

Analysis Color Control LED (*Light Emitting Diode*) On Traffic Light Revolution

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1. Introduction

1.1 Background

The issue of transportation in various forms is one of the main problems faced by the world's cities, including cities in Indonesia. Vehicle growth, increased traffic intensity of goods and services as well as increased user population associated disproportionate availability of roads and supporting facilities resulted in a wide range of crucial issues. Where lead to reduced effectiveness and efficiency of the transportation system in support of the mobility of society. Traffic congestion is one of the main problems in the transportation system. Based Data Transport Statistics 2013 & 2014 are sourced from Statistics Indonesia (BPS Catalog: 8301007) cite an increase in the number of vehicles is high at 10.39 per cent per year on all types of vehicles. Coupled with the specific transportation community awareness so that adds a level of congestion becomes worse. Signs and traffic lights play an important role in regulating the traffic lane so that the public transport can be wise in using the road, especially in the port city of Lampung.

Traffic lights (according to Law no. 22/2009 on Traffic and Transportation: traffic signaling device or APILL) are lights that control traffic flow that is attached at a crossroads, pedestrian crossings (*zebra crossing*), where the flow of other traffic. These lights that indicate when the vehicle had to run and stop alternately from different directions. Anaesthetized setting traffic on crossroads intended to regulate the movement of vehicles in each group in order to move the vehicle movement alternately so as not interfere with each other between the existing flow. (Wikipedia, 2017). Traffic lights Indonesia currently uses three different lamps are arranged artenatey to turn on or off signal. As well as lights that can only display colors as *Symbol*, less informative, whereas, for riders who do not understand or are color blind so it is quite difficult to grasp. In this issue resolve conducted a study of traffic lights (*traffic light*) that exist today. With the aim to build a traffic light system which uses only panel LED (*Light Emitting Diode*). Where to control the color of light symbols can be set automatically using a microcontroller to change color, and in complete text runs to update the traffic so that the traffic lights easier to understand and informative.

2. Literature Review

2.1 Review of Literature

In support of this writing use some review of the literature taken from the journal of research related to the title of this scientific writing.

a. *Intelligent Traffic Light Controller* (JR Latha, and U Suman "Asst Professor, Gitam University, Hyderabad Campus). Journal "*Intelligent Traffic Light Controller*" describes an intelligent traffic light using a microcontroller to control the traffic lights change automatically.

b. *Smart Traffic Lights Switching and Traffic Density Calculation using Video Processing* (Anurag Kanungo, Ayush Aharma, and Chetan Singla "University Institute of Engineering and Technology Panjab University Chandigarh, India) Journal "*Smart Traffic Lights Switching and Traffic Density Calculation using Video Processing*" describes methods for using the live video feed from the camera in the traffic junction *real time* for traffic density calculation using video and image processing. It also focuses on the algorithm to switch the traffic lights according to the density of vehicles on the road, so it aims to reduce traffic congestion on the roads which will help lower the number of accidents. It also will provide critical data that will help in the planning of future roads and analysis.

c. Design of *Smart Traffic Light* microcontroller based (Alfith "Lecturer Department of Electrical Engineering ITP). Journal "*Designing Smart Traffic Light* microcontroller-based" describes the system lamp traffic intelligently to detect the density of traffic and the effect on the green light sensor using

the *object's infrared*, can detect a specific signal from the cars specialties such as *ambulance*, fire, police, or such cars which will automatically change traffic lights red to green by using *XBee wireless module Pro* and *GPS*.

d. *Smart Traffic Light Control System* (If Ghazal, ElKhatib Khaled, Khaled Chahine, and Mohammad Kherfan "Lebanese International University (LIU) Khyara, Lebanon). Journal "*Smart Traffic Light Control System*" describes the microcontroller-based system *PIC* that evaluates the traffic density sensor using *IR (Infra-Red)* and complete dynamic time slot to a different level.

3. Results Analysis And Discussion

3.1 Discussion

P10 LED Panelists RGB LED panel *air-type* DIP, as the name of the main color in this panel are red, blue, and green. Color obtained by sending a command from the PC / laptop to the *microcontroller* and then forwarded to the LED panel. *Microcontroller* used in this study is *arduino uno*.

why use arduino? because arduino is a *microcontroller* that is *open source* and supported by the availability of free library contained in arduino website itself, making it easier for researchers in conducting this research.

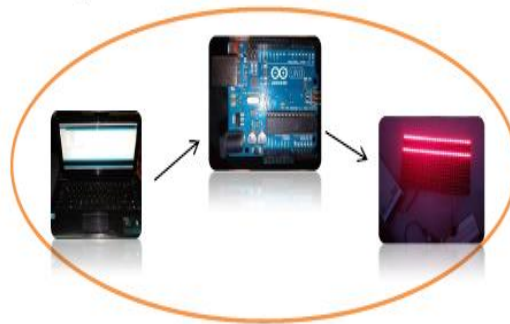


Figure 1 Scheme Of Work System

3.2 Test LED Panel

Methods test of thedo is *Try and error*. Here is the command obtained from forum.arduino.cc:

```
// *****
// Following codes simply shifts out the data for 16x32 LED matrix.
// *****
int LP = A3; // Latch Pin 8
int ClkP = 8; // Clock Pin 12
int R1P = 2; R1 // Pin 11
int B1P = 4; B1 // Pin 10
int G1P = 3; // G1 Pin 9
int R2P = 5; // R2 Pin 7
int B2P = 7; B2 //Pin 6
int G2P= 6; Pin 5 //G2
intAP = A0; // A Pin 2
int BP = A1; // B Pin 3
int CP = A2; // C Pin 4
int OEP = 9; // OE Pin 14
int row = 0;
void setup ()
{ //set pins to output so you can control the shift register
pinMode (LP, OUTPUT);
pinMode (ClkP, OUTPUT);
pinMode (R1P, OUTPUT);
pinMode (B1P, OUTPUT);
```

```

pinMode (G1P, OUTPUT);
pinMode (R2P, OUTPUT);
pinMode (B2P, OUTPUT);
pinMode (G2P, OUTPUT);
pinMode (AP, OUTPUT);
pinMode (BP, OUTPUT);
pinMode (CP, OUTPUT);
pinMode (OEP, OUTPUT);
pinMode (13, OUTPUT);
digitalWrite (AP, LOW);
digitalWrite (BP, LOW);
digitalWrite (CP, LOW);
digitalWrite (OEP, LOW);
digitalWrite (LP, LOW);
row = 0;
}
Void loop ()
{ digitalWrite(OEP, HIGH);
digitalWrite (LP, HIGH);
for (row = 0; row <8; row ++)
{ digitalWrite(AP !! (row & B00000001));
digitalWrite (BP, !! (row & B00000010));
digitalWrite (CP, !! (row & B00000100));
digitalWrite (OEP, LOW);
digitalWrite (13, LOW);
shiftOut1 (R1P, B1P, G1P, R2P, B2P, G2P, ClkP);

}}
Void shiftOut1 (uint8_t R1P1, uint8_t B1P1, uint8_t G1P1, uint8_t R2P1, uint8_t B2P1, uint8_t
G2P1, uint8_t ClkP1)
{ uint8_t
i;
for (i = 0; i <32; i ++)
{ digitalWrite(R1P1, 0);
digitalWrite (B1P1, 1);
digitalWrite (G1P1, 0);
digitalWrite (R2P1, 0);
digitalWrite (B2P1, 0);
digitalWrite (G2P1, 0);
digitalWrite (ClkP1, HIGH);
digitalWrite (ClkP1, LOW);
delay (100);

}}

```

3.3 Test Results

After the tests by using the above command, the values obtained as follows:

- a. The red color is obtained if the pin R = 1, the pin B and G = 0.
- b. The blue color is obtained if the pin B = 1, pin R and G = 0.
- c. The green color is obtained if the pin G = 1, the pins R and B = 0.
- d. Cyan color obtained if the pin B and G = 1, R = 0.pin.
- e. The yellow color obtained if the pins R and G = 1, B = 0.pin.

- f. Magenta color obtained if the pins R and B = 1, pin G = 0
- g. The white color obtained if all the pins in berin value = 1

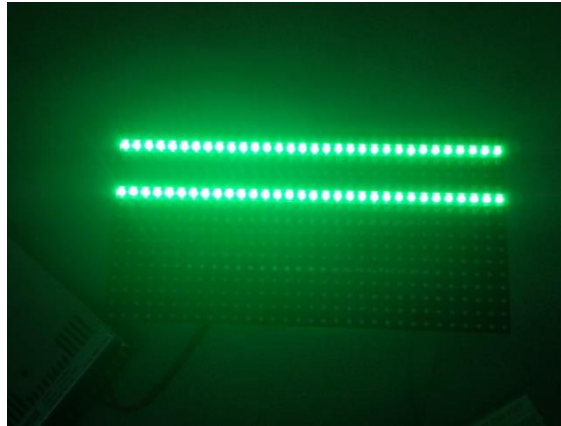


Figure 2 A green LED

4. Conclusions And Recommendations

4.1 Conclusion

Based on the analysis and discussion carried out can be concluded as follows:

- a. It is known how to install the tool.
- b. LED panel can display scheme.
- c. LED panel can display color.
- d. Colors that appear on the LED panel RGB color.

4.2 Recommendations

This study will provide a positive impact for the community, so it is expected in the future will grow even more. The cooperation of many parties including the government will be needed in the dissemination *revolution Traffic* of this eventually Light, so that all elements of society can merasakn good effects of this system.

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