

PROJECT DOCUMENTATION

ELECTRONICS DESIGN WORKSHOP

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SELF BLOOMING NIGHT FLOWER

Keep It Simple, Stupid
(KISS)

MOTIVATION

→ WHY ARE WE MAKING IT?

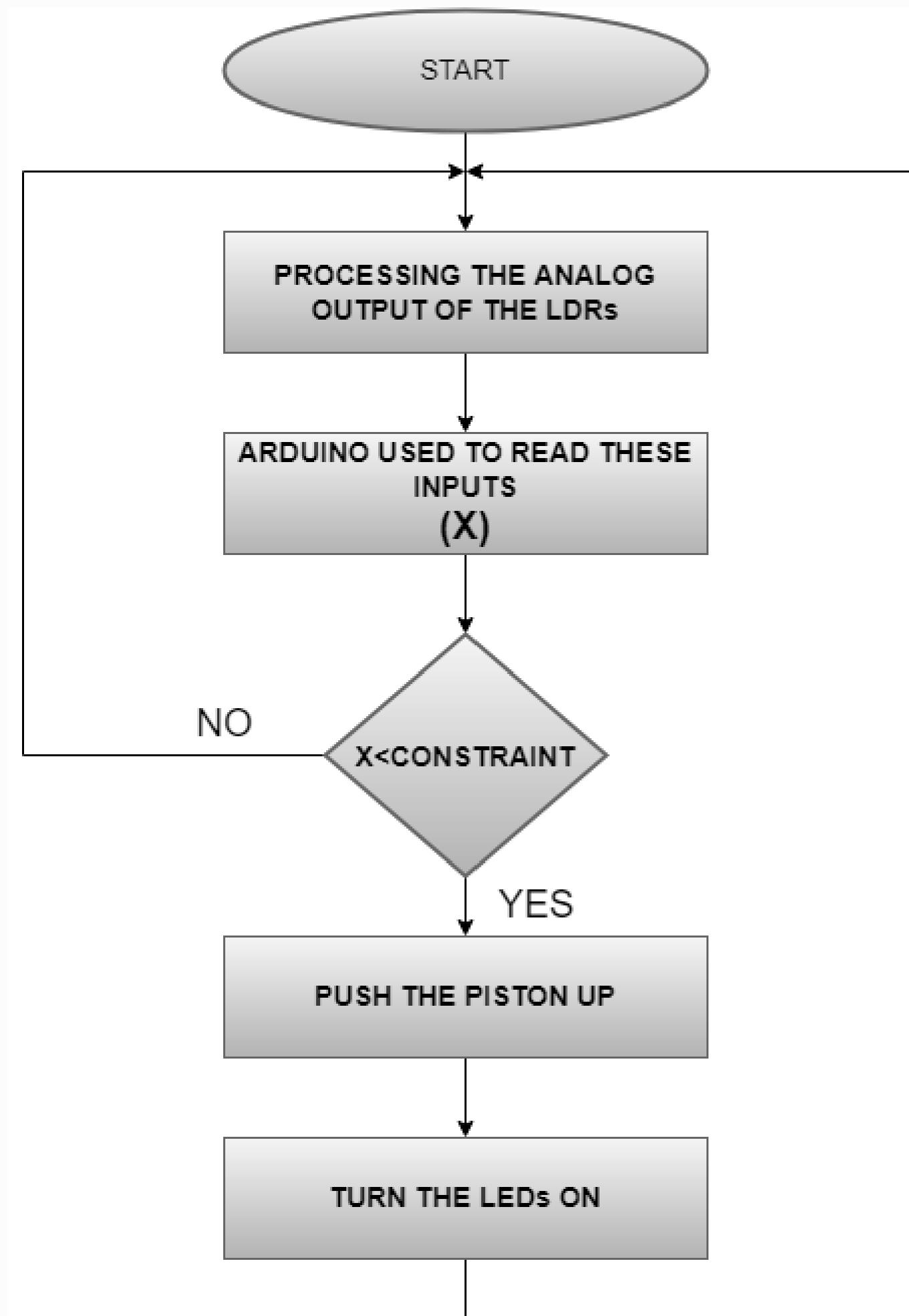
- Resemblance to 'Water Lily'.
- Decorations are an essential part of a festival. Take these decorations one step ahead by using automation.

Reasons why it is simple?

Using the simplest electronics components such as Resistor, LEDs, LDR, Servo Motor, Arduino NANO.

Reasons why it is stupid?

Flowchart

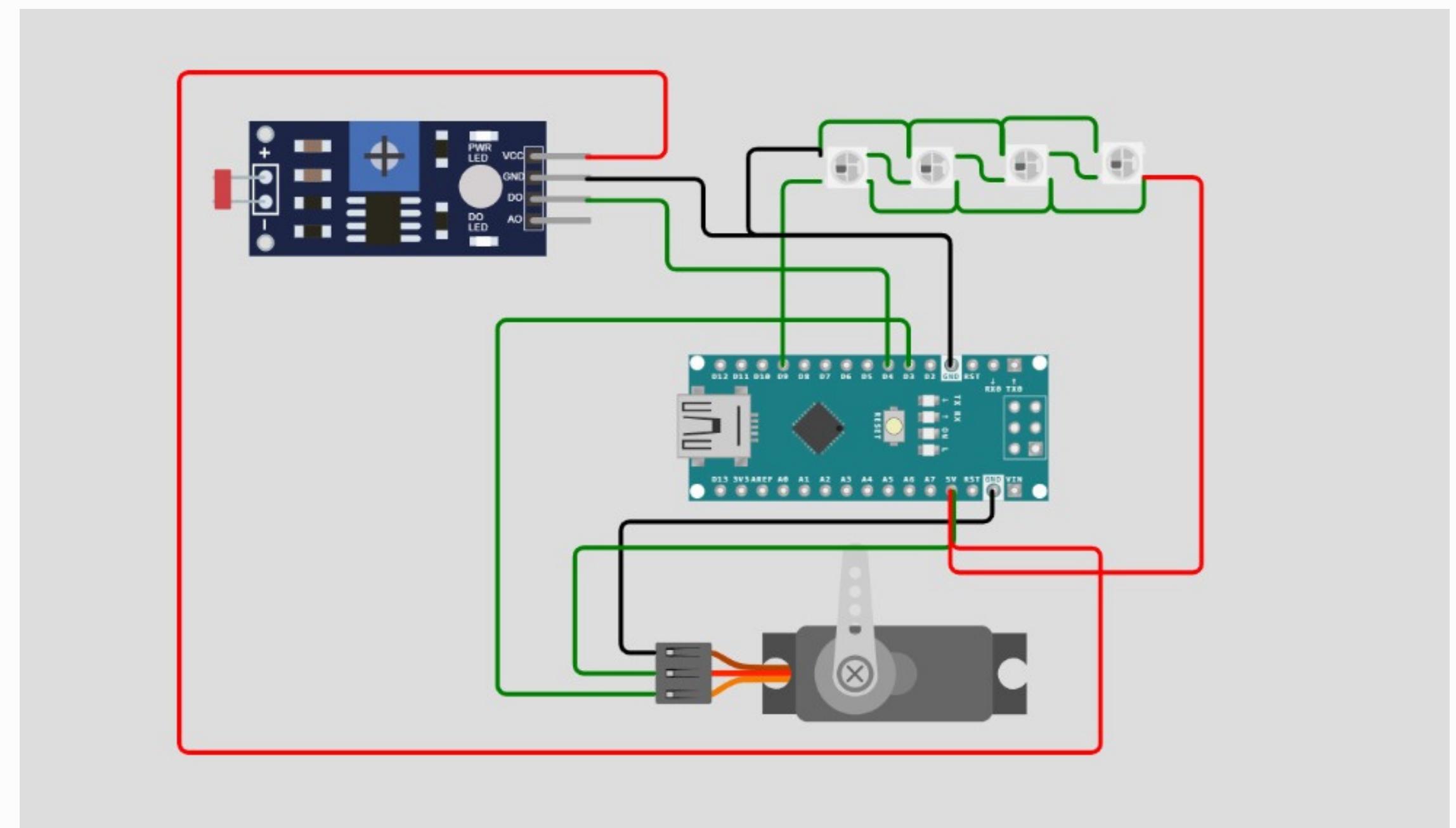


→ **PROJECT DESCRIPTION**

The various components and mechanisms that will be used in our project.

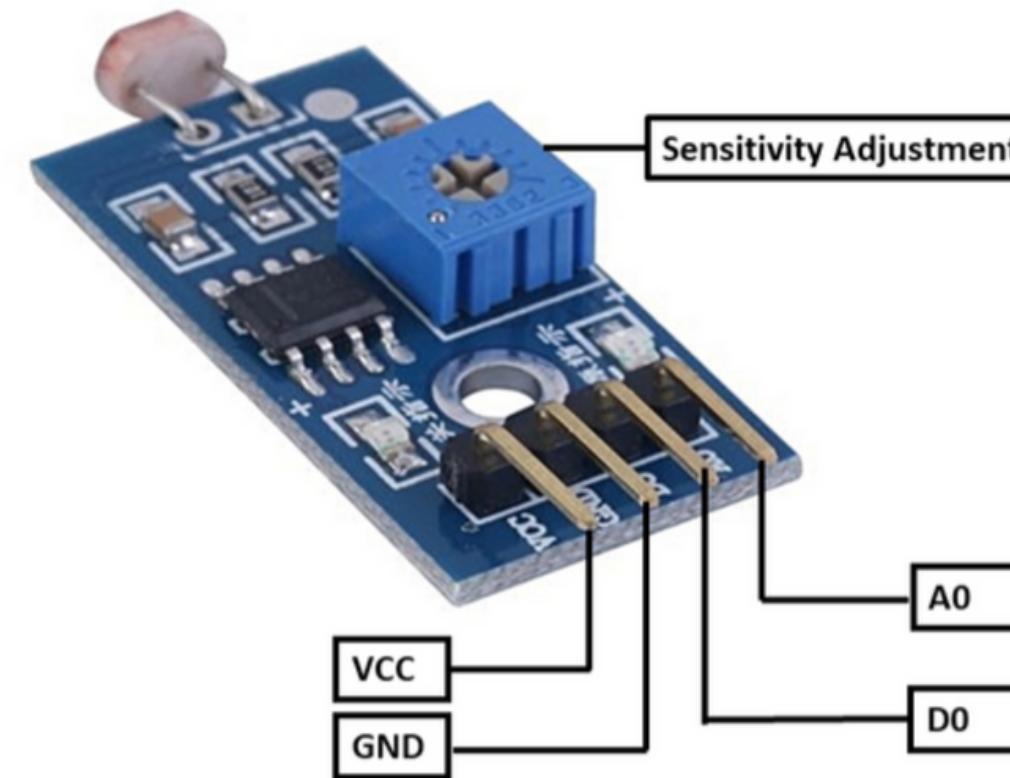
CIRCUIT PROTOTYPE

The circuit below describes the essential components used and their connections consisting the arduino nano, servo, neopixel led and the LDR module.



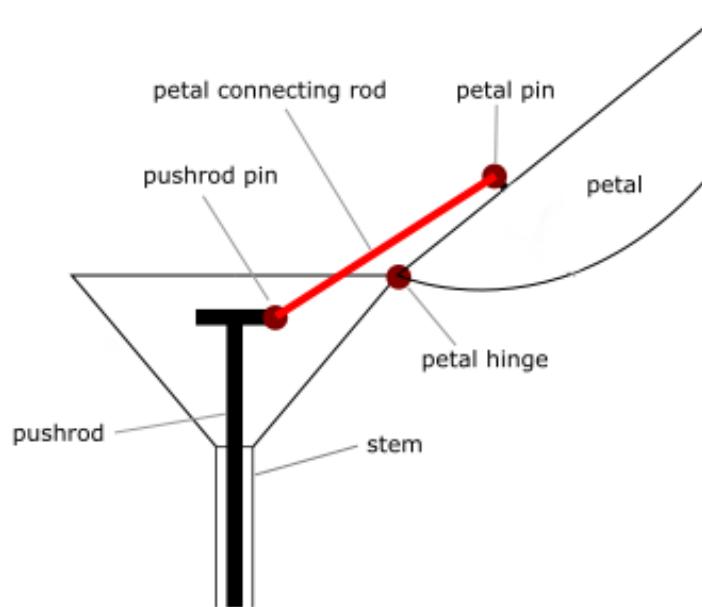
LDR Module

- When light intensity decrease (low/dark) on the surface of the LDR then the resistance of the LDR increases. In this condition, so the sensor output goes High (1).

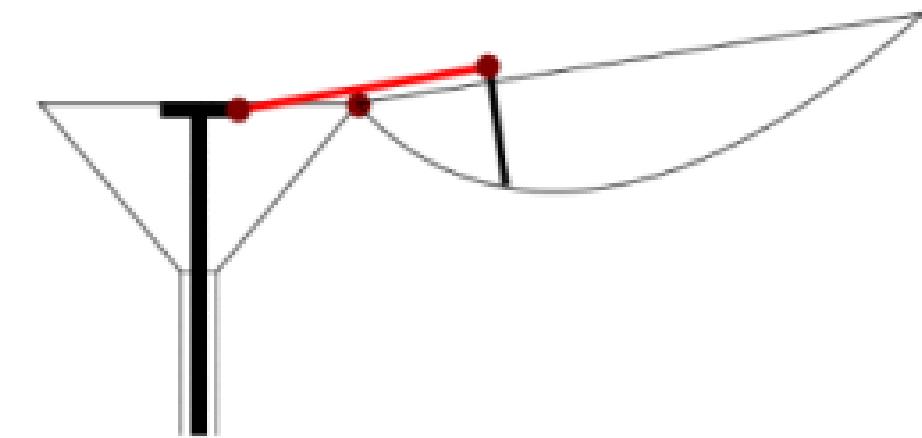


Petals Mechanism

- Below is an image of how the pushrod moves with petals.
As the pushrod moves up it pushes the connecting rod and petals down.
- As it moves down it drags connecting rods and petals are being closed.



(a)



(b)

Servo Motor

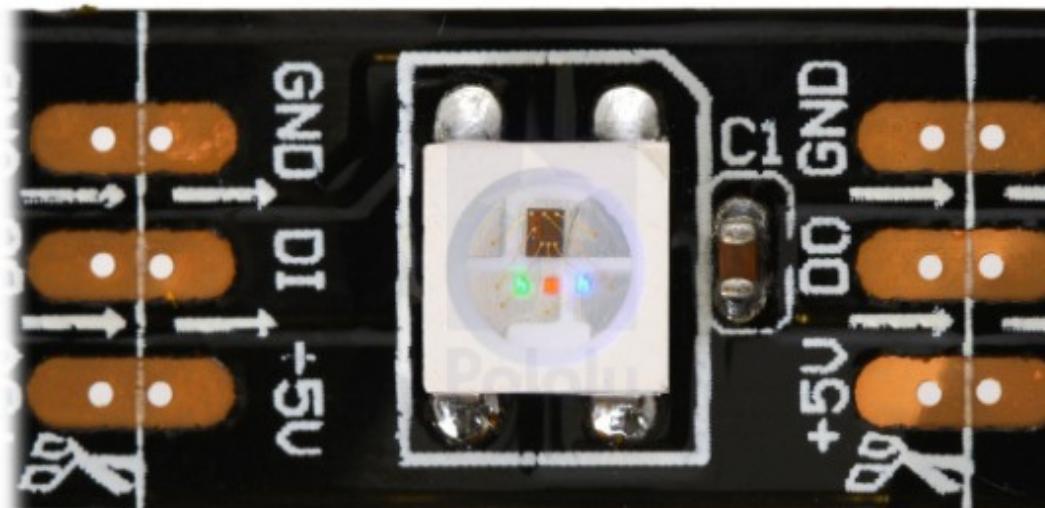
- A servo motor is used here to control the movement of the piston in both upward and downward directions to make it appear like a blooming process as explained in the previous slides.
- Servo motor does not rotate freely and continuously like DC motor. A servo motor is a motor that works in angles between 0° and 180° .



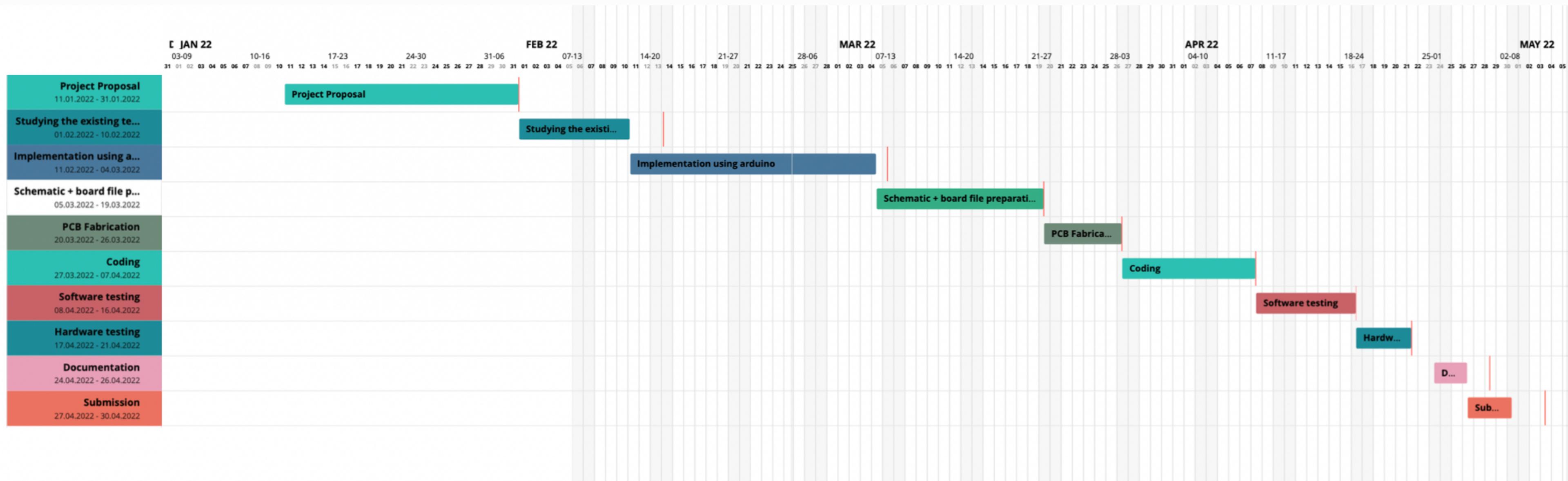
Credit: arduinogetstarted.com

Neopixel LED

- These flexible RGB LED strips are an easy way to add complex lighting effects to a project. Each LED has an integrated driver that allows you to control the color and brightness of each LED independently.
- FastLED is a fast, efficient, easy-to-use Arduino library for programming addressable LED strips and pixels such as WS2810, WS2811, LPD8806, Neopixel, and more. FastLED is used by thousands of developers, in countless art and hobby projects, and in numerous commercial products.



Gantt Chart



TIMELINES

15/01/22 - 31/01/22

We researched about the project topic after sir announced about the project. We searched various project ideas that we can implement. After selecting and dropping some ideas we finally decided to go with the project name Slef blooming night flower and we were fascinated by this idea.

1/02/22 – 10/02/22

After getting a approval from sir we researched about the components required and how to use it. We studied how to control this components according to your need . We take help of google and youtube to learn about the components that are going to use in our project.

5/02/22 – 18/02/22

We researched about the components required and how to implement it using Arduino . We learn about functioning of different-different pin available in arduino. We also observe some demo project to learn how to acually use it while making project.

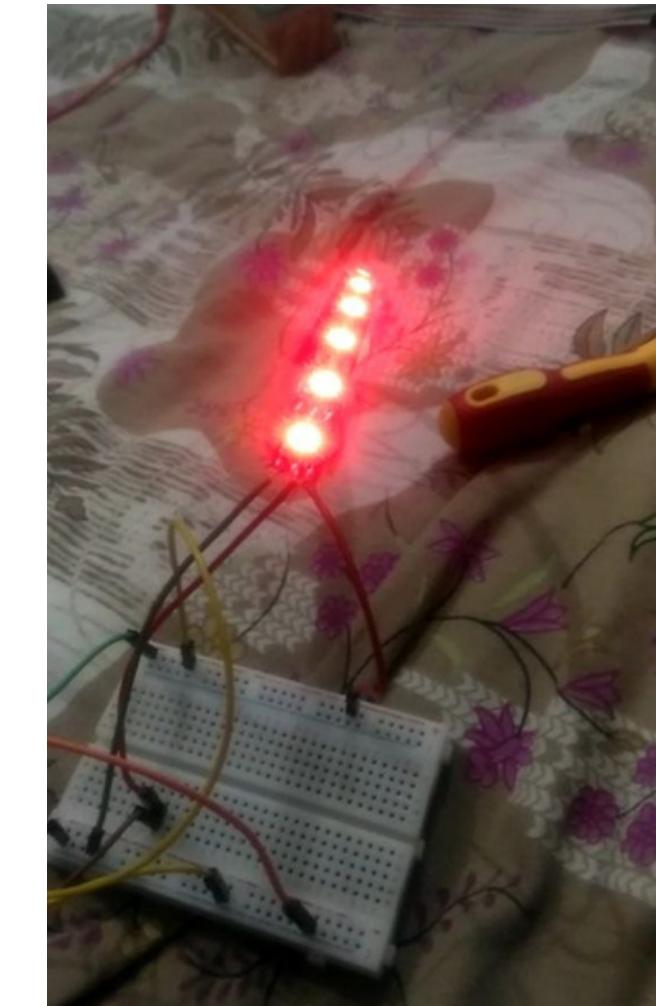
20/02/22 – 30/02/22

Learned how to use autodesk fusion 360 for designing the 3-D models by watching youtube videos and making different mechanical models like hinges and curved surface.



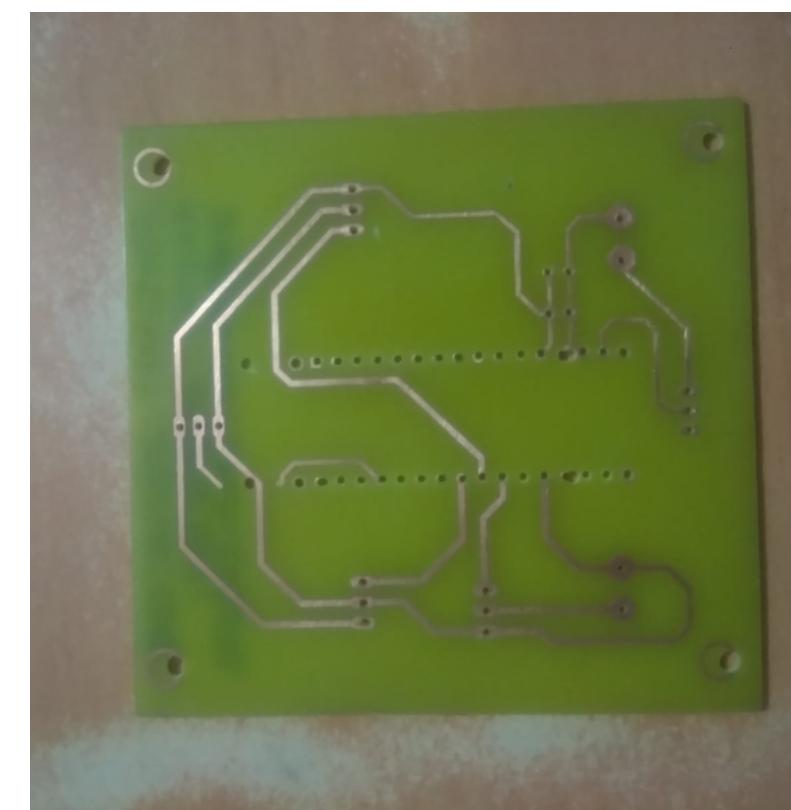
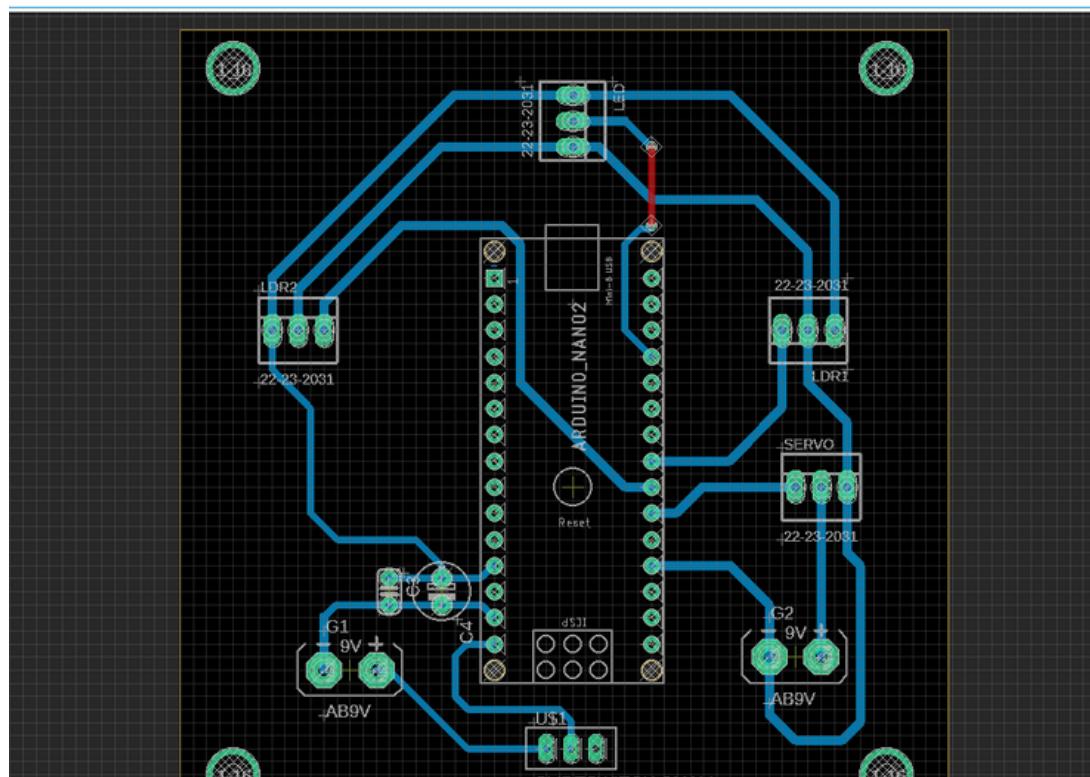
17/03/22 – 30/03/22

Design the prototype model on Tinkercad and observed it on different values of components. After designing the circuit, we tested it on breadboard.



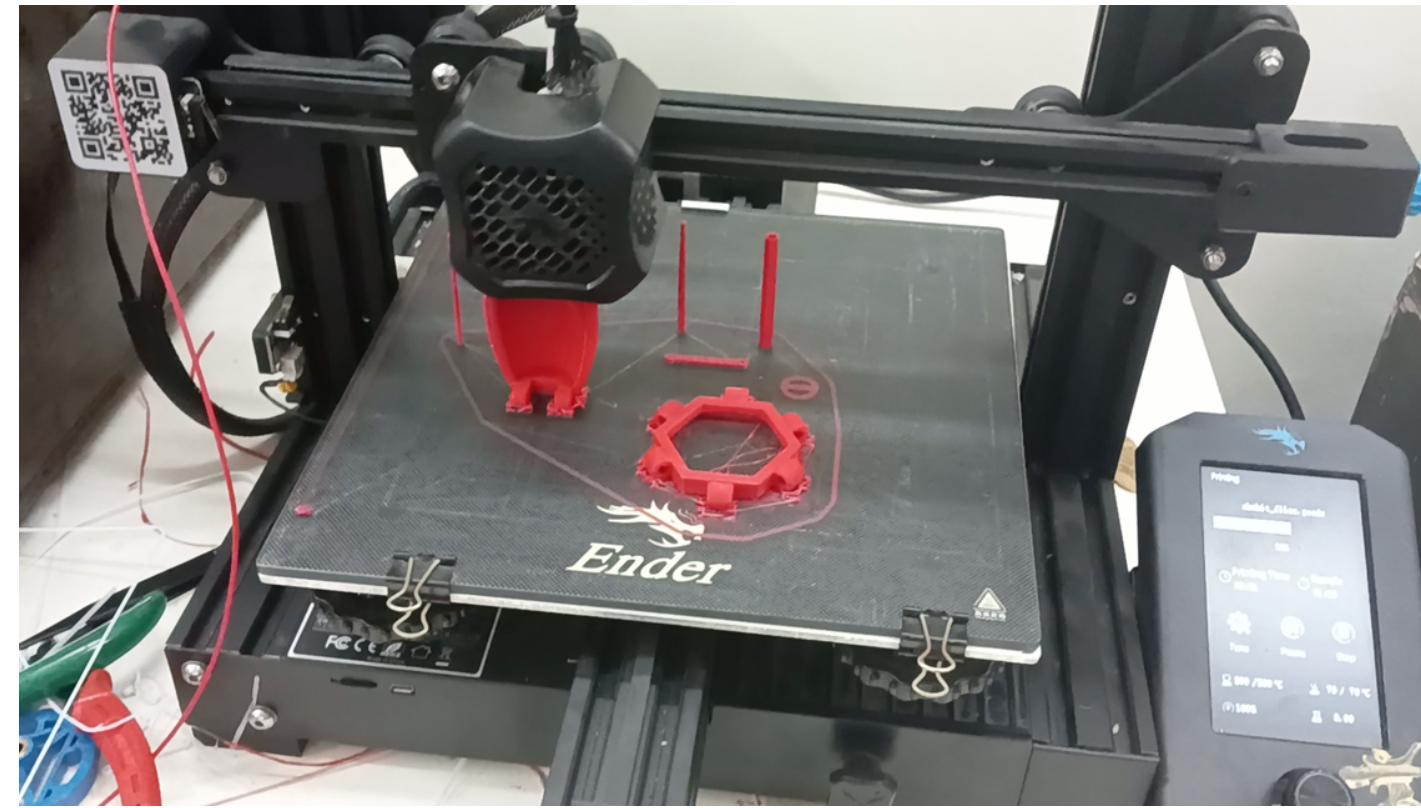
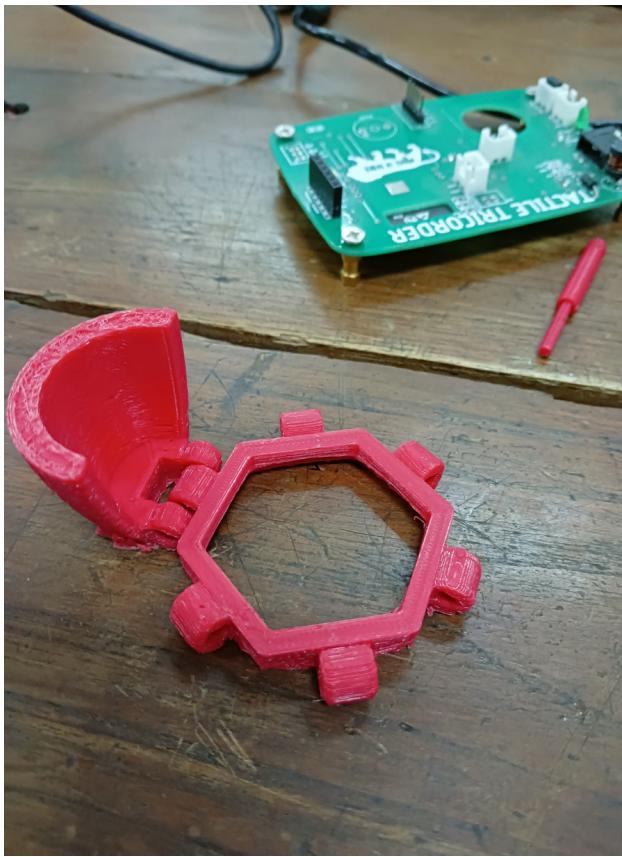
10/04/22 – 147/04/22

We learn how to use Eagle software and how to make proper schematic and board file. We learnt all the steps of pcb fabrication in our college practical. Using this knowledge we make pcb for our project. We learnt all the things related to schematic, board file and PCB fabrication under the guidance of D V Gadre sir and our college seniors.



18/04/22 – 24/04/22

Printed the design for petals and petal base. We found difficulty in printing this as at the start of week we were exploring the design. Also the red PLA was damaged or defective and it gets cut during the printing and have to reprint the whole design. At last we print the design on black PLA and painted petals with white spray.



13/05/22 – 17/05/22

In this timeline we assemble all the components together. We had all design the enclosure box for circuit from acrylic sheet.



Glimpse of project

Through this project, we learnt a lot about the functioning and use of different electronic components and their applications in real life. Also the mechanical part of this project was quite enthusiastic and full of learning. We were able to correlate what we studied in our course to real life.

