# PREMIER UNIVERSITY CHATTOGRAM

DEPARTMENT OF **COMPUTER SCIENCE AND ENGINEERING**

# Lab Report

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| **COURSE NAME** | Microcontrollers Laboratory |
| **COURSE CODE** | CSE3816 |
| **REPORT NO** | 01 |
| **REPORT NAME** | Building a sequential Led Chaser circuit with Arduino . |
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**SUBMITTED TO**

**MOHAMMED SAIFUDDIN MUNNA**
ASSISTANT PROFESSOR
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

| **REMARKS** | **SUBMITTED BY** | |
|---|---|---|
| | **NAME** | Rimjhim Dey |
| | **ID** | 0222220005101039 |
| | **SEMESTER** | 4th |
| | **BATCH** | 42 |
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| | **SECTION** | A |

## Experiment Name:

Building a Sequential LED Chaser Circuit with Arduino.

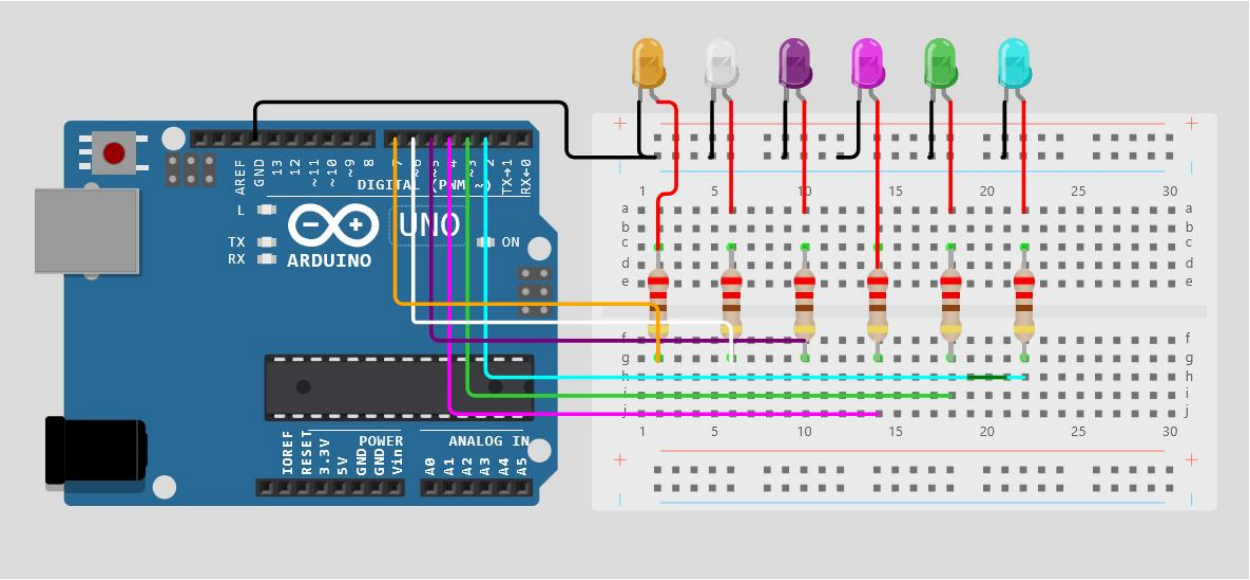
## Objective:

To design and implement a sequential LED chaser circuit using an Arduino microcontroller, which sequentially lights up a series of LEDs in a predefined pattern.

## Instruments Required:

- Arduino Board (e.g., Uno, Nano, Mega)
- Breadboard
- 6 LEDs
- 6 Current-limiting resistors (220Ω each)
- Connecting wires
- USB cable for programming the Arduino
- Computer with Arduino IDE installed.

## Circuit Diagram:



## Source Code:

```
const int numLEDs = 6;
const int ledPins[numLEDs] = {2, 3, 4, 5, 6, 7};

void setup() {

  for (int i = 0; i < numLEDs; i++) {
    pinMode(ledPins[i], OUTPUT);
    digitalWrite(ledPins[i], LOW);
  }
}

void loop() {

  for (int i = 0; i < numLEDs; i++) {
    digitalWrite(ledPins[i], HIGH);
    delay(200);
    digitalWrite(ledPins[i], LOW);
  }
  /
  for (int i = numLEDs - 1; i >= 0; i--) {
    digitalWrite(ledPins[i], HIGH);
    delay(200);
    digitalWrite(ledPins[i], LOW);
  }
}
```

## Output:

When the circuit is powered on and the Arduino code is uploaded, the LEDs will light up sequentially from the first to the last LED, creating a "chaser" effect. This sequence will continue indefinitely, creating a visual pattern that appears to "move" across the LED array.

## Discussion:

In this experiment, we constructed a sequential LED chaser circuit using an Arduino Uno microcontroller. Eight LEDs, each paired with a 220Ω current-limiting resistor, were connected to digital pins 2 through 9. This setup prevented excessive current flow, ensuring LED safety. We used a breadboard for convenient arrangement and connectivity.

The source code, uploaded via USB cable, controlled the LED sequence. Within the loop, each LED was activated sequentially with digitalWrite(), followed by a 100-millisecond delay, creating the chaser effect. An optional reverse chaser effect added variation.

This experiment illustrates basic principles of digital output control, demonstrating how microcontrollers coordinate actions across multiple outputs. Such knowledge lays the groundwork for more complex projects involving sensors, actuators, and advanced logic operations.