



University of Asia Pacific

Department of Computer Science and Engineering

CSE 316: Microprocessors and Microcontrollers Lab

LAB REPORT

Experiment Number: 01

Experiment Title: Traffic Light Control Using Servo Motor and LEDs

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1. Experiment Name

Mini Project 1: Traffic Light Control Using Servo Motor and LEDs

2. Objective

To design and implement a traffic light control system using a servo motor and LEDs that simulate real-world traffic signal operations.

3. Apparatus / Hardware & Software Requirements

- List all required tools and components:

Hardware:

- Microcontroller: Arduino Uno
- LEDs: Red, Yellow, Green
- Servo Motor
- Resistors (220Ω)
- Breadboard
- Jumper Wires
- Power Source (USB or 9V Battery)

Software:

- Arduino IDE

3. Circuit Diagram / Schematic

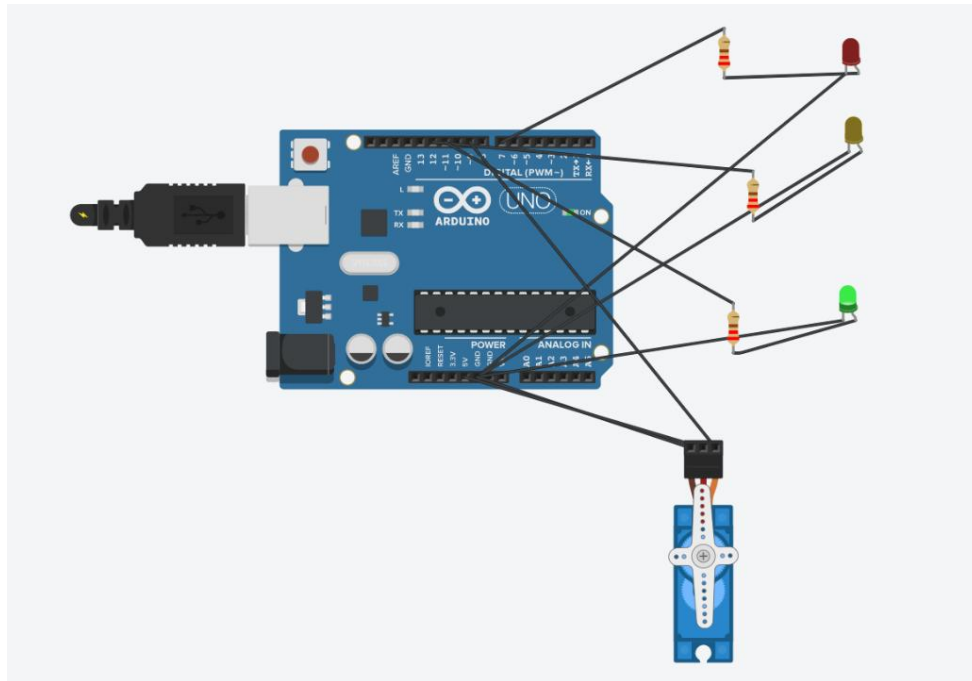


Diagram: Traffic Light Control Using Servo Motor and LEDs

5. Code / Assembly Program

```
#include <Servo.h>
```

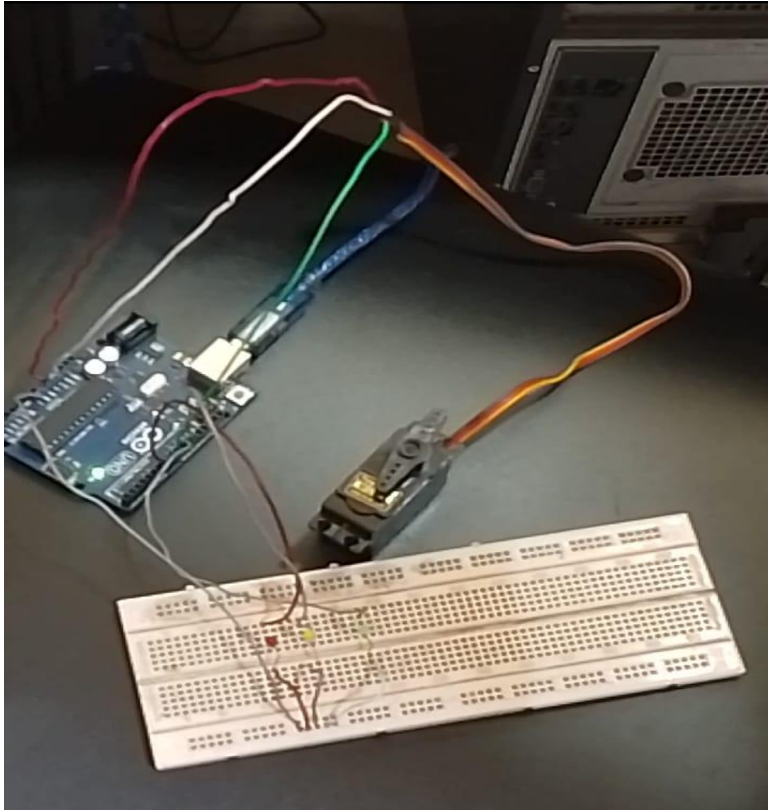
```
int i = 0;  
int k = 0;  
int pos = 0;  
int j = 0;  
Servo servo_9;
```

```
void setup()  
{  
  pinMode(13, OUTPUT);  
  pinMode(7, OUTPUT);  
  servo_9.attach(9, 500, 2500);  
  pinMode(11, OUTPUT);  
  pinMode(12, OUTPUT);
```

```
  digitalWrite(13, LOW);  
}
```

```
void loop()  
{  
  digitalWrite(7, LOW);  
  for (pos = 90; pos >= 1; pos -= 1) {  
    servo_9.write(pos);  
  }  
  digitalWrite(11, HIGH);  
  delay(3000); // Wait for 3000 millisecond(s)  
  digitalWrite(11, LOW);  
  digitalWrite(12, HIGH);  
  delay(2000); // Wait for 2000 millisecond(s)  
  digitalWrite(12, LOW);  
  digitalWrite(7, HIGH);  
  for (pos = 1; pos <= 90; pos += 1) {  
    servo_9.write(pos);  
  }  
  delay(5000); // Wait for 5000 millisecond(s)  
}
```

6. Output / Observations



Traffic Light Control Using Servo Motor and LEDs

7. Result

- The traffic light control system was successfully implemented using a servo motor and LEDs.
- The system operates in the correct traffic signal sequence.
- **Objective achieved:** Yes.

8. Conclusion

- Learned to control LEDs and servo motors using Arduino.
- Understood the timing sequence of traffic lights and how to simulate them with electronics.
- Gained hands-on experience in integrating actuators (servo) with signaling systems.