



Department of Electronic and Telecommunication Engineering

University of Moratuwa

Preliminary Design Report

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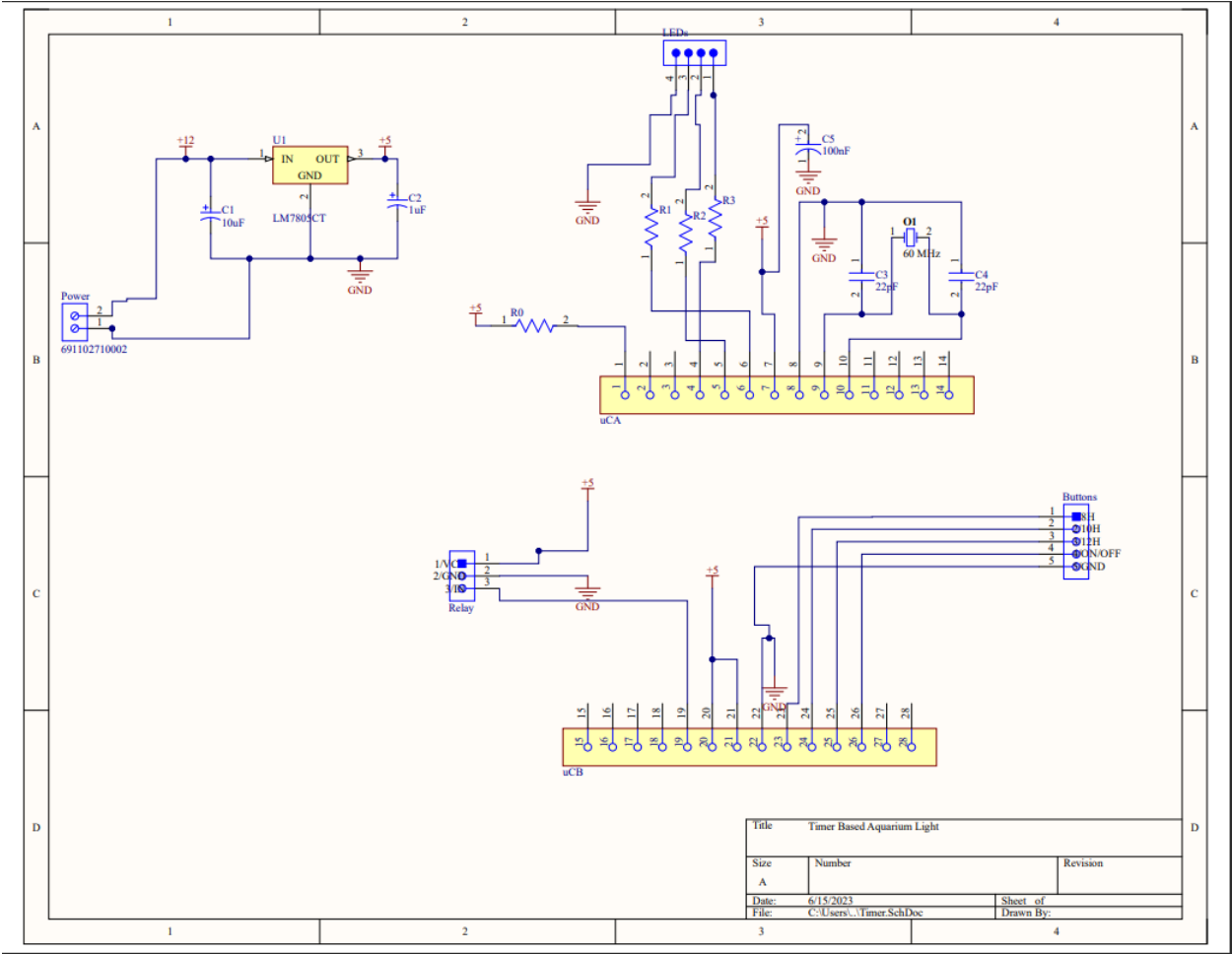
This report is submitted as a partial fulfilment of the module

EN2160 - Electronic Design Realization

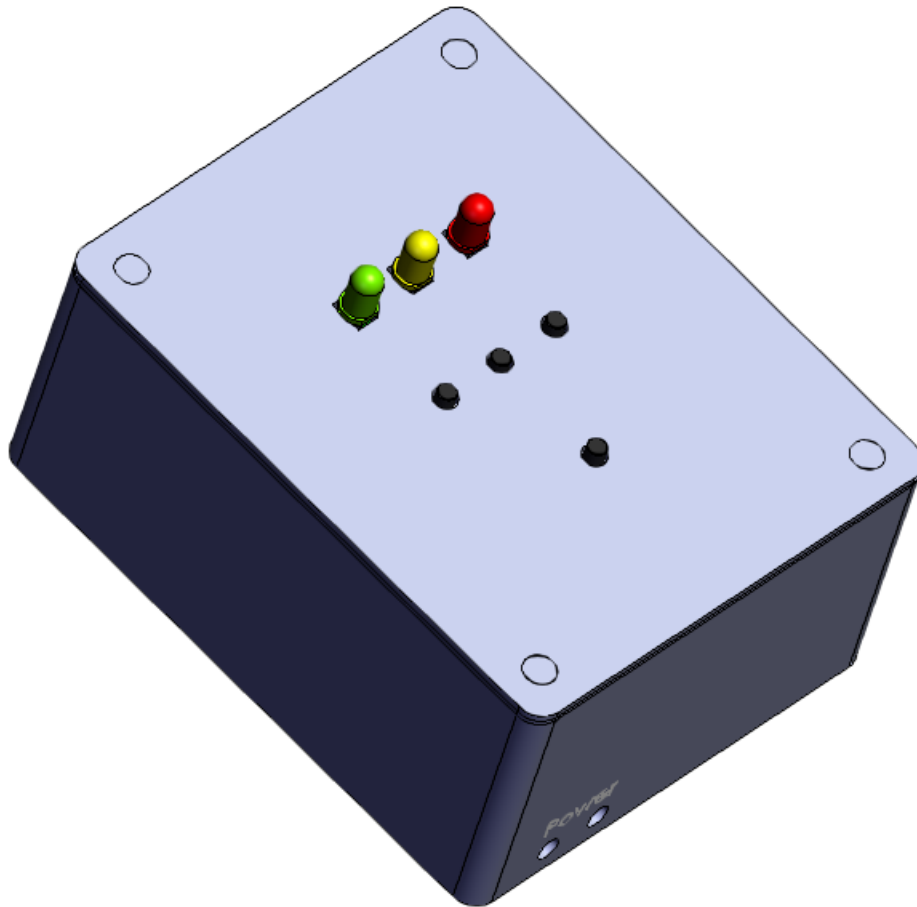
15th June 2023

Initial Design

Schematic



Enclosure



Problems with the initial design

After studying the course content delivered by Prof. Jayasinghe there were key problems identified about the initial design of the product.

- The enclosure had too many sharp edges that restricted it from being molded, which would be necessary for mass production.
- The design of the device was not informed by user feedback and hence the success of the product was questionable.
- The schematic documentation was not organized according to the industry standards.
- The simplicity of the device's functionality wasn't justified by the cost.

Upon discussing with the members of my group and inquiring users on feedback about the initial design, some problems about the initial design were found.

- The design of the enclosure wasn't impressive in an aesthetic sense.
- The device didn't provide enough functionality.
- The functionality provided by the device wasn't sufficient compared to the cost of the product.
- The user interface was not informative enough and the user didn't receive enough information regarding the operation of the device.

Considering these discoveries, the enclosure and functionality of the new design of the product was made such that these problems were addressed, and the suggested improvements were incorporated.

Enclosure:

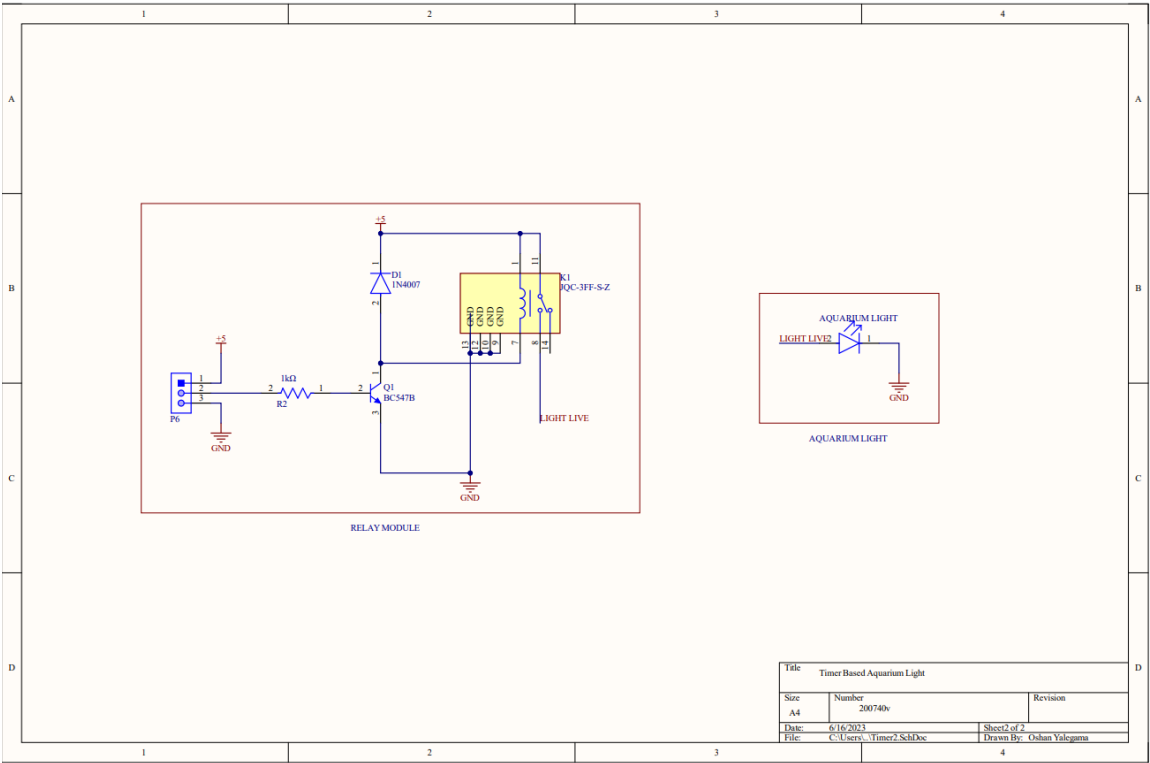
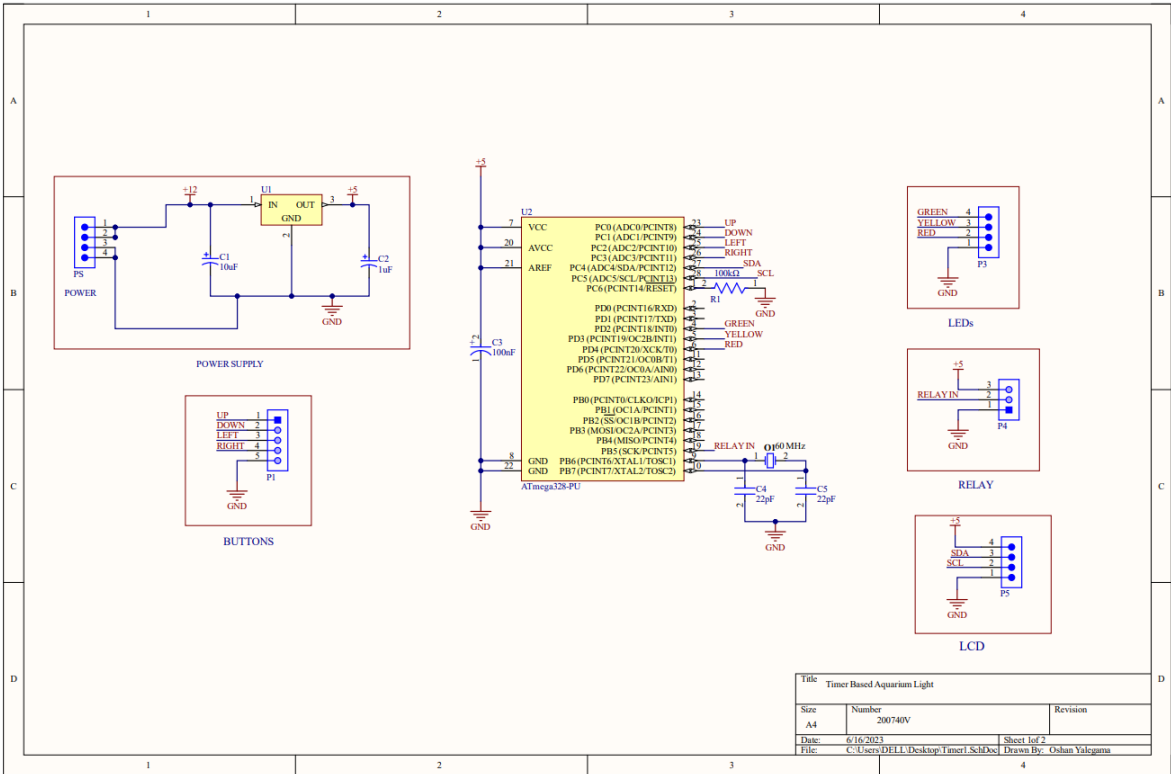
The newer enclosure has fillet edges and sides with draft angles that make it possible to be molded for mass production. The enclosure was made to be aesthetically pleasing and unique. The enclosure contains a more advanced UI, with an LCD to display the state of the timer and a button pad to navigate the menu.

Schematic:

The newer schematic is more compliant with the industry standard rules. It added an LCD module for added functionality and to make more efficient use of the capability of the Atmega328P chip. The functionality of the device was also expanded, using the microcontroller to set user defined times instead of fixed times as was before.

Final Design

Schematic



Enclosure

