

4x4x4 LED Cube with Clock:
A Project Proposal
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Introduction

This paper describes a modification of a 4x4x4 LED cube. The original project, developed by Tapendra Mandal on youtube.com, shows a three-dimensional cube made out of Light Emitting Diodes (LEDs), which lights up to different patterns (Mandal, 2017).

Novel Contribution

The author aims to improve the original project by adding the following: a power button to control the on/off of the device, buttons to control the pattern it displays, and a clock. The author will also use the Arduino UNO instead of Arduino Nano for this project.

Motivation

This project is chosen because the author was fascinated with the idea of how the LED cube works. By adding a clock, it will serve as an excellent night lamp for personal use or as a Christmas present.

Materials Required

According to the project website, the following materials are required:

- Arduino Nano (will change to UNO)
- LED x64
- Resistor x4
- Thick Wire

- Solder
- Soldering iron
- Prototyping board

In addition, the following materials are required:

- Digital clock
- Buttons
- Red LED
- Green LED

- Wooden board
- Wood glue
- Clamps
- Spray paint

Milestones

If the project is kept properly on track, the following milestones should be met:

Milestone 1	November 2	All parts gathered
Milestone 2	November 16	Initial assembly -- no code
Milestone 3	November 23	Working LED Cube with buttons
Milestone 4	November 29	Working clock
Milestone 5	December 1	Working LED cube with clock
Milestone 6	December 7	Stretch goal: Add protection to the LED cube

The final milestone is a "stretch goal" in which the author will make a case for the LED cube as additional protection.

Summary

The goal of this proposed project is to make a device that is aesthetically pleasing to the eyes, which will serve as a good home decoration and as a clock. There is not a whole lot of time to complete this project, so very realistic and conservative goals have been identified. It is best to get started right away.

References

Tapendra Mandal. (2017, July 29). *How to Make a LED Cube at Home* [Video File]. Retrieved from <https://www.youtube.com/watch?v=2BIVUKW5hL0>