College code:9512

College name:JP COLLEGE OF ENGINEERING,ayikudu,

Department of electronics and communication engineering

Project code:proj_211931_Team_1

Title:TRAFFIC MANAGEMENT

TEAM MEMBER

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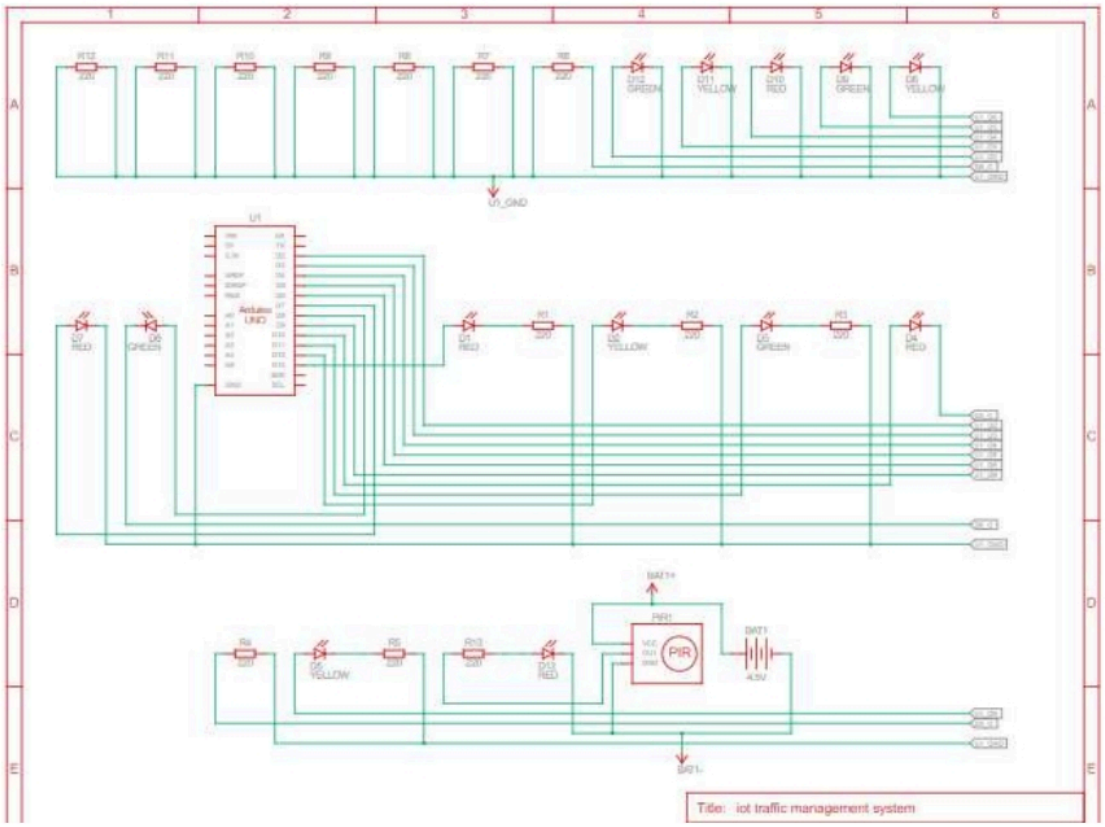
PHASE 4:

DEVELOPMENT PART-2

Traffic management using the Internet of Things (IoT) involves the use of interconnected devices and sensors to collect and exchange data related to traffic flow, congestion, and other relevant parameters.

This data can then be analyzed and used to make informed decisions to optimize traffic flow, improve safety, and reduce congestion.

CIRCUIT DIAGRAM:



COMPONENTS REQUIRED:

	Name	Quantity	Component
2	U1	1	Arduino Uno R3
3	D1, D4, D7, D10, D13	5	Red LED
4	D2, D5, D8, D11	4	Yellow LED
5	D3, D6, D9, D12	4	Green LED
6	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13	13	220 Ω Resistor
7	PIR1	1	-46.204919661944814 , -215.21812432083706 , -261.40186756055743 PIR Sensor
8	Bat1	1	3 batteries, AA, no 1.5V Battery
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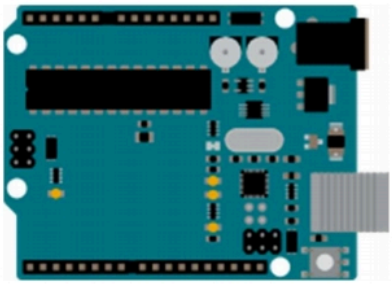
AURDINO UNO:



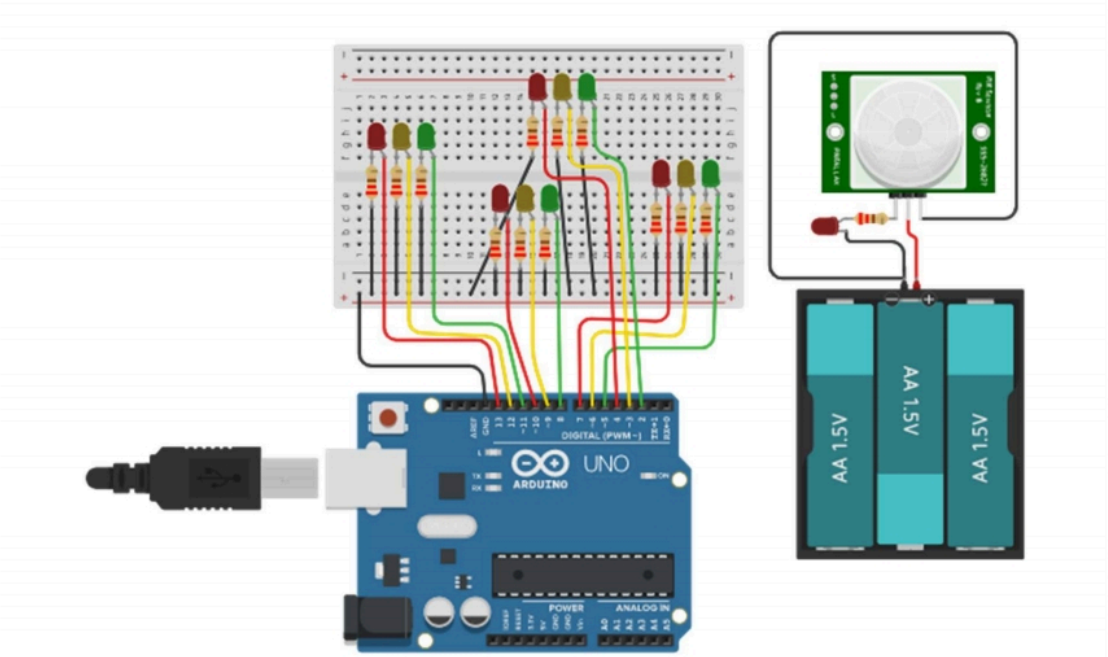
UNO R3

The UNO is the most used and documented board of The Arduino UNO is the best board to get started with electronics and coding. If this is your first experience tinkering with the platform, the UNO is the most robust board the whole Arduino family.

PIR SENSOR:

PIR motion sensors and ultrasonic sensors are placed on each section of the road to detect vehicles to set the duration of traffic lights based on road conditions. The period of the green light time can be determined based on the predetermined road conditions.

AURDINO USING TRAFFIC MANAGEMENT SYSTEM:



:CODE:

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//First of all, we define the pins where we have //connected the LEDs.

int red_1=13; int yellow_1=12; int green_1=11; int red_2=10; int yellow_2=9; int green_2=8;

int red_3=7; int yellow_3=6; int green_3=5; int red_4=4; int yellow_4=3; int green_4=2;


void direction_1_green(void)//green LED of direction 1 will turn ON

{digitalWrite(red_1,LOW);  digitalWrite, (yellow_1,LOW); digitalWrite,(green_1,HIGH);

digitalWrite(red_2,HIGH); digitalWrite, (yellow_2,LOW); digitalWrite,(green_2,LOW);

digitalWrite(red_3,HIGH); digitalWrite, (yellow_3,LOW); digitalWrite,(green_3,LOW);

digitalWrite(red_4,HIGH); digitalWrite, (yellow_4,LOW); digitalWrite,(green_4,LOW); }


void direction_2_yellow(void)//yellow LED of direction 2 will turn ON

{digitalWrite(red_1,HIGH); digitalWrite(yellow_1,LOW); digitalWrite(green_1,LOW);

digitalWrite(red_2,LOW); digitalWrite(yellow_2,HIGH); digitalWrite(green_2,LOW);

digitalWrite(red_3,HIGH); digitalWrite(yellow_3,LOW); digitalWrite(green_3,LOW);
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digitalWrite(red_4,HIGH); digitalWrite(yellow_4,LOW); digitalWrite(green_4,LOW); }

void direction_2_green(void)//green LED of direction 2 will turn ON
{digitalWrite(red_1,HIGH); digitalWrite(yellow_1,LOW); digitalWrite(green_1,LOW);
digitalWrite(red_2,LOW); digitalWrite(yellow_2,LOW); digitalWrite(green_2,HIGH);
digitalWrite(red_3,HIGH); digitalWrite(yellow_3,LOW); digitalWrite(green_3,LOW);
digitalWrite(red_4,HIGH); digitalWrite(yellow_4,LOW); digitalWrite(green_4,LOW); }

void direction_3_yellow(void)//yellow LED of direction 3 will turn ON
{digitalWrite(red_1,HIGH); digitalWrite(yellow_1,LOW); digitalWrite(green_1,LOW);
digitalWrite(red_2,HIGH); digitalWrite(yellow_2,LOW); digitalWrite(green_2,LOW);
digitalWrite(red_3,LOW); digitalWrite(yellow_3,HIGH); digitalWrite(green_3,LOW);
digitalWrite(red_4,HIGH); digitalWrite(yellow_4,LOW); digitalWrite(green_4,LOW); }

void direction_3_green(void)//green LED of direction 3 will turn ON
{digitalWrite(red_1,HIGH); digitalWrite(yellow_1,LOW); digitalWrite(green_1,LOW);
digitalWrite(red_2,HIGH); digitalWrite(yellow_2,LOW); digitalWrite(green_2,LOW);
digitalWrite(red_3,LOW); digitalWrite(yellow_3,LOW); digitalWrite(green_3,HIGH);
digitalWrite(red_4,HIGH); digitalWrite(yellow_4,LOW); digitalWrite(green_4,LOW); }

void direction_4_yellow(void)//yellow LED of direction 4 will turn ON
{digitalWrite(red_1,HIGH); digitalWrite(yellow_1,LOW); digitalWrite(green_1,LOW);
digitalWrite(red_2,HIGH); digitalWrite(yellow_2,LOW); digitalWrite(green_2,LOW);
digitalWrite(red_3,HIGH); digitalWrite(yellow_3,LOW); digitalWrite(green_3,LOW);
digitalWrite(red_4,LOW); digitalWrite(yellow_4,HIGH); digitalWrite(green_4,LOW); }

void direction_4_green(void)//green LED of direction 4 will turn ON
{digitalWrite(red_1,HIGH); digitalWrite(yellow_1,LOW); digitalWrite(green_1,LOW);
digitalWrite(red_2,HIGH); digitalWrite(yellow_2,LOW); digitalWrite(green_2,LOW);
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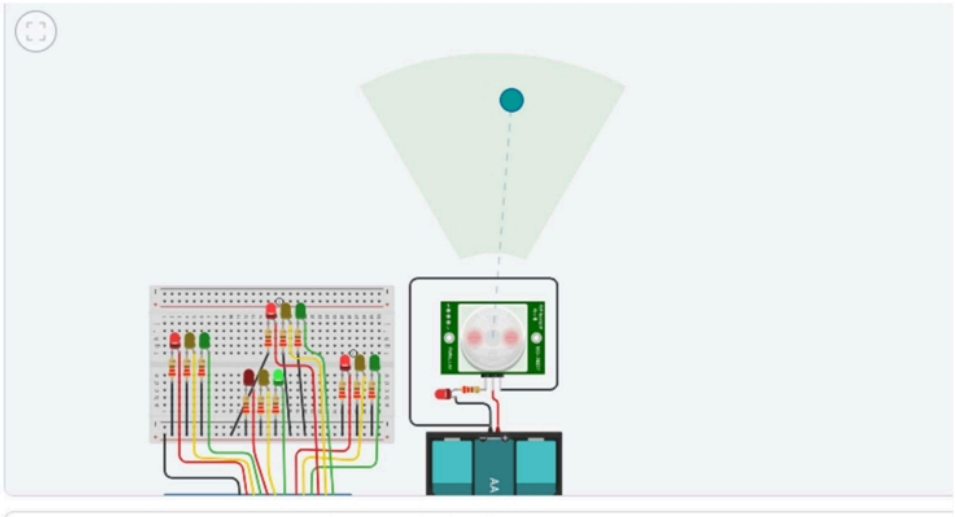
digitalWrite(red_3,HIGH); digitalWrite(yellow_3,LOW); digitalWrite(green_3,LOW);
digitalWrite(red_4,LOW); digitalWrite(yellow_4,LOW); digitalWrite(green_4,HIGH); }

void direction_1_yellow(void)//yellow LED of direction 1 will turn ON
{digitalWrite(red_1,LOW); digitalWrite(yellow_1,HIGH); digitalWrite(green_1,LOW);
digitalWrite(red_2,HIGH); digitalWrite(yellow_2,LOW); digitalWrite(green_2,LOW);
digitalWrite(red_3,HIGH); digitalWrite(yellow_3,LOW); digitalWrite(green_3,LOW);
digitalWrite(red_4,HIGH); digitalWrite(yellow_4,LOW); digitalWrite(green_4,LOW); }
void setup() { // Declaring all the LED's as output

for(int i=2;i<=13;i++) pinMode(i,OUTPUT);
} void loop() //In the loop function, we controlled the signal one // by one to control the flow of traffic.
{direction_1_green(); delay(5000); direction_2_yellow(); delay(3000);
 direction_2_green(); delay(5000); direction_3_yellow(); delay(3000);
 direction_3_green(); delay(5000); direction_4_yellow(); delay(3000);
 direction_4_green(); delay(5000); direction_1_yellow(); delay(3000); }
```

OUTPUT:



CONCLUSION:

By employing IoT in traffic management, cities can achieve more efficient traffic flow, reduce congestion, lower emissions, and enhance overall safety for both drivers and pedestrians. It's essential to consider privacy and security measures when implementing such systems to protect sensitive data and ensure the integrity of the traffic management infrastructure.