



# Light Animations using MATLAB and Arduino

## Team Members-

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# AIM & OBJECTIVE





## AIM -

- ▶ Light animations are visually appealing and hence widely used for advertising purposes.
- ▶ The Aim of this project is to produce visually appealing light animations through a MATLAB based GUI.



## OBJECTIVE -

The objective of this project is to present a MATLAB-based graphical user interface (GUI) approach to control the glowing pattern of a number of light-emitting diodes (LEDs).

EXISTING SYSTEM





## STANDARD HOLIDAY LIGHTS

- ▶ Light animations are commercially used in lighting decorations during festivals like Christmas & Diwali.



## WORKING

- ▶ The LEDs are all typically connected to the same power source.
- ▶ There are 2 ways to attach the lights which are **in series** or **in parallel**.
- ▶ As a standard, engineers decided that the best option was to connect several series of lights together in parallel.



## DISADVANTAGE:

- ▶ We cannot program the light animations in Standard holiday lights according to our own needs.
- ▶ For this, we have proposed our system of light animations using MATLAB.



# PROPOSED SYSTEM





# INTRODUCTION

- ▶ This project creates five different lighting patterns including ring counter and Johnson counter by clicking appropriate pushbuttons in the GUI.
- ▶ The blinking speed of LEDs can also be controlled using fast, normal and slow pushbuttons in the GUI.



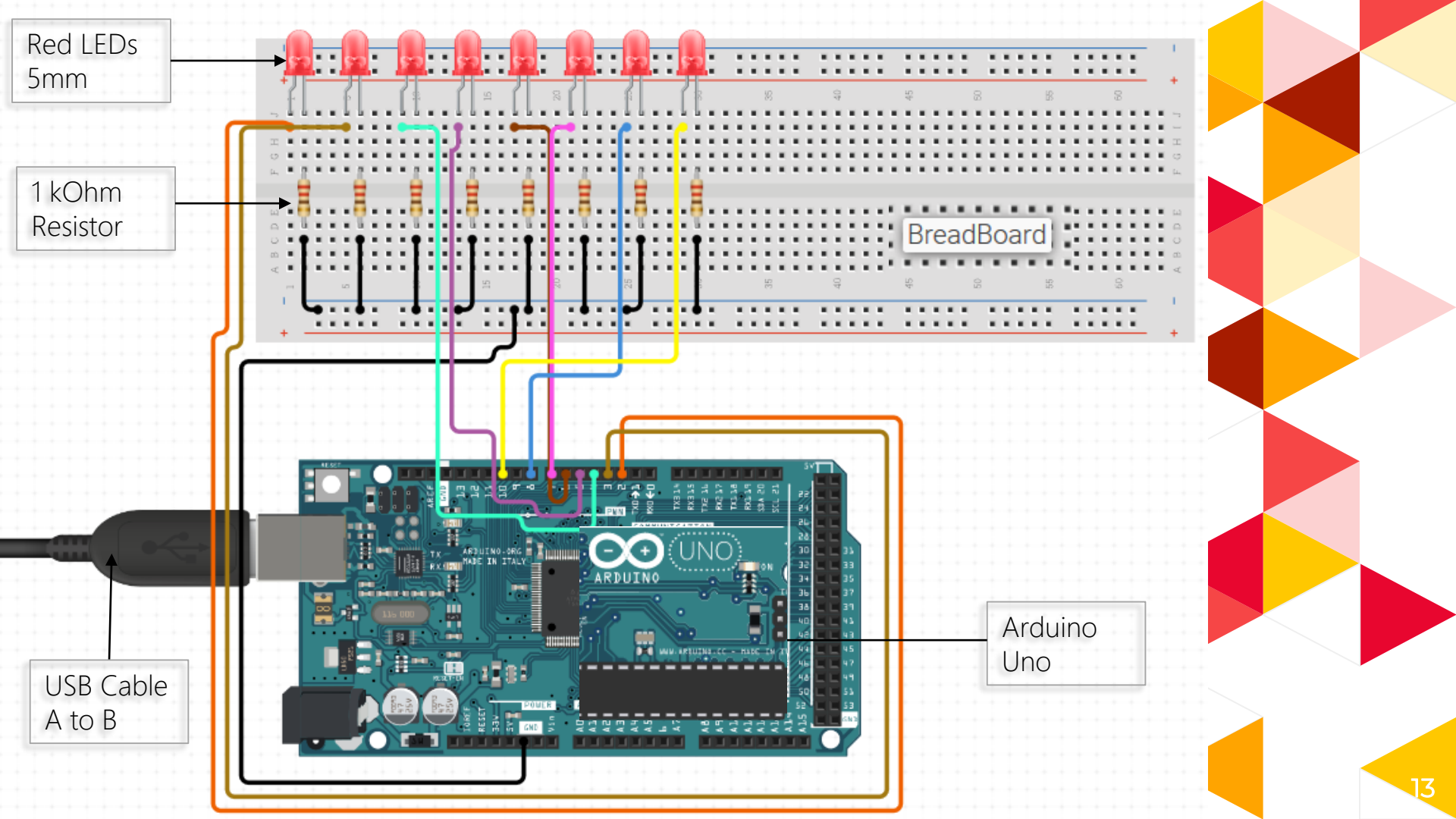
# FEATURES OF OUR PROPOSED SYSTEM

- ▶ **Easy access:** This application can be accessed anytime and anywhere from the world.
- ▶ **Control:** This application can allow the user to control the glowing of the LED's with great ease in just one mouse click with great ease.
- ▶ **User friendly:** This application will be user friendly since the user interface will be simple and easy to understand even by the common man.
- ▶ **Click:** This application can help in getting the animations with great ease in just one mouse click.
- ▶ **Result:** This application can help in providing the accurate result through this application.
- ▶ **Useful:** This application can be useful since the user can control the lighting patterns through GUI.

# CIRCUIT DIAGRAM

The circuit for controlling light animations consists of an Arduino Uno board, six LEDs and six 1-kilo-ohm resistors on a breadboard connected with wires.





Red LEDs  
5mm

1 kOhm  
Resistor

USB Cable  
A to B

Arduino  
Uno



# Implementation Steps

This project involves 3 broad steps –

- ▶ Step 1 – Connecting components as per circuit diagram
- ▶ Step 2 – Writing Arduino code to create animation order of LEDs
- ▶ Step 3 – Writing MATLAB code to create GUI and connecting the two

# Hardware Requirements

- ▶ Arduino Uno Microcontroller
- ▶ Six 1-kilo Ohm Resistors
- ▶ Six 5mm Red/Green LEDs
- ▶ USB Cable A to B
- ▶ Connecting wires and Breadboard



# Software Requirements

- ▶ Latest Arduino IDE
- ▶ GUI – MATLAB R2013b Version
- ▶ Legacy MATLAB and Simulink Support for Arduino package from Mathworks



# Thank You



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