

Project Title: TRAFFIC MANAGEMENT SYSTEM

Phase 2 Submission Document

Introduction:

Traffic Management Systems (TMS) use a variety of technologies to manage traffic flows and the effects of congestion on the roading network. Traffic Management Systems do this by addressing the traffic management effects of accidents and slow moving or queuing vehicles, planned events and extreme weather.

DESIGN THINKING:

IOT sensor:



IOT sensors are used here, to detect the vehicles density among each road .This is used to reduce traffic in peak hours.

Mobile app:

It is used in this project to determine the traffic in each road .Using this app we can find easy way to go for destination.

Web design:

It is used in this project to determine the traffic in each way. Then it is used to select which way is free, then select that way and go through it to our destination.

Project Name: Traffic Light Managements

Components required:

1. Aurdino UNO
2. 4 sets (LED's red,yellow,green)
3. Wires
4. 12 pieces of 220ohm resistors
5. Breadboard

Algorithm:

- 1-Assign the traffic lights pins to variables
- 2-Configure the traffic lights as outputs
- 3-Use **loop** function to keep the lights in a loop and use **changeLight()** function to carry out the logic

Explanation:-Here the loop start with all the yellow light turned on and the green light moving in a clockwise direction when one of the green light is on the rest of the direction will be red and it all will do a transition with the yellow light turned on in every direction.

- 4-Compile the code and upload it to the Arduino

C++ Program coding for traffic and management:

```
int d_red =10;
int d_yellow =9;
int d_green =8;
int r_red =4;
int r_yellow =3;
int r_green =2;
int l_red =13;
int l_yellow =12;
int l_green =11;
int u_red =7;
int u_yellow =6;
int u_green =5;
void setup()
{
  pinMode(d_red, OUTPUT);
  pinMode(d_yellow, OUTPUT);
  pinMode(d_green, OUTPUT);
  pinMode(r_red, OUTPUT);
  pinMode(r_yellow, OUTPUT);
  pinMode(r_green, OUTPUT);
  pinMode(l_red, OUTPUT);
  pinMode(l_yellow, OUTPUT);
```

```

    pinMode(l_green, OUTPUT);
    pinMode(u_red, OUTPUT);
    pinMode(u_yellow, OUTPUT);
    pinMode(u_green, OUTPUT);
}
void loop()
{
    changeLights();
}
void changeLights()
{
    //Start (all yellow)
    digitalWrite(u_red,LOW);
    digitalWrite(d_red,LOW);
    digitalWrite(r_red,LOW);
    digitalWrite(l_green,LOW);
    digitalWrite(u_yellow,HIGH);
    digitalWrite(d_yellow,HIGH);
    digitalWrite(r_yellow,HIGH);
    digitalWrite(l_yellow,HIGH);
    delay(5000);

    //upper lane go
    digitalWrite(u_yellow,LOW);
    digitalWrite(d_yellow,LOW);
    digitalWrite(r_yellow,LOW);
    digitalWrite(l_yellow,LOW);
    digitalWrite(u_green,HIGH);
    digitalWrite(r_red,HIGH);
    digitalWrite(l_red,HIGH);
    digitalWrite(d_red,HIGH);
    delay(10000);

    //ALL YELLOW
    digitalWrite(u_yellow,HIGH);
    digitalWrite(d_yellow,HIGH);
    digitalWrite(r_yellow,HIGH);
    digitalWrite(l_yellow,HIGH);
    digitalWrite(u_green,LOW);
    digitalWrite(r_red,LOW);
    digitalWrite(l_red,LOW);
    digitalWrite(d_red,LOW);
    delay(5000);

    //RIGHT LANE GO
    digitalWrite(u_yellow,LOW);
    digitalWrite(d_yellow,LOW);
    digitalWrite(r_yellow,LOW);
    digitalWrite(l_yellow,LOW);
    digitalWrite(u_red,HIGH);
    digitalWrite(l_red,HIGH);
    digitalWrite(d_red,HIGH);
    digitalWrite(r_green,HIGH);
    delay(10000);

    //ALL YELLOW ON
    digitalWrite(u_yellow,HIGH);
    digitalWrite(d_yellow,HIGH);
    digitalWrite(r_yellow,HIGH);
    digitalWrite(l_yellow,HIGH);
    digitalWrite(u_red,LOW);
    digitalWrite(l_red,LOW);
    digitalWrite(d_red,LOW);
    digitalWrite(r_green,LOW);
    delay(5000);

    //DOWN LANE GO

```

```

digitalWrite(u_yellow,LOW);
digitalWrite(d_yellow,LOW);
digitalWrite(r_yellow,LOW);
digitalWrite(l_yellow,LOW);
digitalWrite(u_red,HIGH);
digitalWrite(l_red,HIGH);
digitalWrite(r_red,HIGH);
digitalWrite(d_green,HIGH);
delay(10000);

//ALL YELLOW
digitalWrite(u_yellow,HIGH);
digitalWrite(d_yellow,HIGH);
digitalWrite(r_yellow,HIGH);
digitalWrite(l_yellow,HIGH);
digitalWrite(u_red,LOW);
digitalWrite(l_red,LOW);
digitalWrite(r_red,LOW);
digitalWrite(d_green,LOW);
delay(5000);

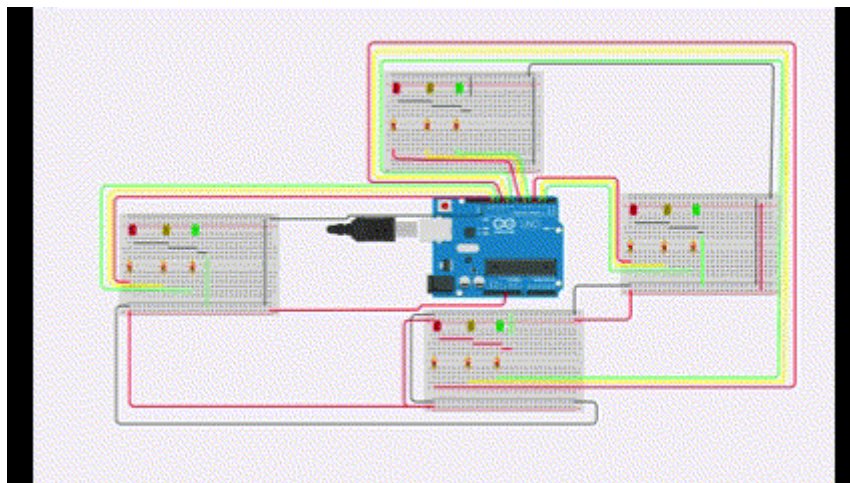
//LEFT LANE GO
digitalWrite(u_yellow,LOW);
digitalWrite(d_yellow,LOW);
digitalWrite(r_yellow,LOW);
digitalWrite(l_yellow,LOW);
digitalWrite(u_red,HIGH);
digitalWrite(d_red,HIGH);
digitalWrite(r_red,HIGH);
digitalWrite(l_green,HIGH);
delay(10000);

}

```

OUTPUT:

<https://media.geeksforgeeks.org/wp-content/uploads/20230201165137/Untitled-video---Made-with-Clipchamp.gif>

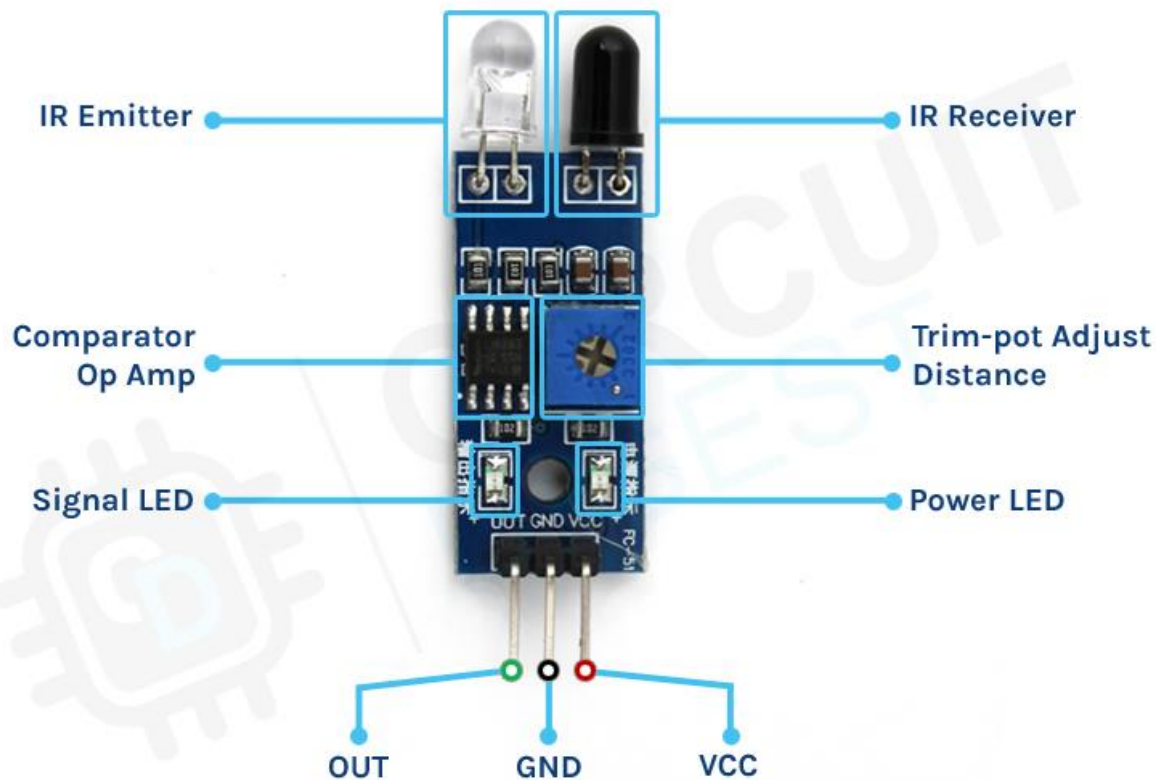
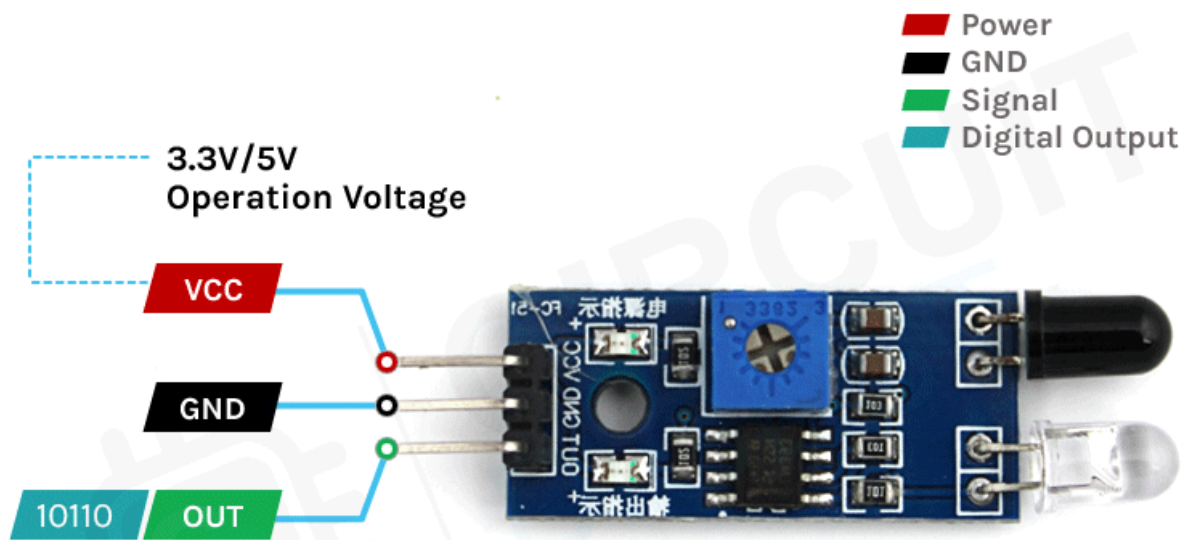


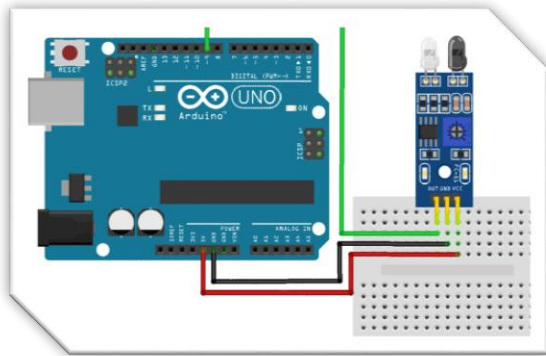
IR SENSORS

INTRODUCTION:

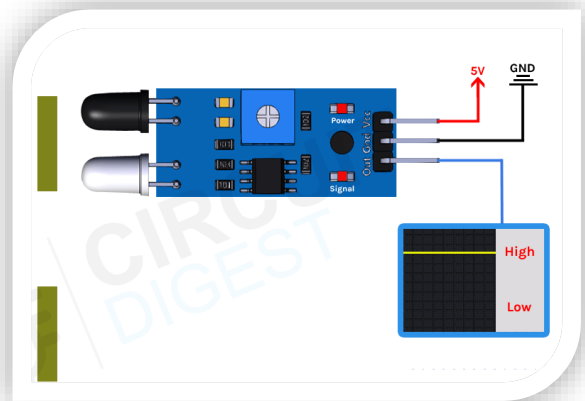
To detect the real time of traffic condition. A IR sensor in this project are used because this sensor sense the that the rode is High density, low density or medium density are sense. And data will be transfer in over mobile. This IR sensor detects vehicle and also detect the emergency vehicle. Thermal radiation is emitted by all the objects in the infrared spectrum. The infrared sensor detects this type of radiation which is not visible to human eye HOW DO IR SENSOR WORKS? An IR (Infrared) sensor is an electronic device which can be used to sense certain parameters of its surroundings by either emitting or detecting radiations. It can also measure heat of an object and detect motion. It uses the infrared light to sense objects in front of them and map or guess their distance. This system consist of 4 IR sensors as a detector of 4 junctions. IR transmitter looks like an LED. This IR transmitter always emits IR rays from it. The operating voltage of this IR transmitter is 2 to 3v. These IR (infra-red) rays are invisible to the human eye. But we can see these IR radiations through camera. IR transmitter transmits IR rays that are received by IR receiver. Generally IR receiver has high resistance in the order of mega ohms but when it is receiving IR rays the resistance is very low. The operating voltage of IR receiver also 2 to 3V. We have to place these IR pair in such a way that when we place an obstacle in front of this IR pair, IR receiver should be able to receive the IR rays. When power is supplied, the transmitted IR rays hit the object and reflect back to the IR receiver.

WORKING :





IR sensor with aurdino UNO



IR sensor

CONCLUSION AND FUTURE WORK(PHASE 2) :

In phase 2 conclusion , In this we detect the vehicles and make LED'S glowing with respect to vehicles in the 4 way road.

Future work:We are able to design a traffic management system .We add some extra components to this project like display ,timer and weather detectors and make this super useful to public.