

Department of Electronic and Telecommunication
Engineering

University of Moratuwa



EN2160 – Electronic Design Realization

Preliminary Design Report

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1. Product Description

1.1. Need statement

A design which can ensures the **continuous** supply of **clean** water for pets

1.2. Need Analysis

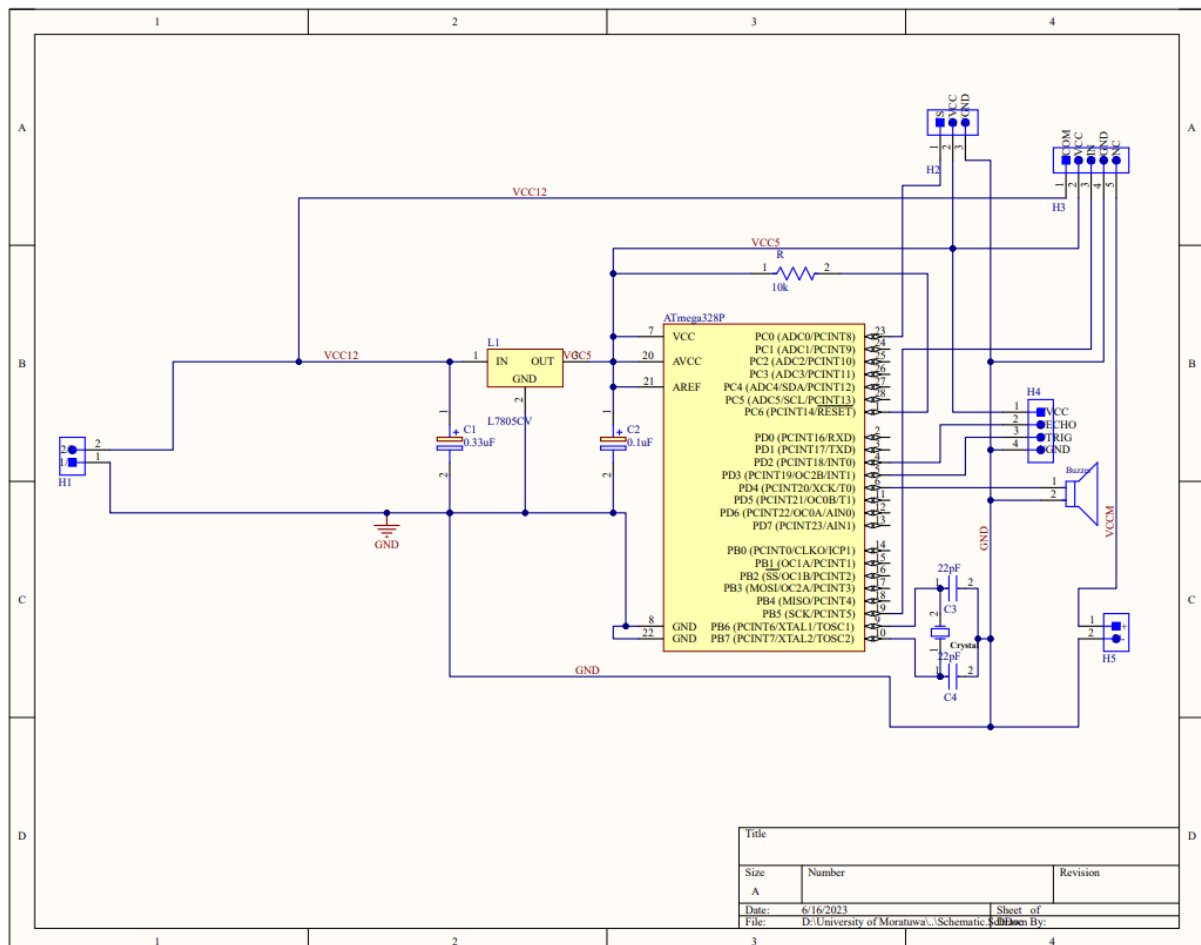
The design must satisfy following requirements,

- Supply clean water
- Cost effective
- Saves energy
- Supply water continuously

2. Implemented original design

2.1. Enclosure design

2.2. Schematic Design



3. Problems identified considering the course content

3.1. Schematic design

- The schematic diagram wasn't suitable for documentation purposes due to following reasons
 - The inputs and outputs of the circuits didn't have a flow from left to right
 - The component designators didn't have consistent numbering

3.2. Enclosure design

- The design wasn't suitable for manufacturing due to following reasons
 - It didn't have draft angles
 - It can't be molded using injection molding
- It had straight edges and pointed vertices
- It wasn't attractive at all
- The design wasn't constructed drawing hand sketches first
- The inner enclosure didn't have proper mounting for some components

4. Problems identified by the group members and users

- The ultra-sonic sensor can't recognize the presence of the pet when it doesn't come from the front.
- There must be a way to drain the excess water back to the main water container

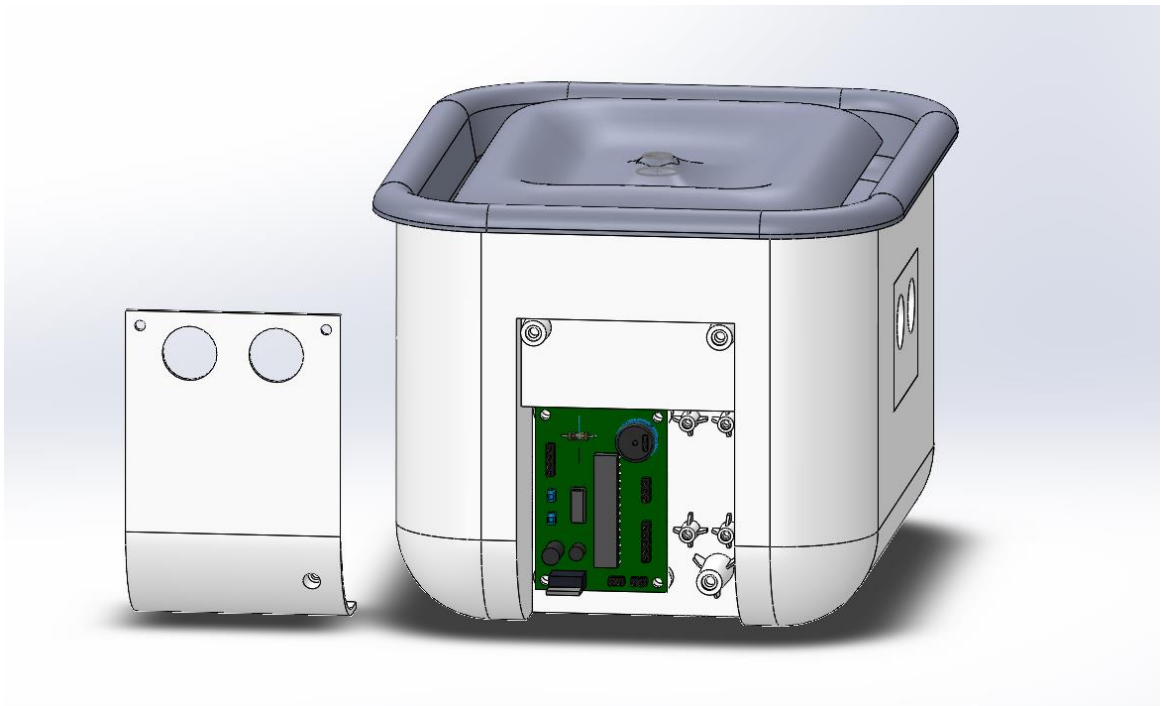
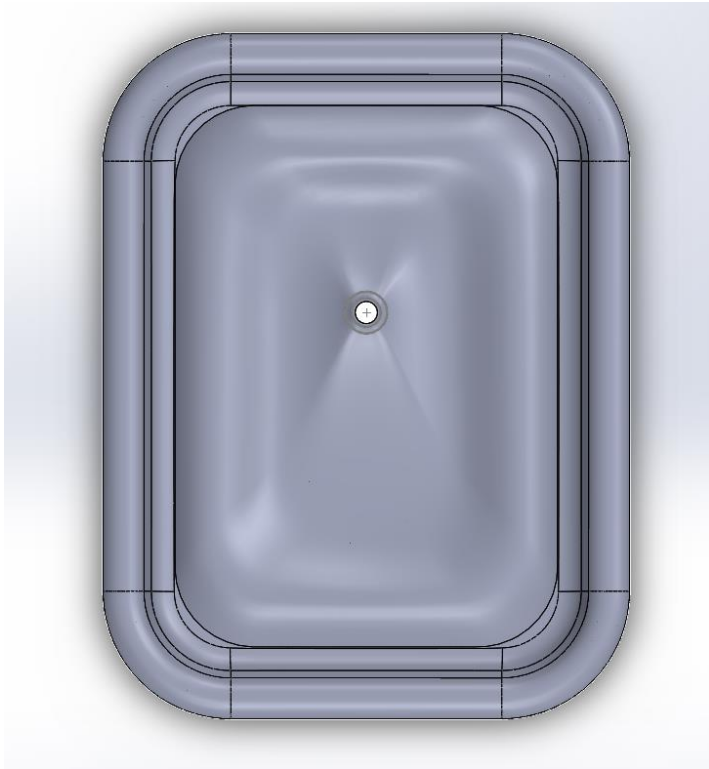
5. Improved Design

5.1. Enclosure design

- Curves were added to make the design more aesthetic
- Draft angles were added so that the design is moldable
- Mounting bosses were added to install the PCB and some components
- A sink was added under the top plate to drain the excess water back to the base bucket

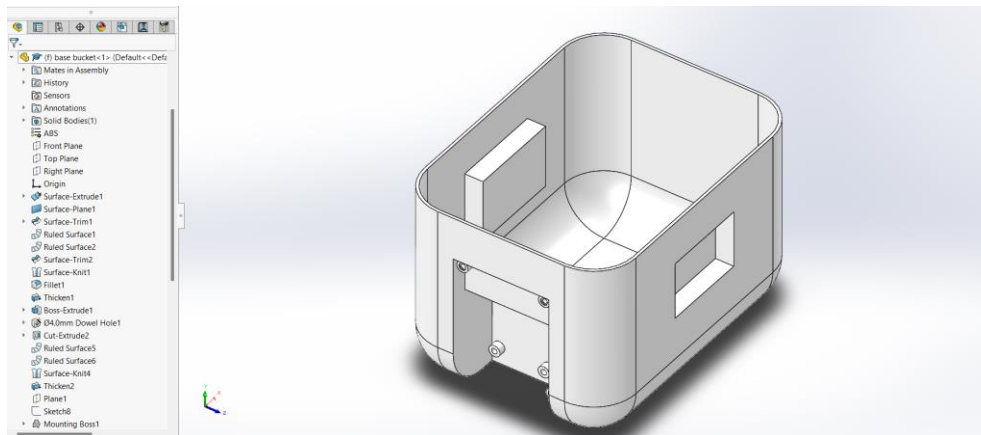
5.1.1. Assembled Enclosure



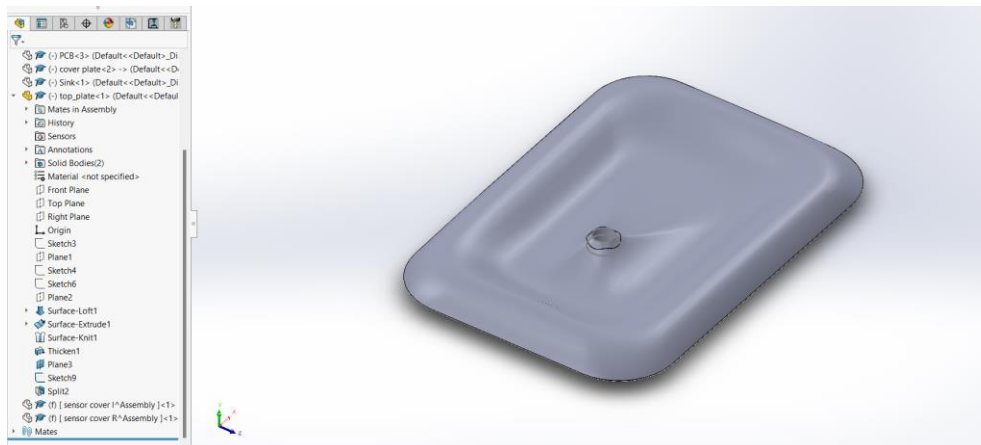


5.1.2. Enclosure parts

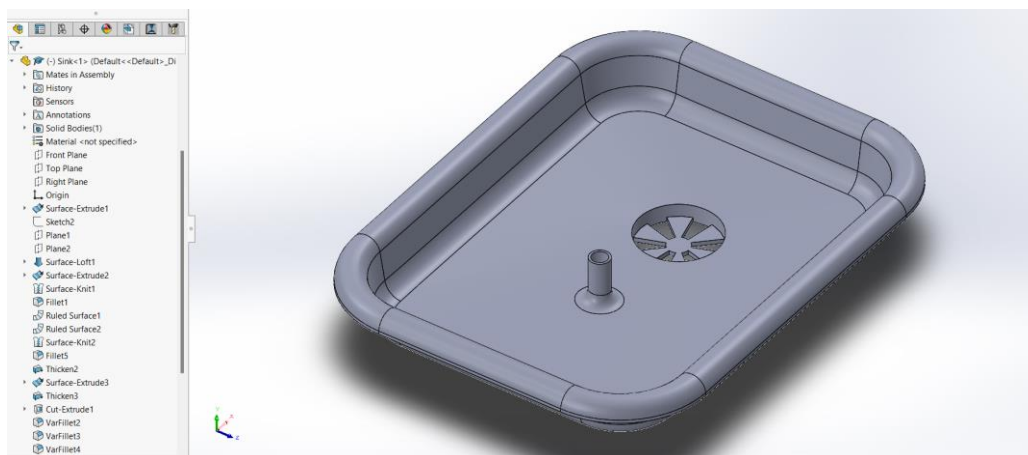
Base Bucket



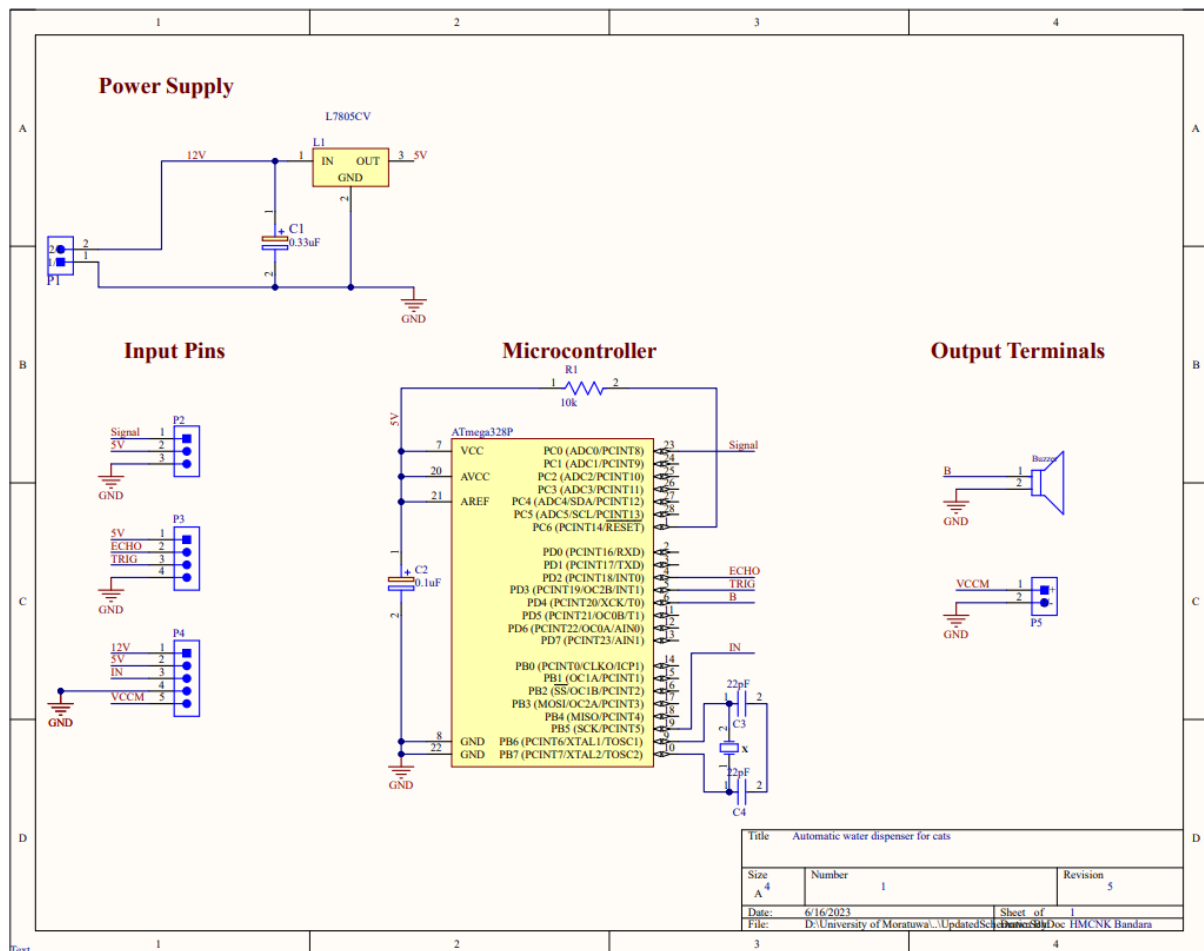
Top plate



Sink



5.2. Schematic Design



6. Group members who gave their feedbacks on the design

- | | |
|------------|-----------------------|
| 1. 200027R | Amarasinghe A.M.V.M. |
| 2. 200473E | Prabuddhika M.W.R. |
| 3. 200477U | Pramuditha R.M.I.D. |
| 4. 200664P | Tilakarathna U.A. |
| 5. 200222K | Himeka S.H.D. |
| 6. 200287L | Kapukotuwa P.B.K.S.G. |
| 7. 200358G | Luckshan G.W.C.M. |