

Outline

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1. Summary / Abstract

- The project concerns building a Bangla Calendar Clock that displays a design improvement over the previous iterations. Our version shares the displayed data between 3 screens. The time and date are synced from NTP server via WiFi. The device is suitable to be used on tabletops and on walls.



2. Introduction

Bangla clock 2.0 is an IoT device featuring bangla lcd displays. The project is based on ESP-8266 microcontroller and it's prime function is to drive three led displays at a time. The microprocessor also features WiFi connectivity allowing it to connect to the internet and work as an IoT device. It collects time and date data from online servers, updates regularly and works flawlessly. The physical dimensions of the project is somewhat compact and easy mountable.

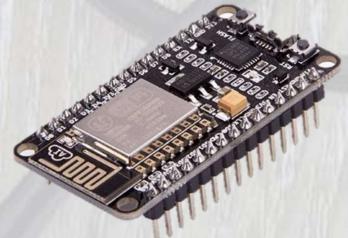


Objective

1. Multiple LED Matrix Displays
2. Bangla Clock and Calender
3. Synchronized Time Date
4. Custom Notice Board
5. Single Board Implement



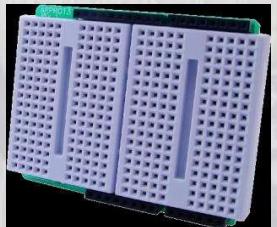
Design: (Components)



ESP8266



Lcd dot matrix display



Nano Breadboard



RTC DS3231



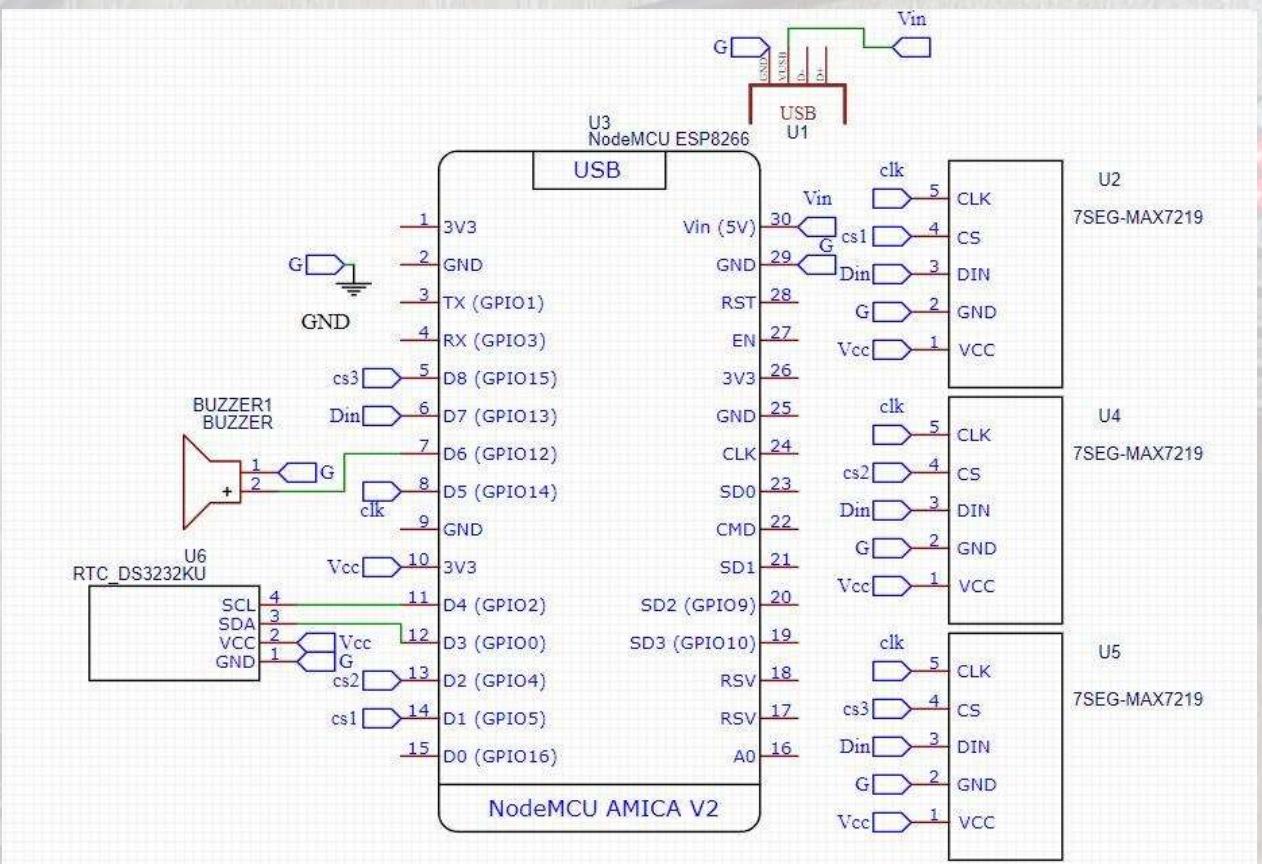
Acrylic sheet box



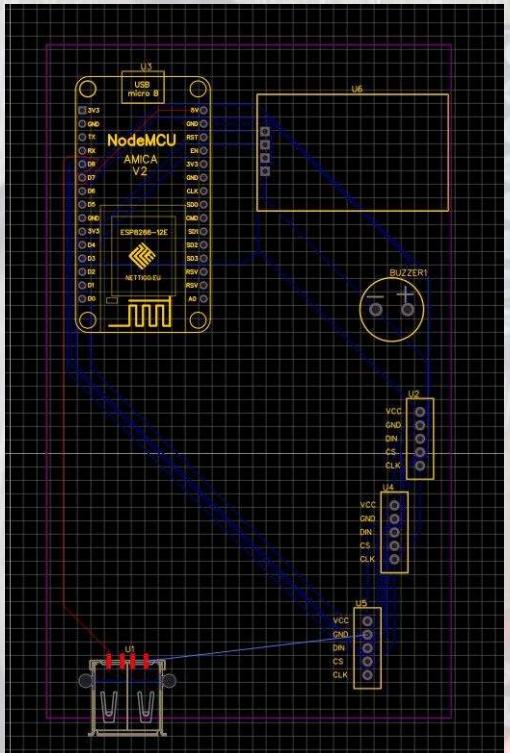
Dc charger



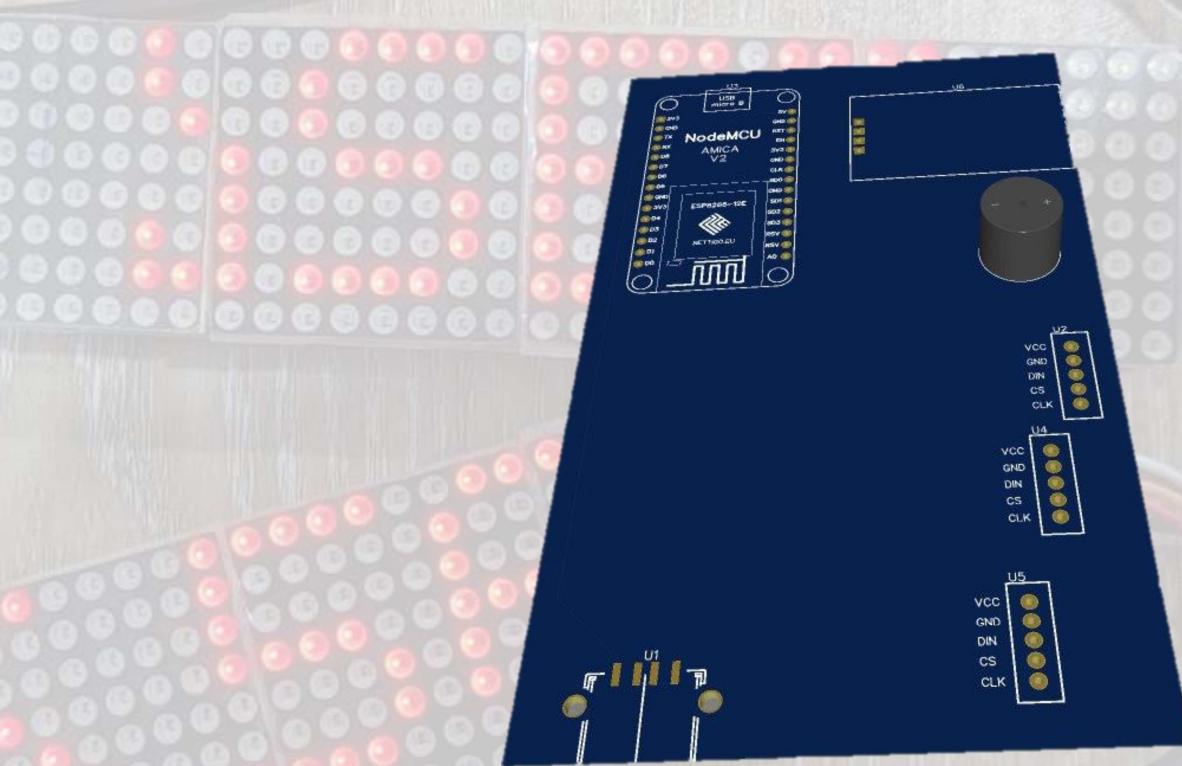
Design: Circuit Diagram



Design: PCB Layout and 3d rendering



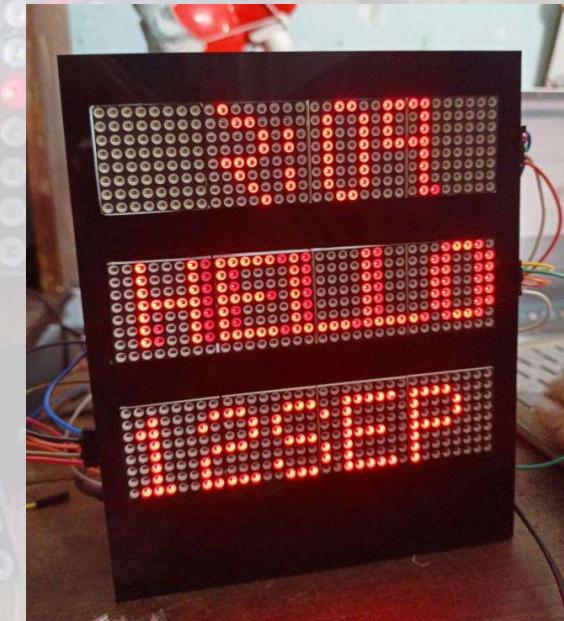
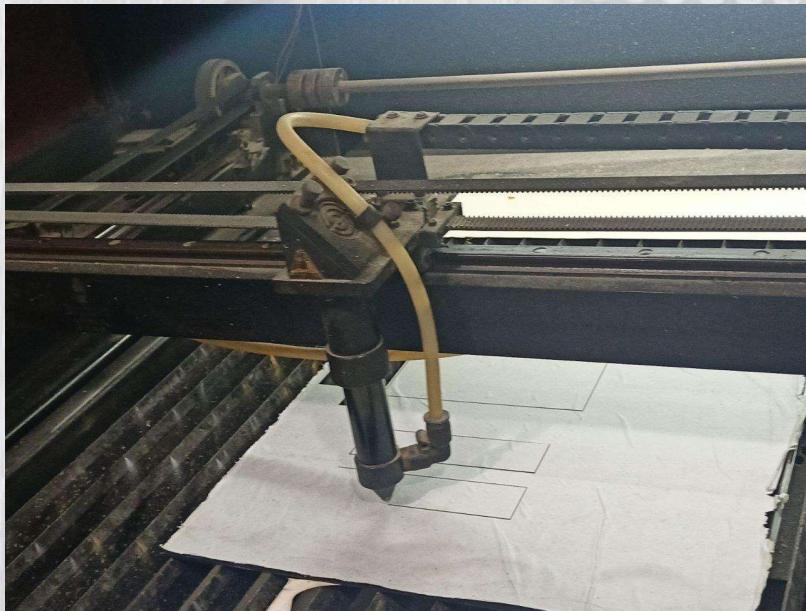
PCB layout



PCB 3D render



Design: Enclosure Design

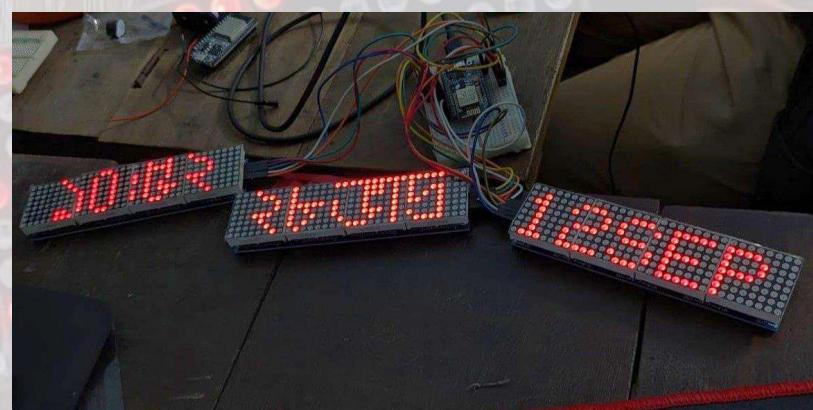
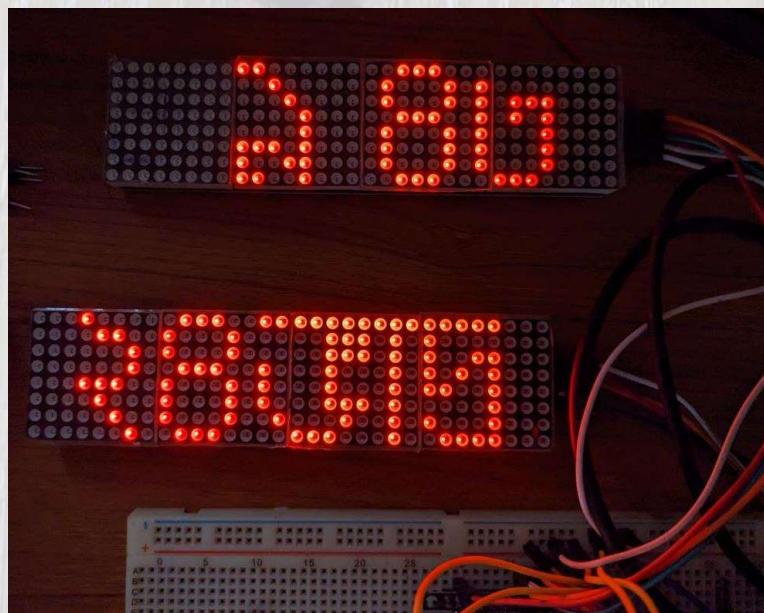


Technical Challenges

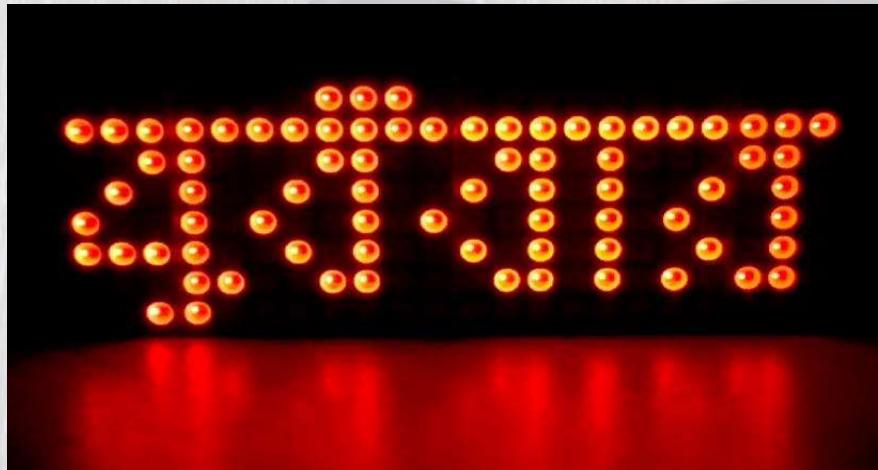
- **Deficiency of voltage in display**
- **Font bitmapping and padding**
- **Manual time update**
- **UI design**
- **PCB design**
- **Custom kit design**



Implementation: Photo Gallery



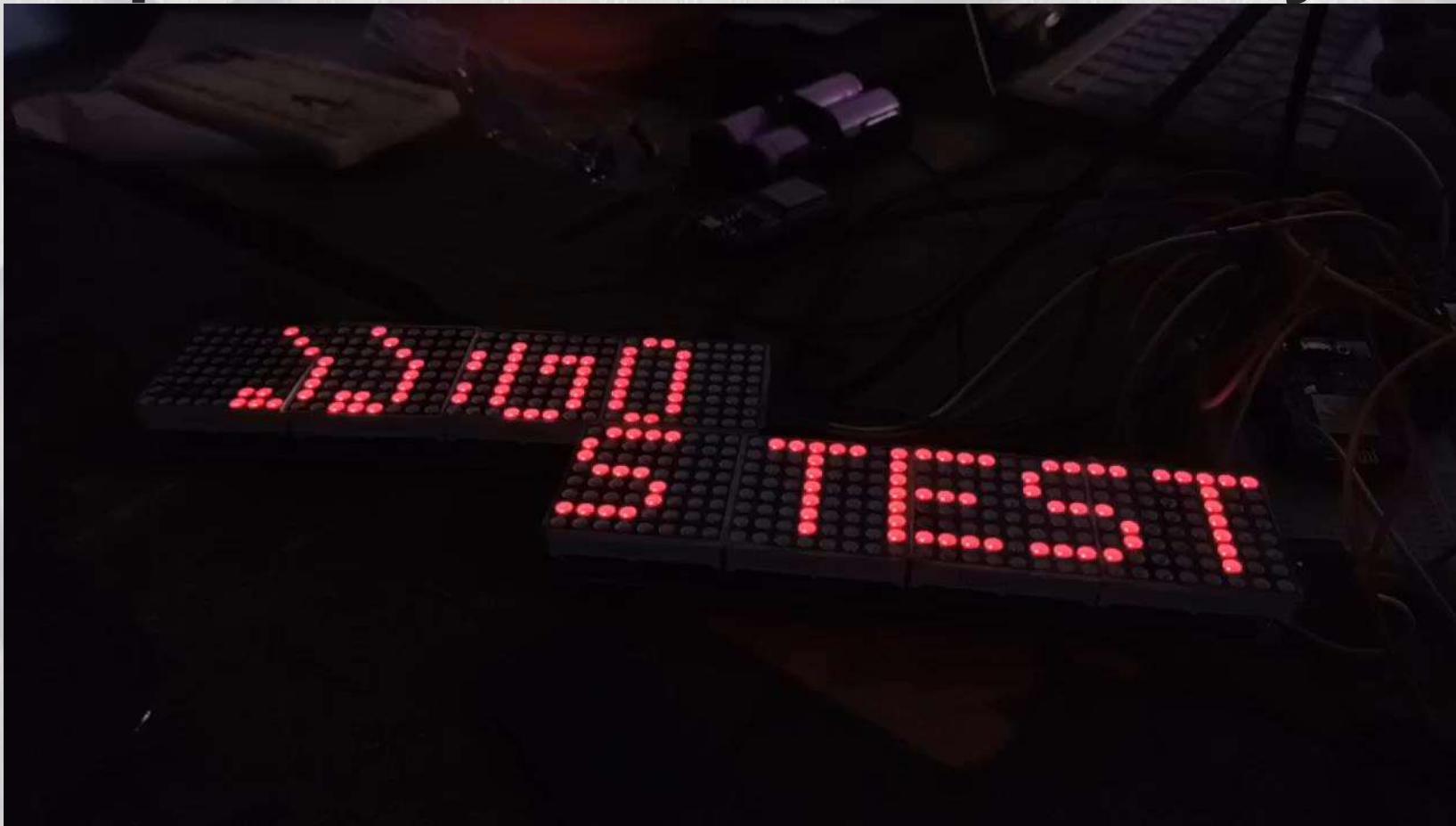
Implementation: Photo Gallery



Implementation: Video Gallery



Implementation: Video Gallery



Implementation: Video Gallery



Novelty

- Improved fonts and visual
- Compact design
- Cheaper Hardware



5.2 Project Management and Cost Analysis

i) RTC 3231	$230*1=230 \text{ Tk}$
ii) ESP NODE MCU	$330*1=330 \text{ Tk}$
iii) LED dot matrix	$350*3=1050 \text{ Tk}$
iv) 2M 317T	$350*3=1050 \text{ Tk}$
Total:	1630 Tk



5.3 Practical Considerations of the Design

- Suitable for placement on both tables and walls
- Affordable
- Could have been more cost effective if custom-made multi-segment display was used
- Wifi can be conveniently connected using a smart phone



5.3 Impact of the Project

- Suitable for people who only recognize bangla numerics



4 Implementation: Demonstration

