Index No : 200740V

Name : Yalegama MMOAB

The following document shows the design process that was taken to determine the final product schematic and enclosure for the product.

An acknowledgment should be made to the team members that contributed their ideas to improve the design.

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Leon Fernando (200164H)

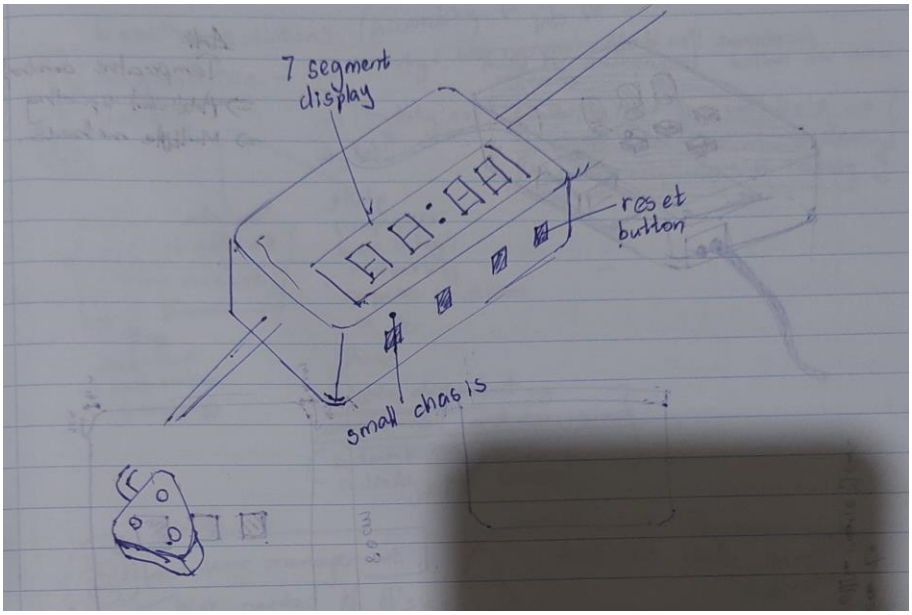
Malith Jayalath (200247P)

Avishka Herath (200212F)

Nushrath Amana (200022X)

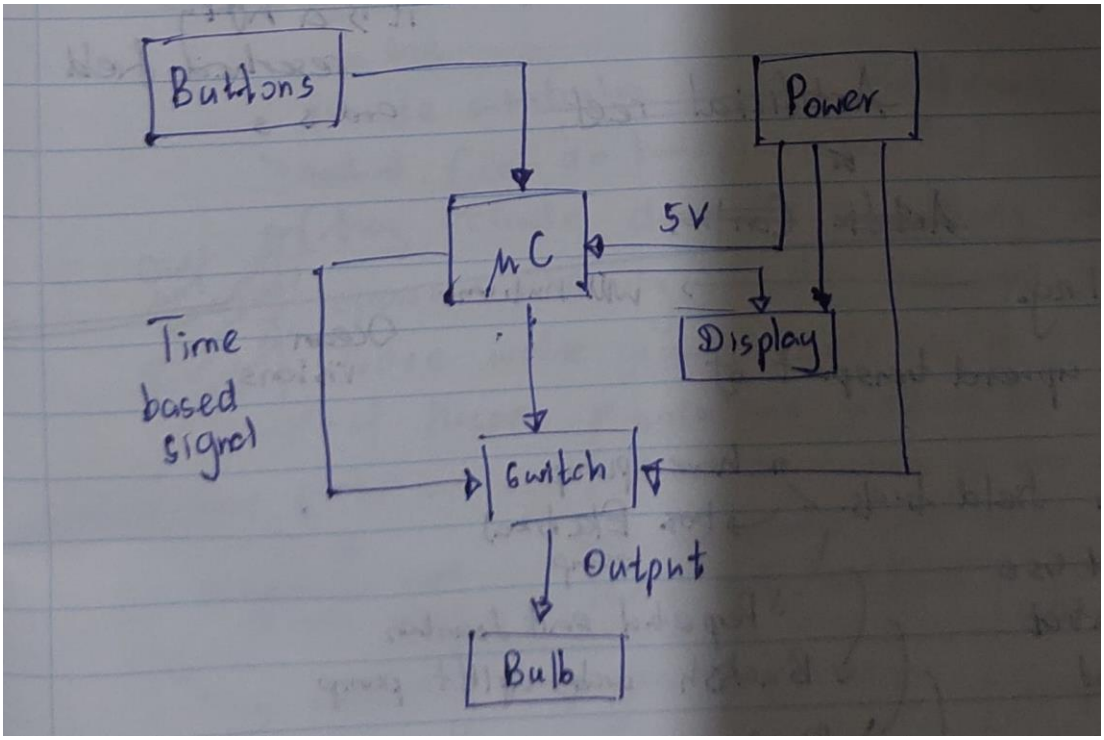
Dusara Gamidu (200179H)

Design 1



Enclosure

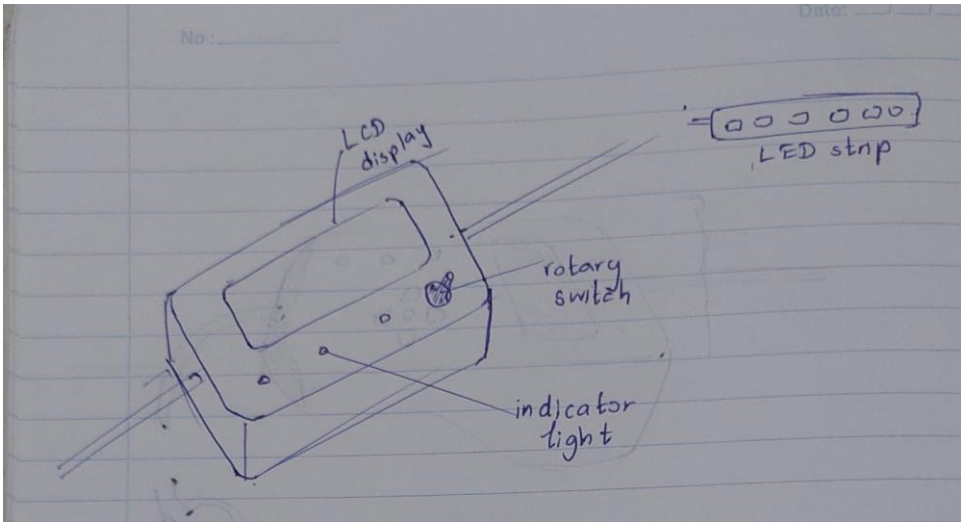
Added a seven segment display to indicate the time remaining until the switch is turned off.



Functional Block Diagram

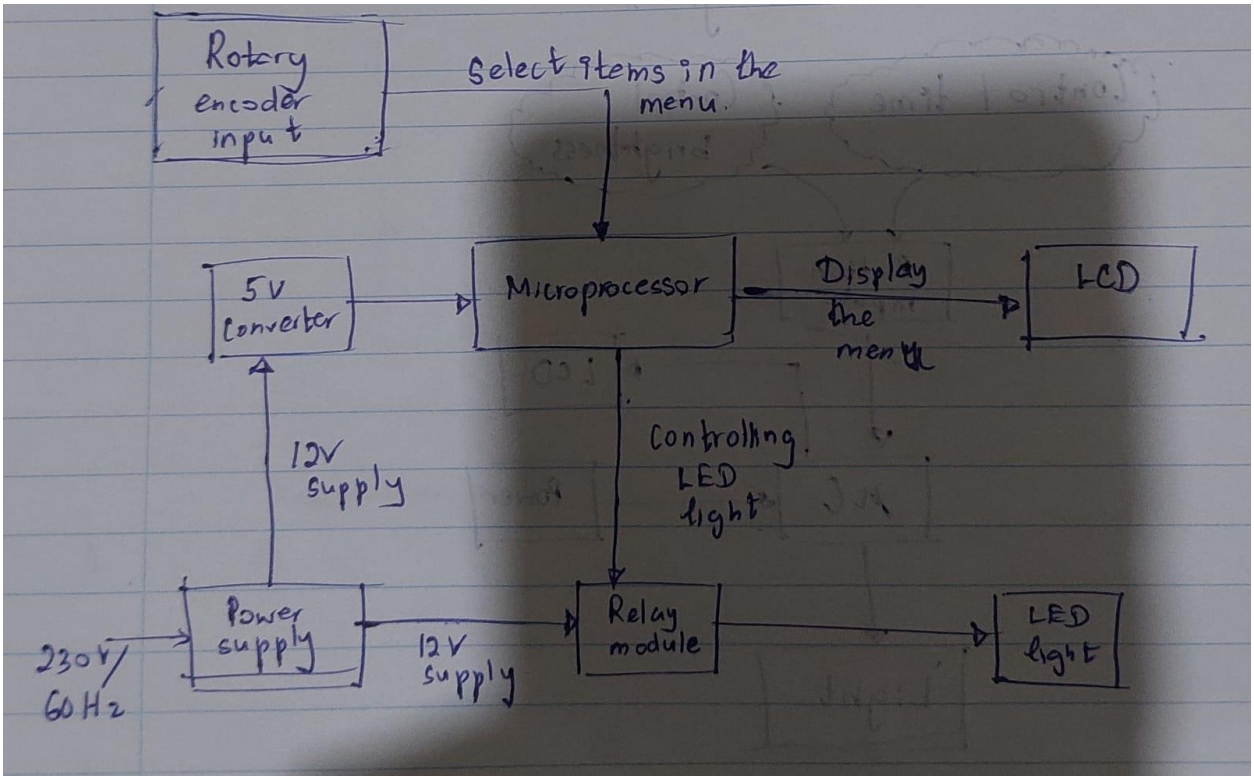
There is an output from the microcontroller to the LED display unit to display the timer remaining until the switch is turned off.

Design 2



Enclosure

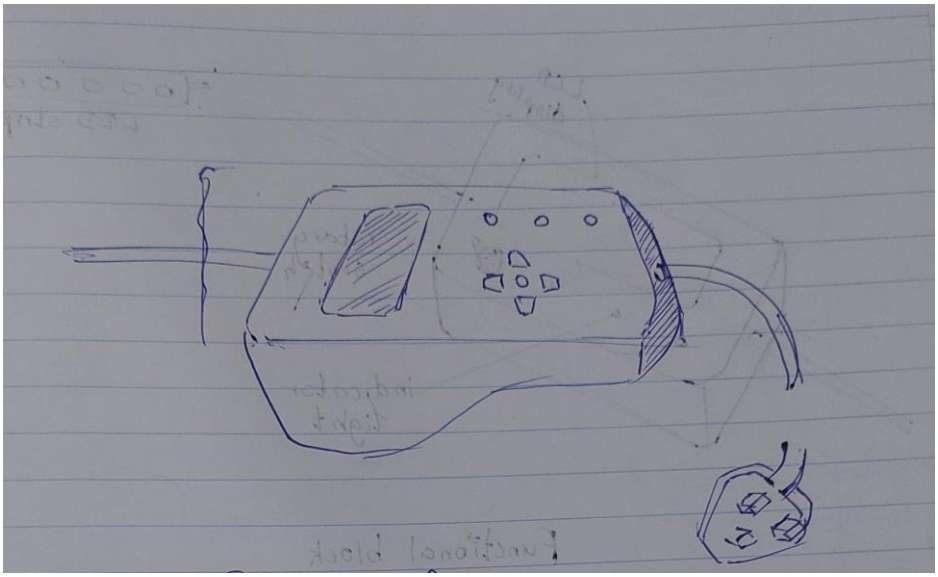
The enclosure now contains a rotary switch for smoother user controls.



Functional Block Diagram

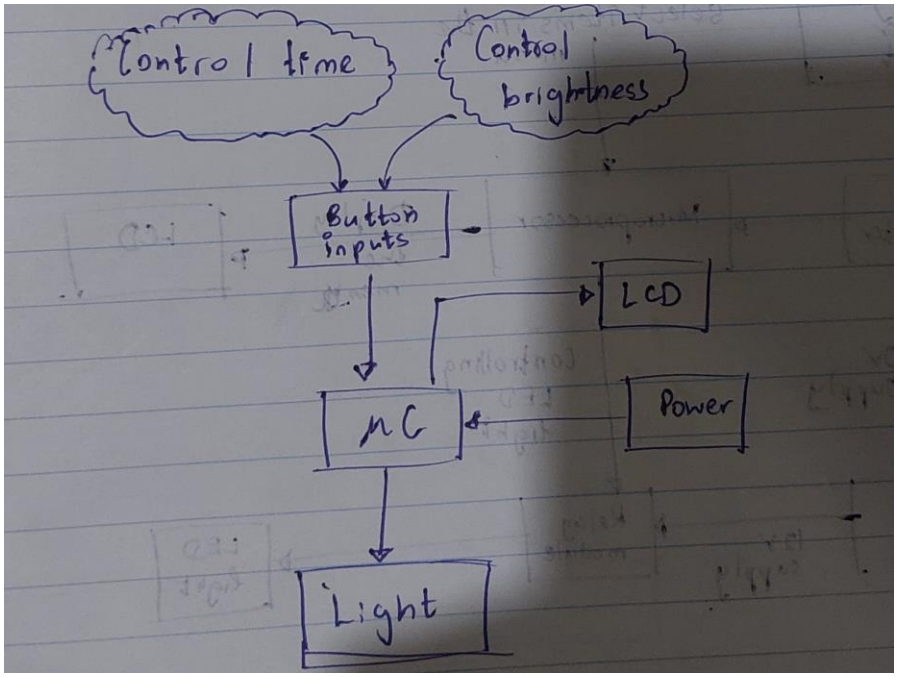
The input to the microprocessor is now given through a rotary encoder input.

Design 3



Enclosure

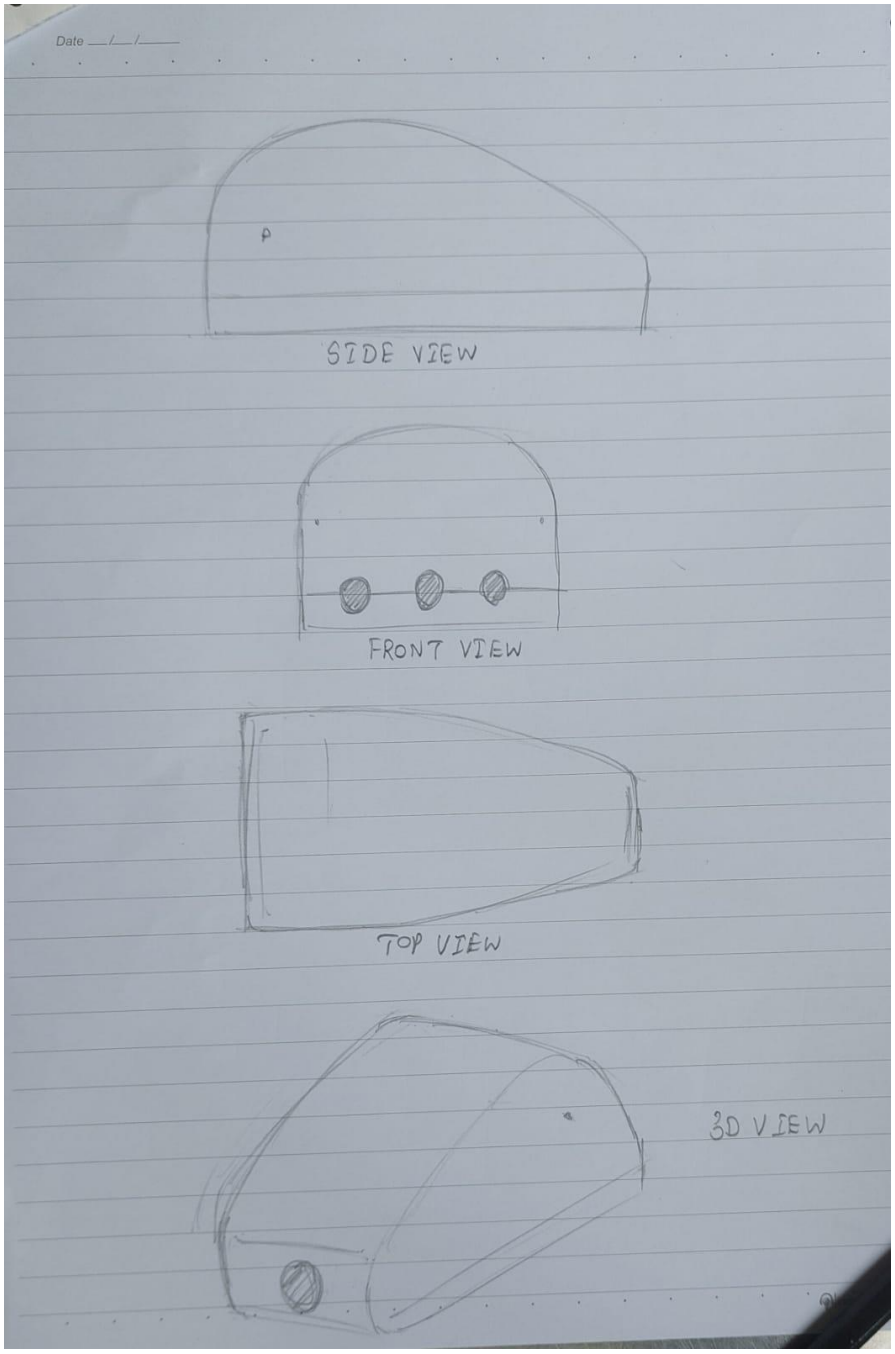
The back of the enclosure is changed to follow a smoother curve and the buttons are rearranged and modified to provide additional functionality.



Functional Block Diagram

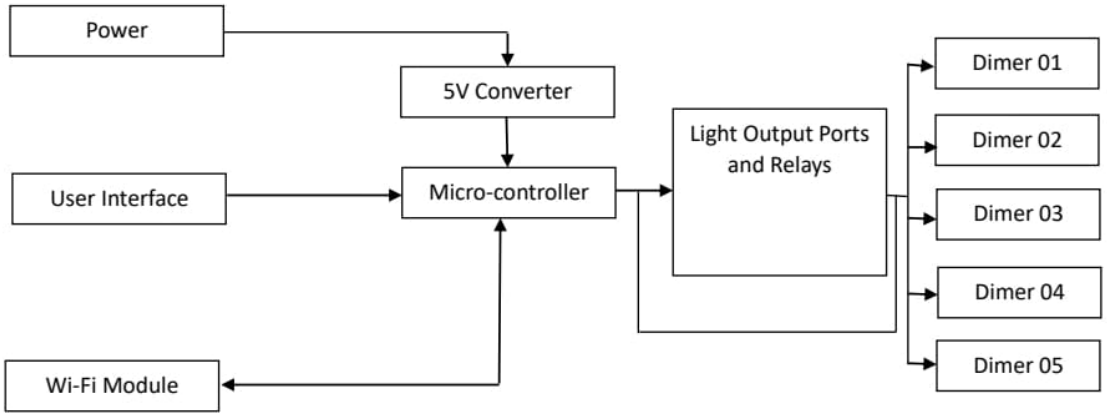
The buttons inputs are now able to input the time of controlling timer and also enables the user the option to change the brightness of the light connected.

User Centered Design (Design 4)



Enclosure

The enclosure now contains additional ports to allow connectivity of multiple decices.



Functional Block Diagram

Adds dimmers and multiple relays to control the brightness and timer settings of multiple lights that are connected. A Wi-Fi module is added for remote control of the device.

Selection Matrix

Enclosure

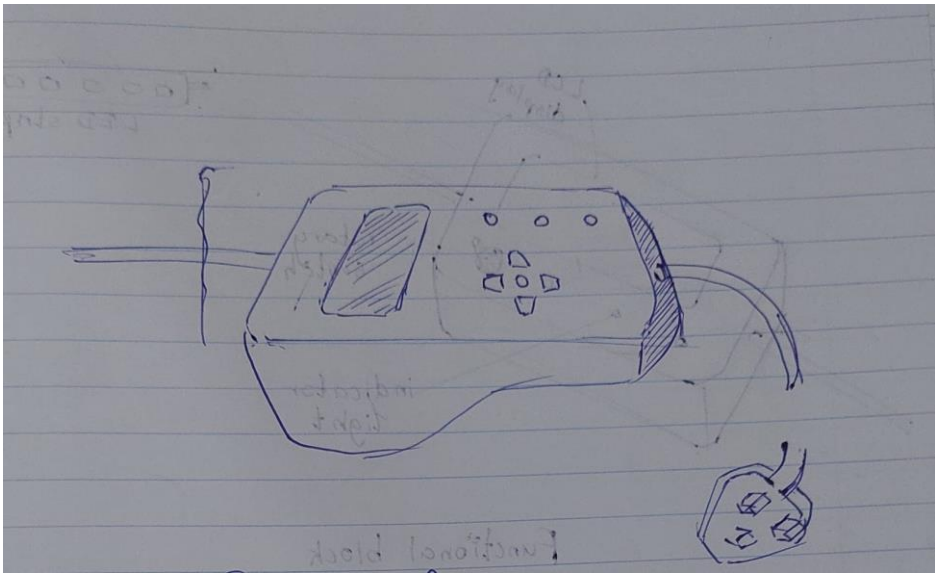
	Design 1	Design 2	**Design 3**	Design 4
Protection	3	3	5	3
Size and Space Optimization	5	5	3	5
Access and Ergonomics	3	3	5	5
Aesthetics	3	3	5	5
Thermal Management	3	3	3	3
Material Selection	5	5	5	5
Compliance and Standards	5	5	5	3
Total	27	27	**31**	29

Schematic

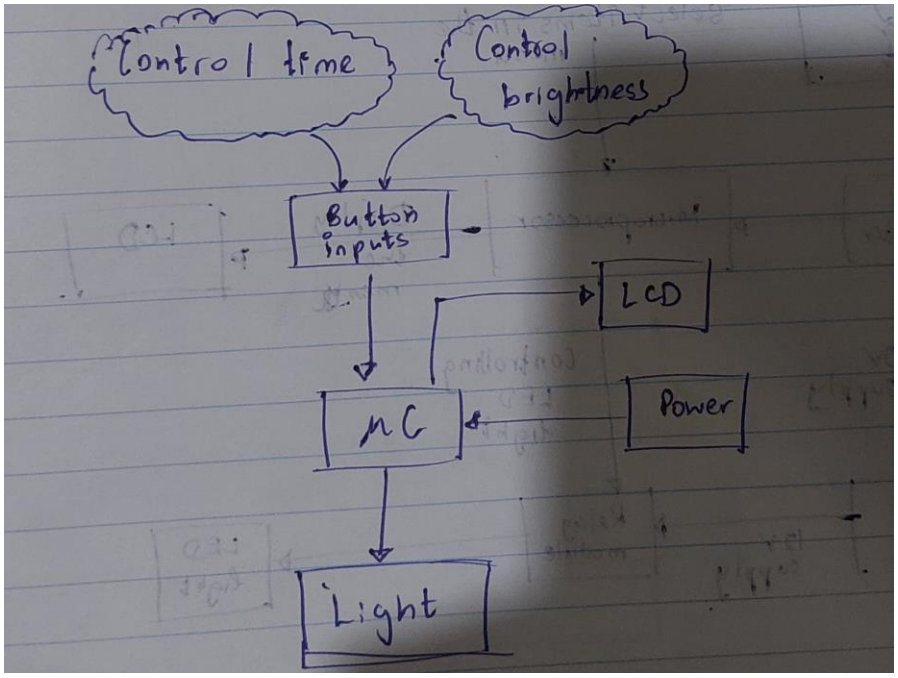
	Design 1	Design 2	**Design 3**	Design 4
User-Centered	5	3	5	5
Functionality	5	5	3	5
Performance	3	3	5	3
Intuitive	3	3	5	3
Scalability	3	3	3	5
Reliability	5	3	5	3
Cost-Effectiveness	5	5	5	3
Total	29	25	**31**	30

From the selection matrices we can determine that design 3 has both the best enclosure and best schematic. Hence, the selected design will be design 3.

Selected Design (Design 3)



Enclosure



Functional Block Diagram