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TRAFFIC PRIORITY FOR EMERGENCY VEHICLES

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ABSTRACT

Vehicle traffic is rapidly expanding across the world, resulting in awful traffic choke points at road crossings. A significant number of traffic signals use a hard and fast green light sequence, and as a result, the green light sequence is set without taking into consideration whether or not the signal is accompanied by an emergency vehicle. In the unfortunate event that emergency vehicles (ambulances, police vehicles, and fire engines) become immobilized by traffic, which prevents them from reaching their destination, there is a risk that they will not be able to reach their objective. This new study introduces a procedure that gives priority to emergency cars on the road. This study provides a new way for giving emergency vehicles priority over other traffic on the road. The main concept of the strategy is that each traffic light is furnished with a Bluetooth module that empowers emergency vehicles to control the signal to clear their path. This study will offer valuable information on the development of an intelligent traffic management system that focuses on ensuring emergency vehicles can get to where they are needed quickly. Perhaps lives and property will be saved.

Keywords: Traffic Signals, Emergency Vehicles, Priority, Bluetooth Module, Traffic Management.

I. INTRODUCTION

Any intelligent traffic management system has traffic light control as a vital component. The duration of green lights and the number of green lights in a sequence are the two most significant parameters to take into consideration while regulating traffic lights. The vast majority of traffic lights in many nations follow a set of rules and have set durations of illumination. Approaches that use a fixed control device should only be used for traffic that is consistent and predictable, not for the traffic that is irregular and unpredictable. This case eliminates all possibilities for other road-vehicle presence hence, in light of the circumstances, the green light sequence is decided without regard for other cars. Thus, to protect emergency vehicles such as ambulances, police vehicles, fire engines, and other kinds of emergency vehicles, traffic lights often need to delay ambulances, police vehicles, fire engines, and other emergency vehicles, causing people to die and property to be lost. On India's roads, out of every 10 patients who need to be transported to the hospital, one dies while waiting for an ambulance to arrive. An increase in the number of vehicles has an additional effect beyond increasing the response time of emergency vehicles; it also increases the probability of their being involved in accidents. Because of the way emergency vehicles travel through intersections on red lights, other road users are put in danger and accidents are possible.

II. METHODOLOGY

An Arduino Uno is a microcontroller that consists of an 8-bit CPU, SRAM memory, and Flash and EEPROM storage is used. The code is written in the open-source Arduino Software IDE and executed. In the code, we define the Bluetooth module and all the LEDs. LEDs take the information from the Arduino with the help of the Bluetooth module and give on and off output according to the code and the code is loaded into the Arduino Uno microcontroller. We connect the Bluetooth module to a 5V power output pin for the power supply and other wires to the ground pin. The Bluetooth module uses IEEE 802.15.1 protocol using Frequency-Hopping Spread Spectrum which can be operated from less than 100 meters and can easily interact with any smart device with Bluetooth. An application needs to be installed in the smart devices that will be used as terminals for serial devices connected with Bluetooth and the Bluetooth should be turned on to detect the module. When both the smart device and the Bluetooth module are paired we see the module name in the application. Now configure the names of each button for each road. Finally, we can control the traffic signals depending on which road the emergency vehicle is traveling on using our smart device.

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III. MODELING AND ANALYSIS

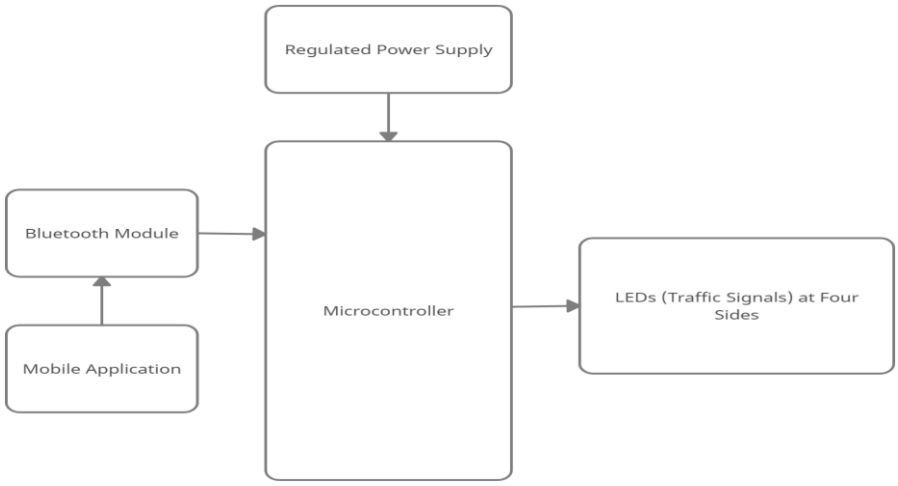

Figure1: Block Diagram

The materials which are used are:

1)Arduino Uno Microcontroller.

2)HC05 Bluetooth Module.

3)12 LEDs(Red, Orange and Green).

4) 4 Resistors(330 Ohms).

IV. RESULTS AND DISCUSSION

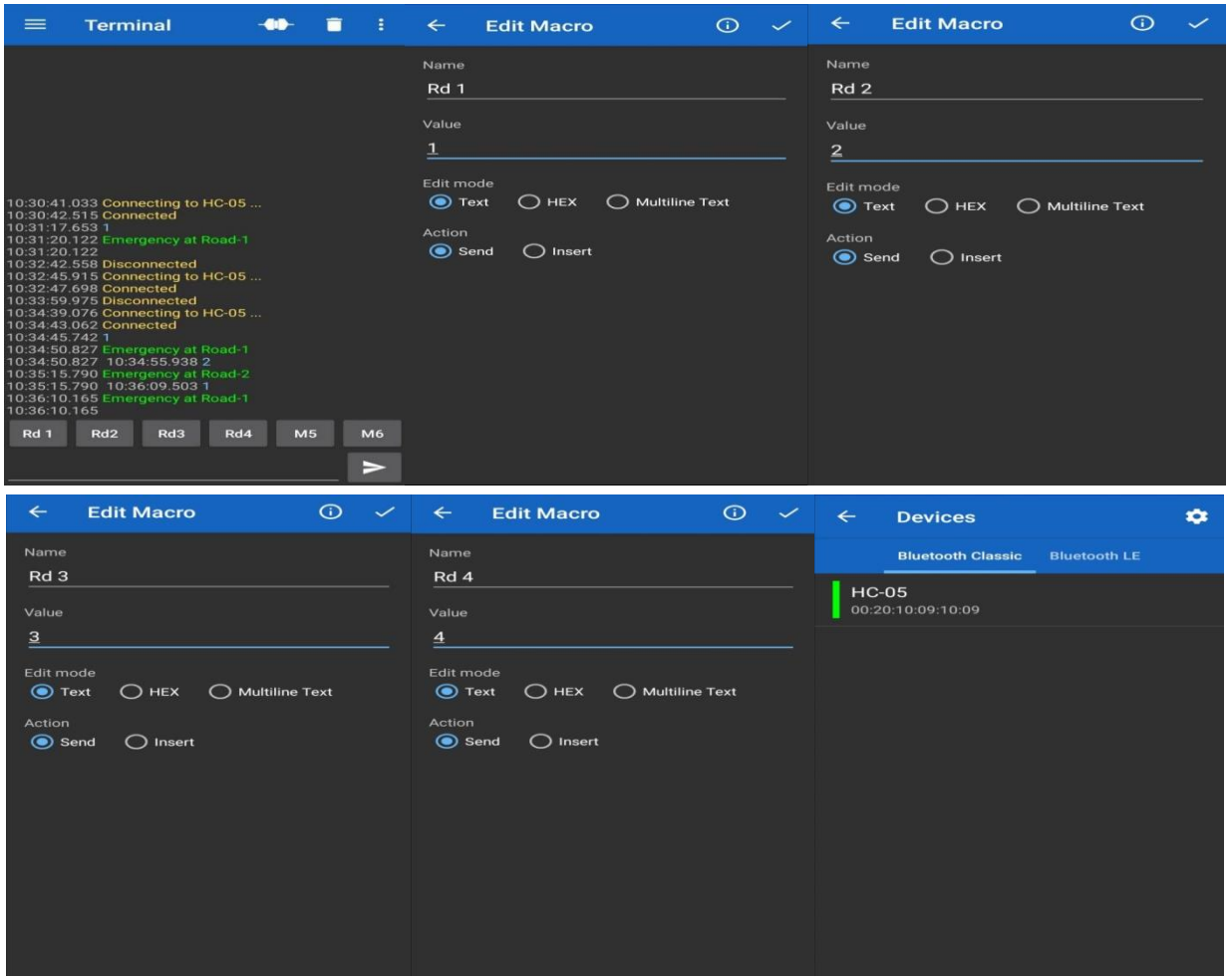

Figure2: Application Terminal, Naming the Roads and Status of the Bluetooth Module

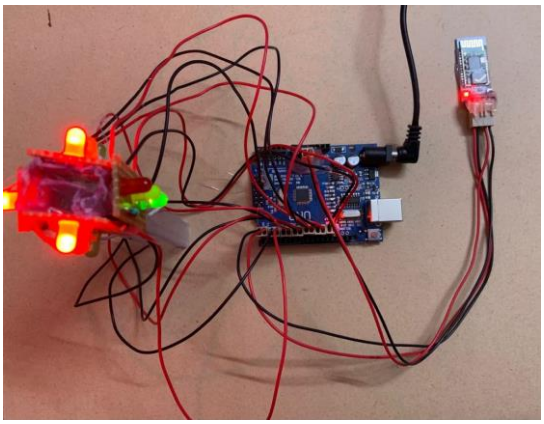

Figure3: Final Output

V. CONCLUSION

This research introduces the smartness of traffic signal controllers through specialized actions and hardware interfaces. The software API gives the administrator a simple interface. In terms of less waiting time and efficient operation during the emergency mode, the suggested system outperforms the current traffic control system.

VI. REFERENCES

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