

# Final Project Documentation Flow

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## 1. Idea

A robot bartender that makes the drinks for you.

## 2. Problem statement

To provide the thirsty ones with energising and refreshing drinks that calm the mind and soul.

## 3. SDG in focus

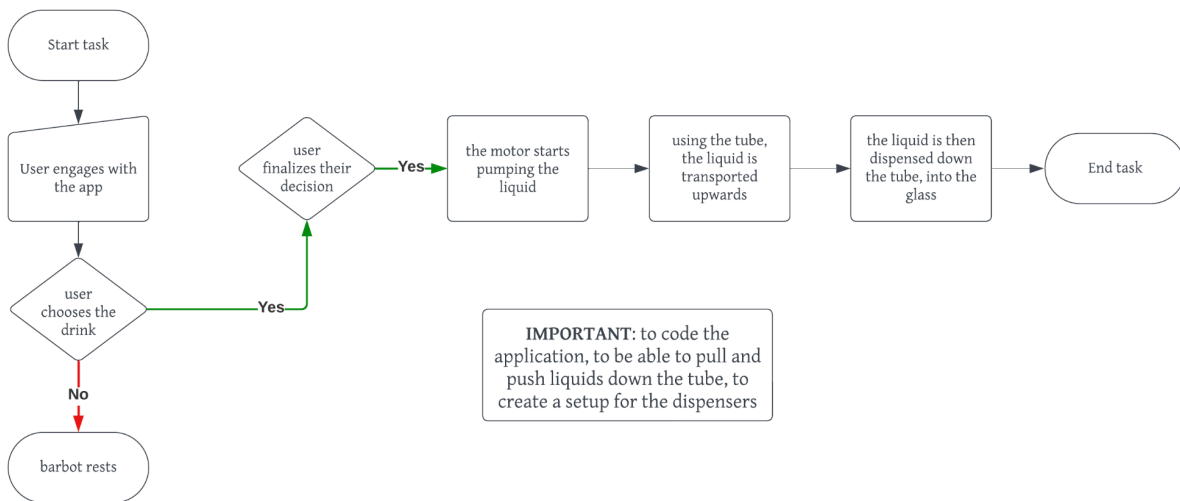
To solve 'Food and Hunger'

## 4. Constraints

- We could not have an unlimited budget
- It was hard to stick the wood pieces together for the enclosure.
- The latter part of the project was rushed due to the late arrival of our motor pumps.

## 5. Solutions brainstorming (Write down all the possible solutions, Miro board, sketches)

Our first idea was to have dispensers for each drink and the cup would move around using some tracks. We made a block diagram to see the flow of our ideas. Moving on, the final project would have looked something like this:





#### 6. Process: (All the iterations - What worked, what didn't work)

We started off with designing the prototype of our project. This was done by sketching out the likely measurements, and then we made a scaled prototype using foamboard and cardboard (separately) to have a figure of representation. Based on this model of representation, we proceeded with drawing out the measurements on the piece of wood and plywood we would be using for our project. This was time-consuming, given that we had to be careful with the measurements, and then had to sand it for the pieces of wood to have a proper shape.

Side by side, we started working along the code behind the Bluetooth receiver and the app that the user controls. As a group we struggled, and that is because there was only one of us who knew how to code well. It was indeed tiring but we managed to pull it off after the help of some referral videos. Upon completion of the app, we proceeded with the electronics bit of the project. Sometimes, the AC-DC converter stopped working, and at other times, the screw wouldn't fit inside the hole for the relay board. With time running, we were all on the nerves. Eventually, we pulled through and assembled everything

successfully. It was quite the joy to see that the BarBot was fully functional.

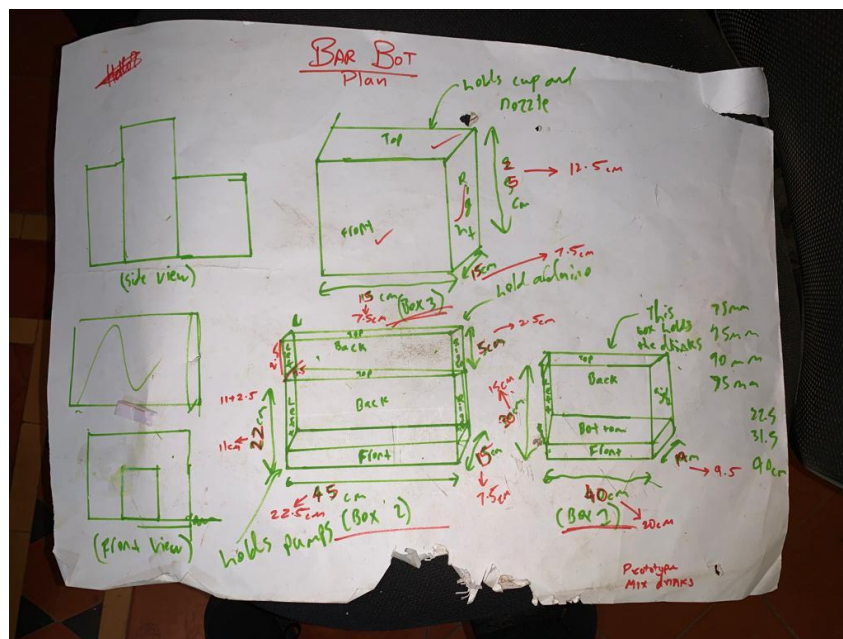
## 7. Final solution

### a. Name of the project

Mixmaster 3000

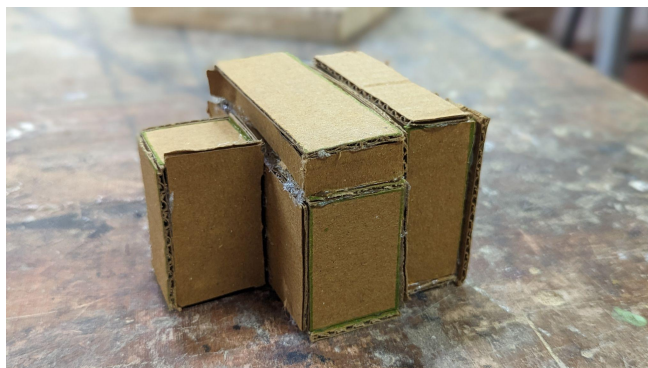
### b. Final detailed sketches

This sketch was our first sketch of the boxes that would be the enclosure of our bot. We decided to not continue with Box 1 because we felt that it would consume too much space and will look clumsy.



### c. Paper prototyping images/videos

This was the first prototype made from cardboard. This is  $\frac{1}{5}$  scale of the sketched model.



This was the second prototype made from foam board. We made the change to remove the first box. To provide ourselves with a bigger and more functional prototype, we made it  $\frac{1}{2}$  scale of the sketched model.



d. Final prototyping images and videos







e. Design process

To have an idea of what our bar bot would look like, we used a reference video on YouTube. This gave us the outlook of how our exterior design would be, and where we would be placing our electrical components, water pumps and placement area for the drinks. We worked around the design a bit, and came up with the conclusion that there will be one box which will behave as the dispensing unit. This box is a small box with a hole from which the pipe will pass through.

We then tried to design the model in CAD and then we made our first prototype with cardboard which was 1/5th the actual size. We then re-designed the model and made it out of foamboard. This was ½ the actual size of what it was going to be.

Finally we made the final piece out of plywood and PVC pipes as the inner skeleton. We designed some brackets on the laser cutter which was useless because we didn't stick it right.

f. Source files (CAD, Programs, sketches, etc)

- [Code File](#) (Arduino)

g. Programming/CAD screenshots or screen recording (5 seconds)

- [CAD Model](#)
- [Code File](#)

h. Materials/components/tools/machines used

Materials & components:

- Plywood
- Cardboard
- Foamboard
- Wood glue
- Bluetooth module

- 4 24 v dc food grade pumps
- Food grade tubes
- 4 channel relay board
- 220 volts (AC) to 24 volts (DC) converter
- Milk frother (optional)
- Arduino UNO
- Jumper wires
- Perfboard

#### Tools:

- Hand Drill
- The Jigsaw
- Hand saw
- Electric sander
- Mallet
- Soldering iron & solder wire
- Screwdriver
- Wire cutter
- Scissors

#### Machines:

- Laser cutter

#### i. Skills used

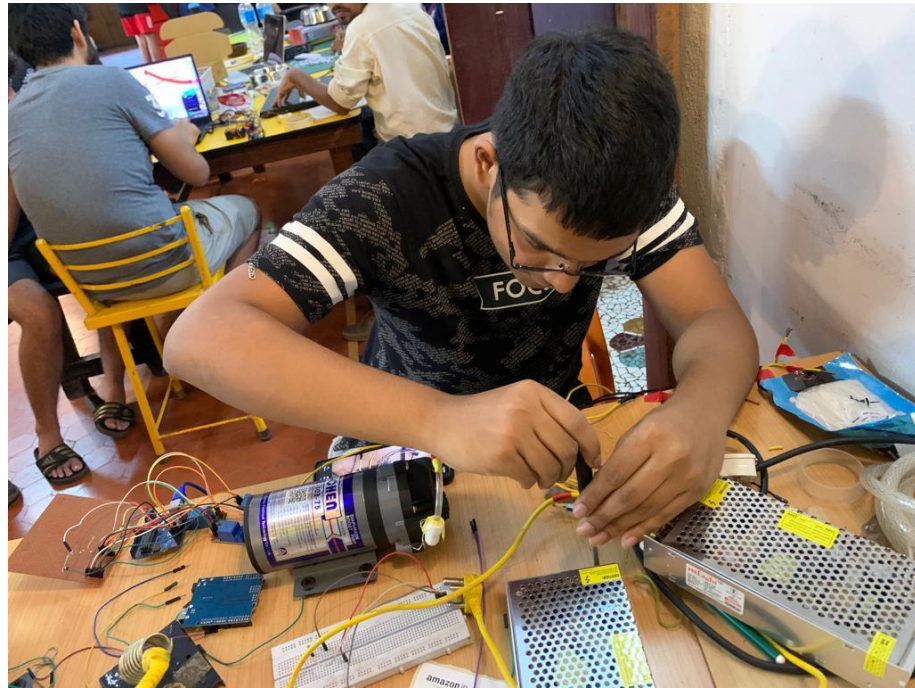
- Soldering
- Woodworking
- CAD
- Internet of things
- Electronics

#### j. Challenges faced and their solutions

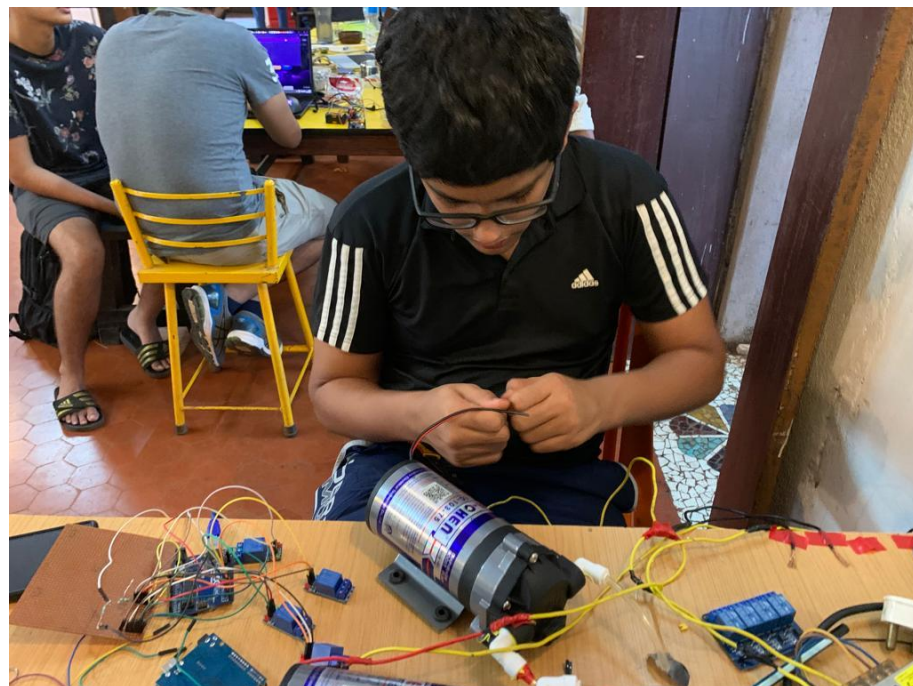
- The pumps came very last minute
- The app we used to create our app was not very good
- There were lots of errors with the code
- We had a very hard time sticking the wood pieces together. Since we hadn't laser cut the wood, the pieces were not exactly perfect.
- We also bought the wrong wood glue since it did not help stick the wood together, and when we checked

amazon for the description it did not say it was wood glue.

k. Testing images and videos







I. References links

- [https://www.hackster.io/Seafox\\_C/cheap-portable-cocktail-maker-barbot-with-app-4f9079](https://www.hackster.io/Seafox_C/cheap-portable-cocktail-maker-barbot-with-app-4f9079)
- <https://www.youtube.com/watch?v=UyE59p9K1fA&t=90s>
- [https://www.youtube.com/watch?v=7ztbMLb\\_dS4](https://www.youtube.com/watch?v=7ztbMLb_dS4)