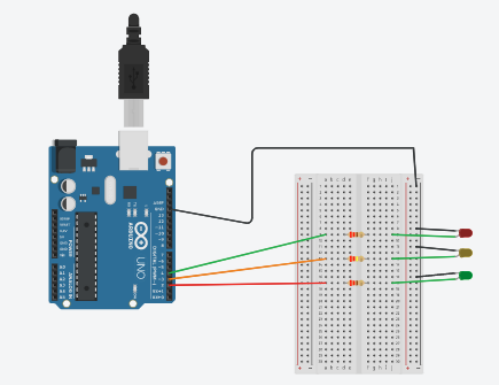
YELLOW light – instructs the driver to WAIT (If red light is next) or GET READY (if green light is next)

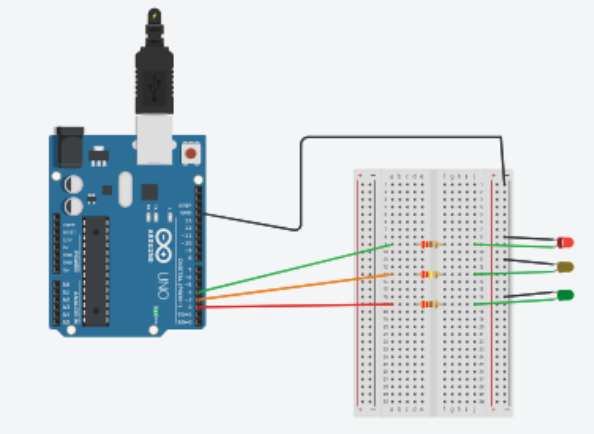
GREEN light – instructs the driver to GO through the intersection.

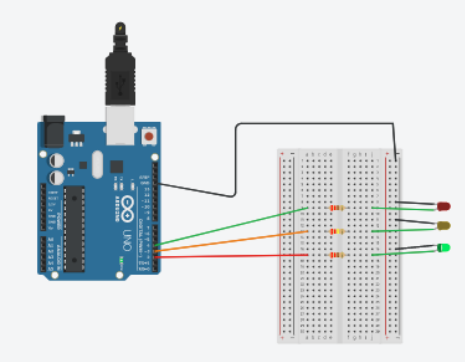
Block Diagram:



Project Images







Project Code

```
void setup()

{
```

```
  pinMode(4, OUTPUT);
  pinMode(3, OUTPUT);
  pinMode(2, OUTPUT);
}
void loop()
{
  digitalWrite(4, HIGH); // For green LED
  delay(3000); // Wait for 3 second
  digitalWrite(4, LOW);
  digitalWrite(3, HIGH); // For orange LED
  delay(1000);  // Wait for 1 second
 digitalWrite(3, LOW);
  digitalWrite(2, HIGH);  // For the red LED
  delay(3000); // Wait for 3 second
  digitalWrite(2, LOW);
}
```

Limitations

The project is not suitable for actual implementation but just a demonstration of the process behind the system.

Real time traffic light controller systems are generally run time programmable i.e. the operator (usually a policeman) can change the timings of each lane as per the intensity of the traffic in each lane.

There will also be a provision for either manual operation or pre-programmed operation.

Applications

A simple traffic light controller is implemented in this project with a real chance of expansion. An external memory can be interface with the main controller so that the timings are not fixed during its programming but rather can be programmed during operation.

An efficient traffic light controller system will include a pedestrian signaling system.