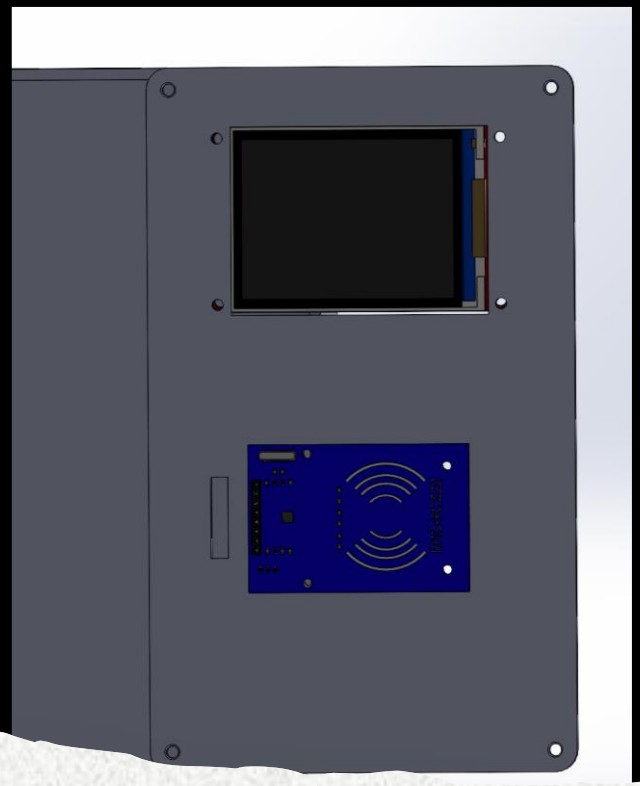
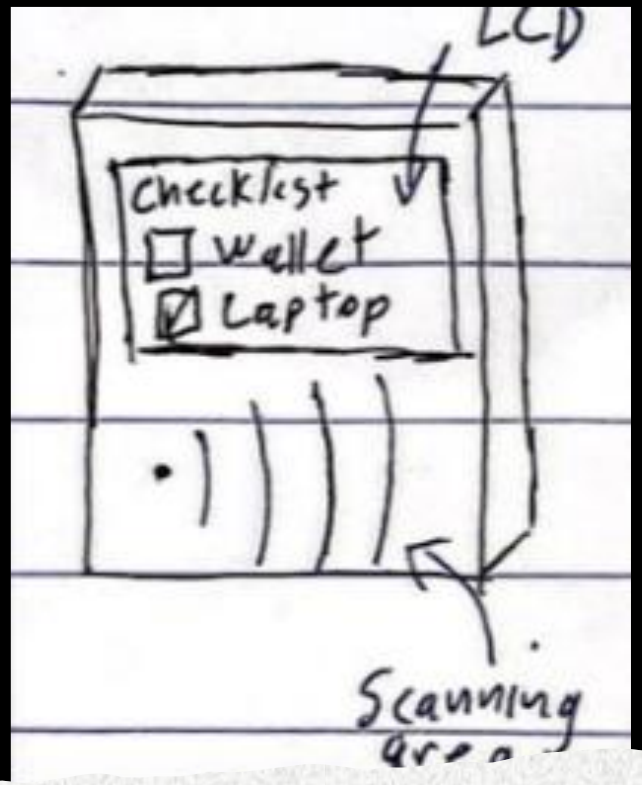
RASHID'S INTERNSHIP REPORT

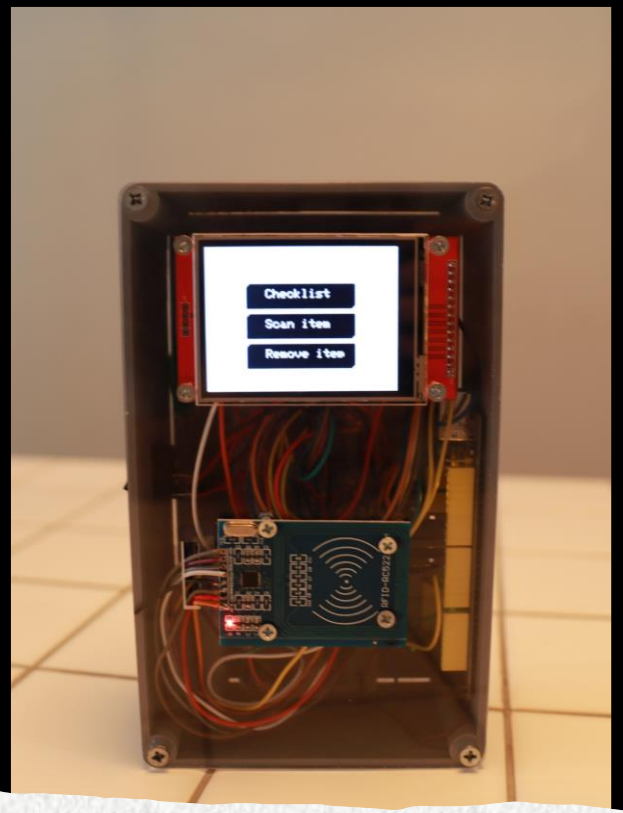
HNDI Summer 2023 - Rashid Abder

About me

- I am a sophomore studying Computer Engineering at UCSD
- I enjoy indoor bouldering, collecting music CDs and working on random small projects in my free time.







Internship project

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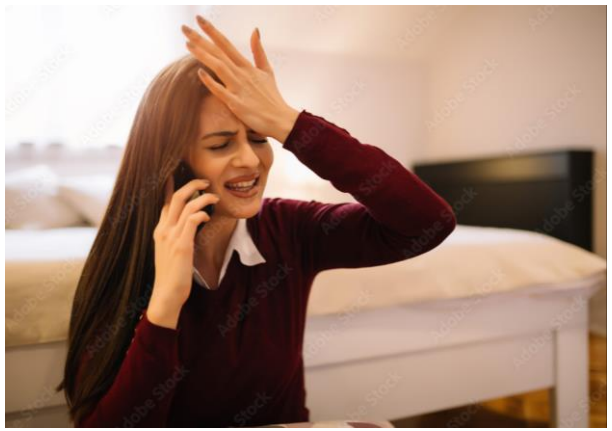
Problem definition

- It is hard to find a convenient way for a user to check that they are bringing everything with them.
- Solutions usually rely on the user's memory or making traditional handwritten/digital checklists

Leaving for work in the morning...

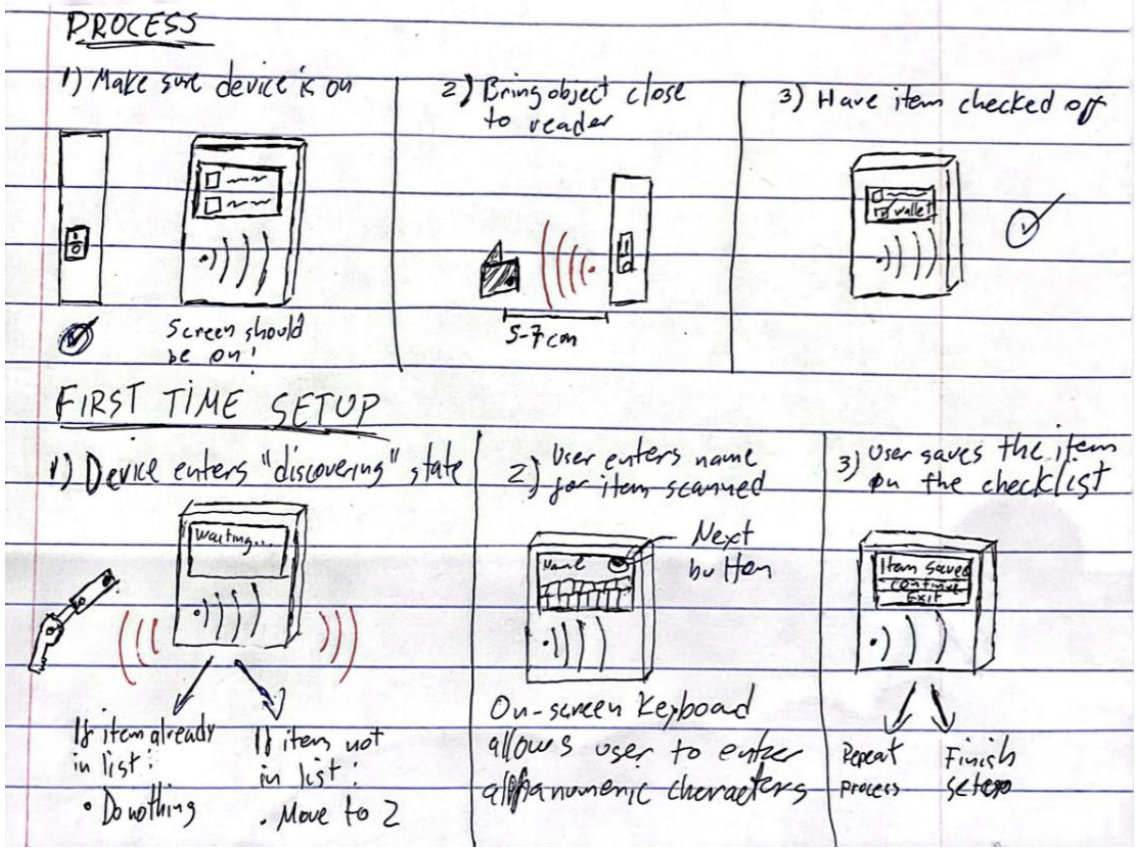
5 minutes later, you realize you forgot something

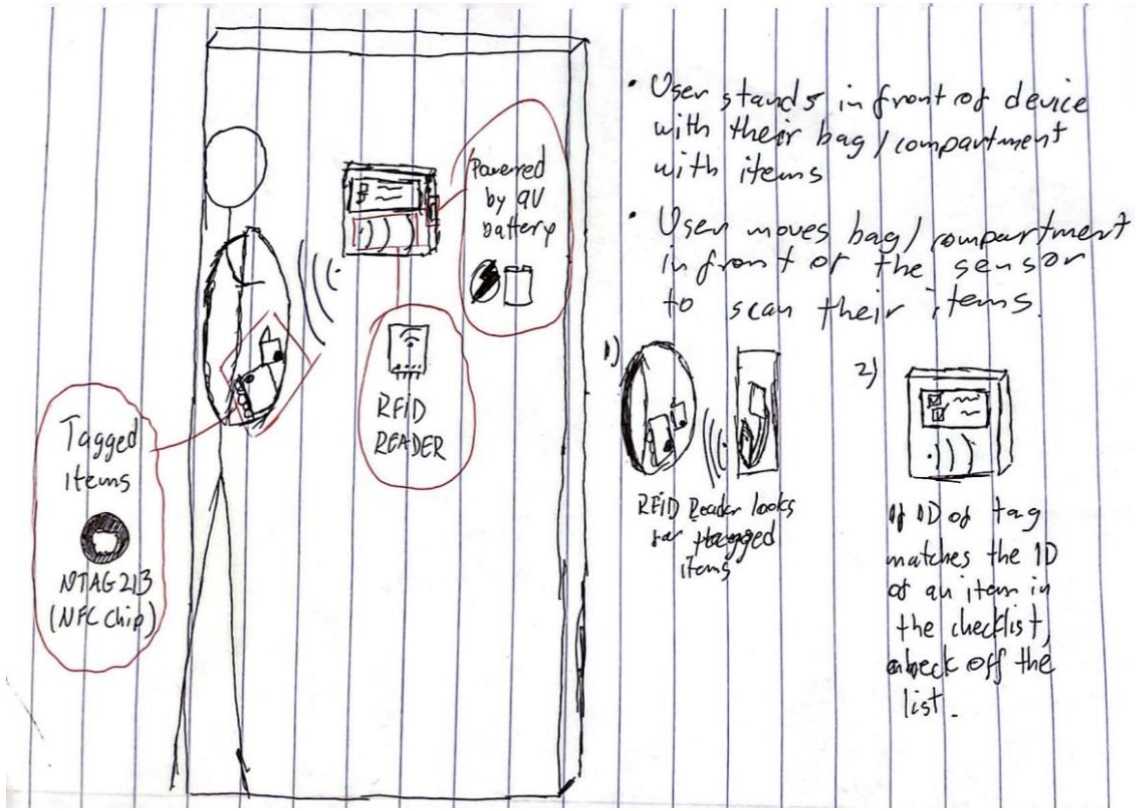


Idea

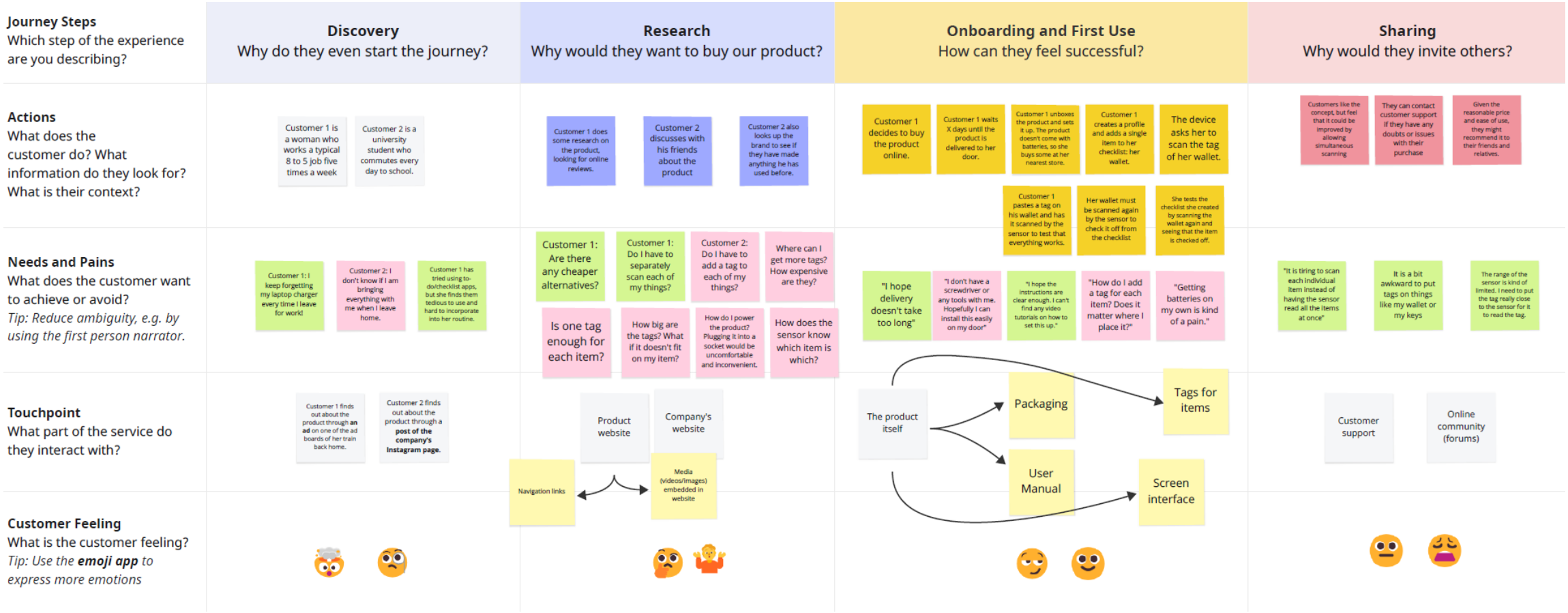
- An electronic device that acts like an enhanced checklist, hung on the door or wall of the user's home. The user would scan their items before leaving and update the checklist.
- Placing it on one of these locations incorporates the checklist in the routine of the user, making it more natural to use.

Concept sketches

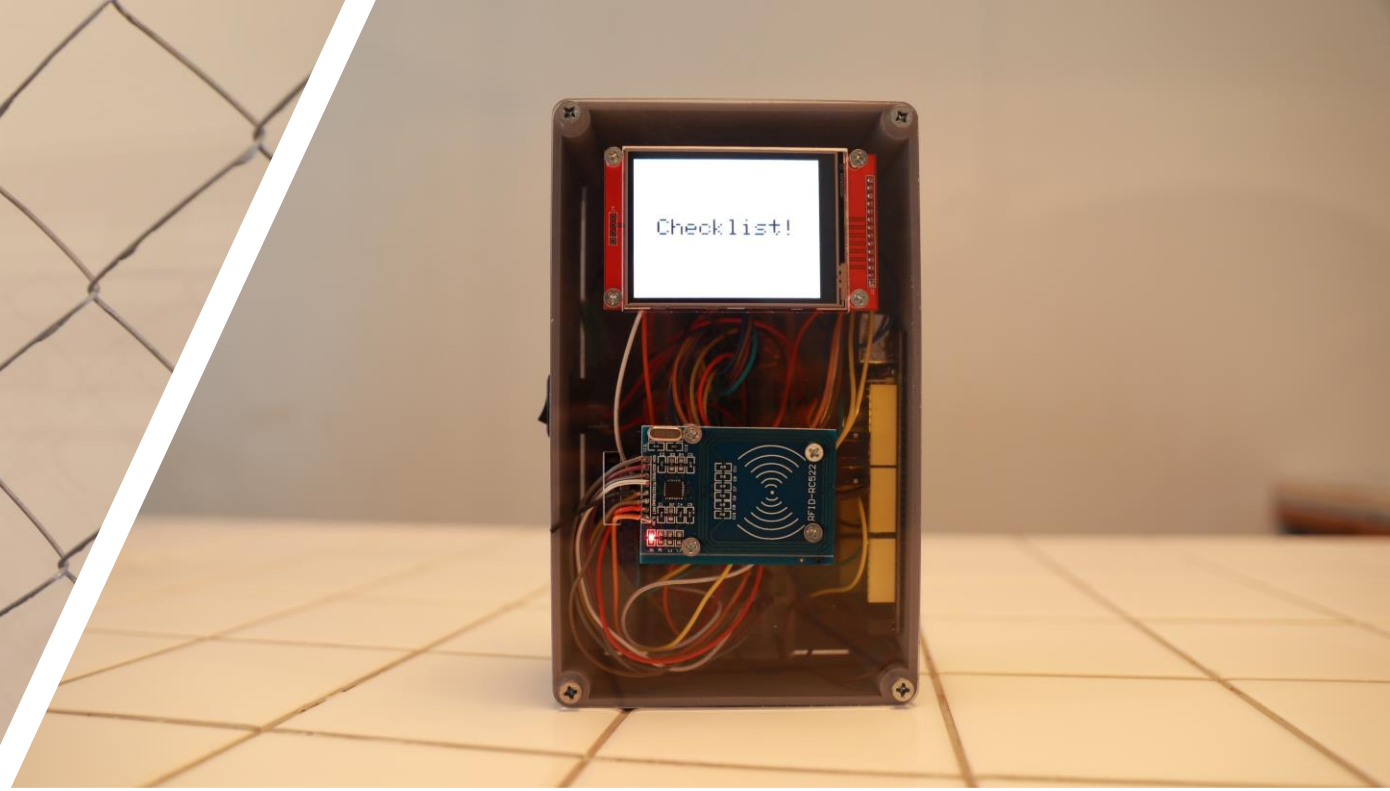


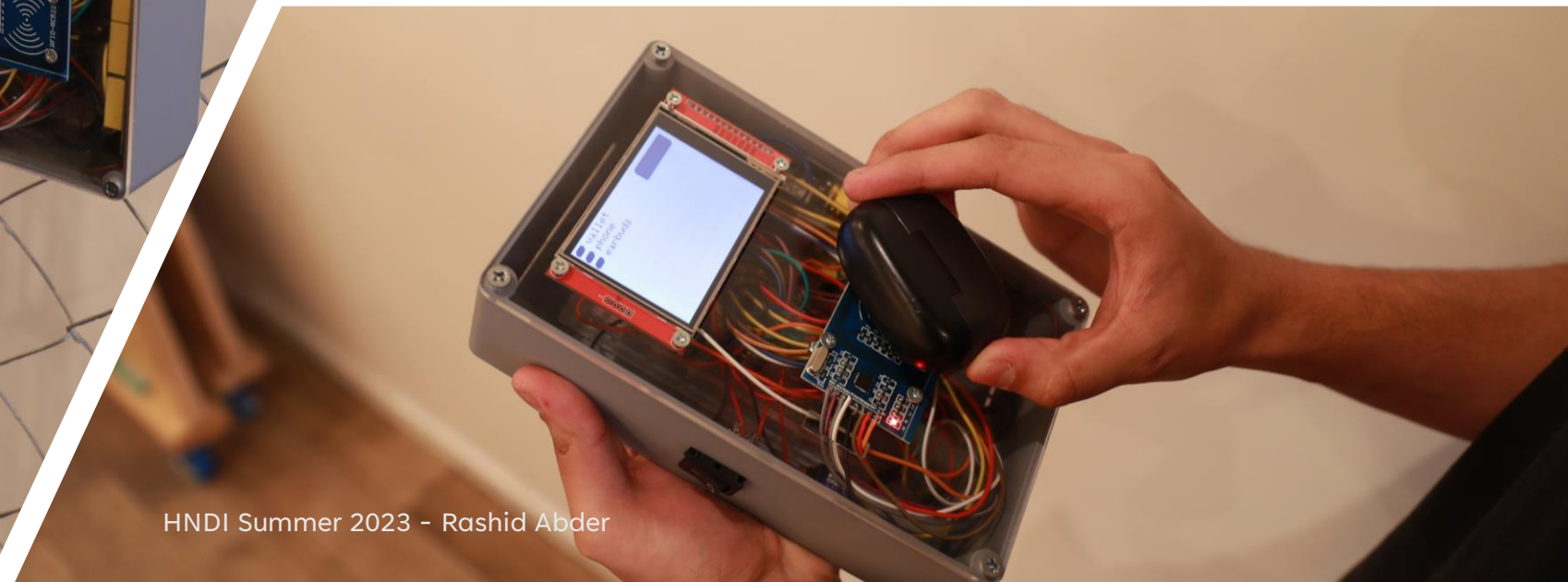


UX Map

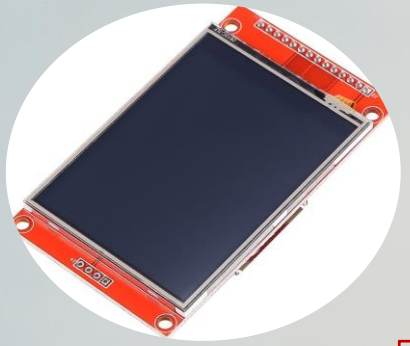

Journey Steps
Which step of the experience are you describing?
Discovery
Why do they even start the journey?
Research
Why would they want to buy our product?
Onboarding and First Use
How can they feel successful?
Sharing
Why would they invite others?
Actions
What does the customer do? What information do they look for? What is their context?
Customer 1 is a woman who works a typical 8 to 5 job five times a week
Customer 2 is a university student who commutes every day to school.
Customer 1 does some research on the product, looking for online reviews.
Customer 2 discusses with his friends about the product
Customer 2 also looks up the brand to see if they have made anything he has used before.
Customer 1 decides to buy the product online.
Customer 1 waits X days until the product is delivered to her door.
Customer 1 unboxes the product and sets it up. The product doesn't come with batteries, so she buys some at her nearest store.
Customer 1 creates a profile and adds a single item to her checklist: her wallet.
The device asks her to scan the tag of her wallet.
Customer 1 pastes a tag on his wallet and has it scanned by the sensor to test that everything works.
Her wallet must be scanned again by the sensor to check it off from the checklist
She tests the checklist she created by scanning the wallet again and seeing that the item is checked off.
Customers like the concept, but feel that it could be improved by allowing simultaneous scanning
They can contact customer support if they have any doubts or issues with their purchase
Given the reasonable price and ease of use, they might recommend it to their friends and relatives.
Needs and Pains
What does the customer want to achieve or avoid?
Tip: Reduce ambiguity, e.g. by using the first person narrator.
Customer 1: I keep forgetting my laptop charger every time I leave for work!
Customer 2: I don't know if I am bringing everything with me when I leave home.
Customer 1 has tried using to-do/checklist apps, but she finds them tedious to use and hard to incorporate into her routine.
Customer 1: Are there any cheaper alternatives?
Customer 1: Do I have to separately scan each of my things?
Customer 2: Do I have to add a tag to each of my things?
Where can I get more tags? How expensive are they?
Is one tag enough for each item?
How big are the tags? What if it doesn't fit on my item?
How do I power the product? Plugging it into a socket would be uncomfortable and inconvenient.
How does the sensor know which item is which?
"I hope delivery doesn't take too long"
"I don't have a screwdriver or any tools with me. Hopefully I can install this easily on my door"
"I hope the instructions are clear enough. I can't find any video tutorials on how to set this up."
"How do I add a tag for each item? Does it matter where I place it?"
"Getting batteries on my own is kind of a pain."
"It is tiring to scan each individual item instead of having the sensor read all the items at once"
It is a bit awkward to put tags on things like my wallet or my keys
The range of the sensor is kind of limited. I need to put the tag really close to the sensor for it to read the tag.
Touchpoint
What part of the service do they interact with?
Customer 1 finds out about the product through an ad on one of the ad boards of her train back home.
Customer 2 finds out about the product through a post of the company's Instagram page.
Product website
Company's website
Navigation links
Media (videos/images) embedded in website
The product itself
Packaging
Tags for items
User Manual
Screen interface
Customer support
Online community (forums)
Customer Feeling
What is the customer feeling?
Tip: Use the emoji app to express more emotions

Prototype

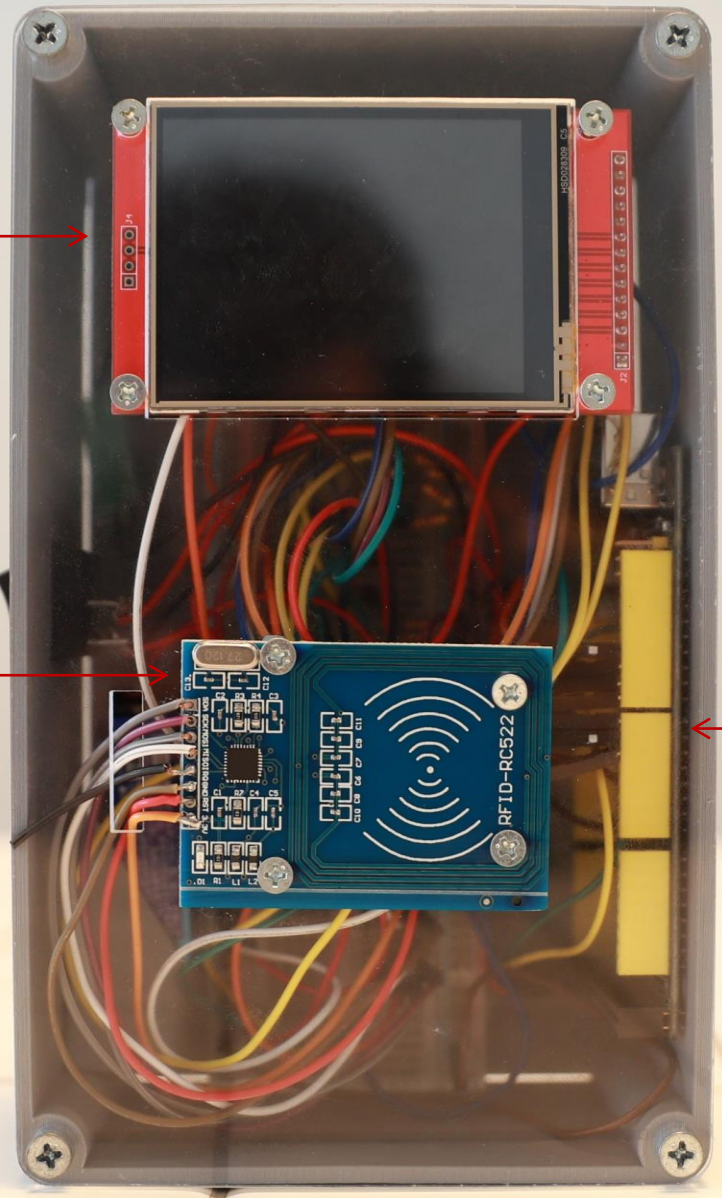




Critical components

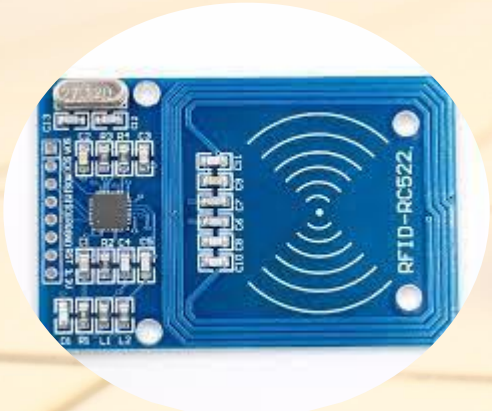


2.8’’ Touchscreen

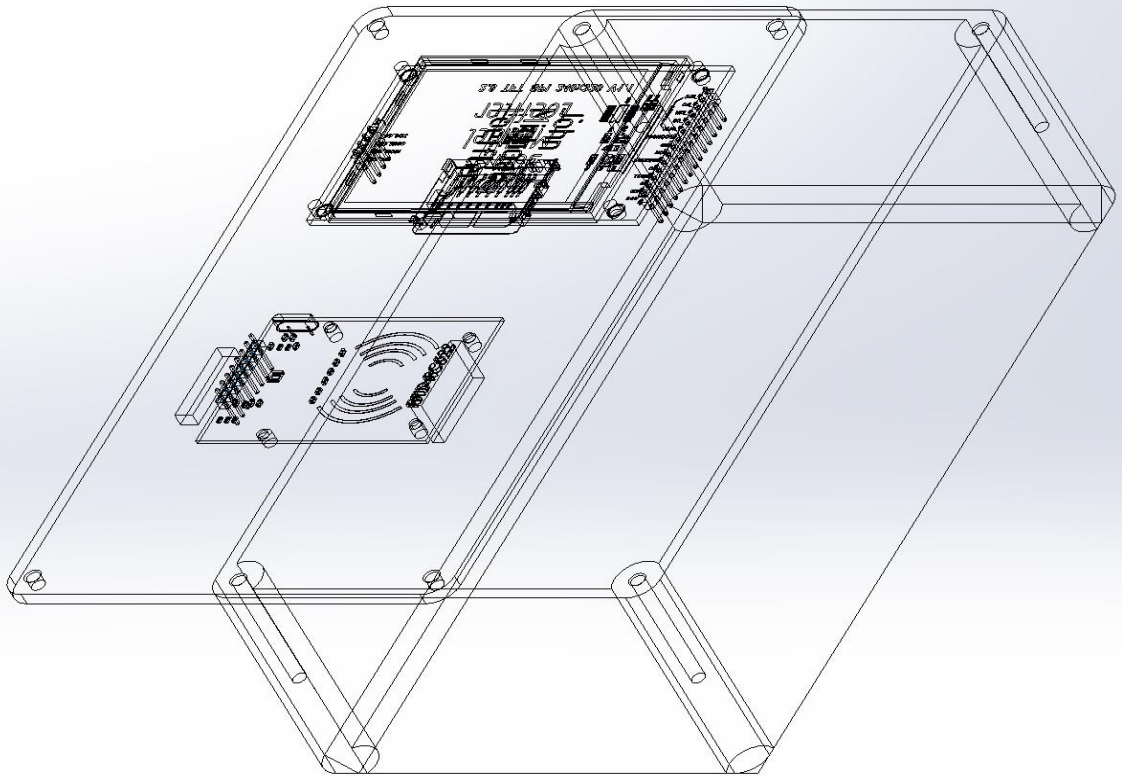


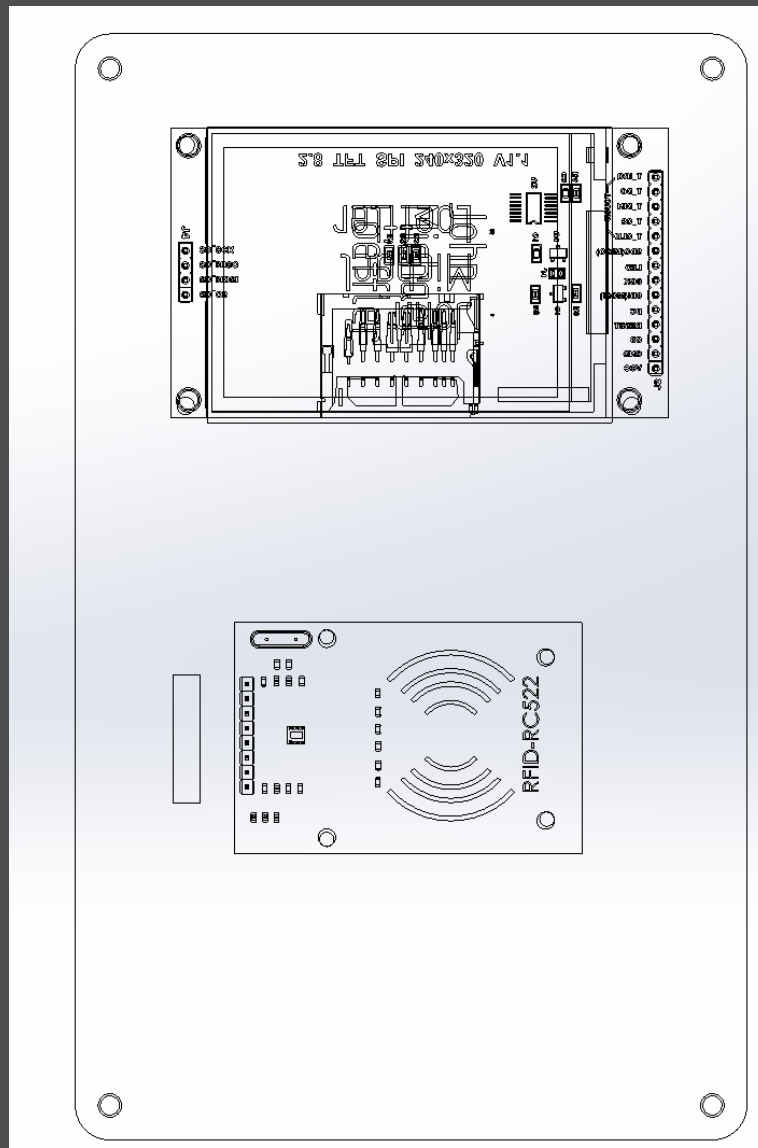
Arduino Mega

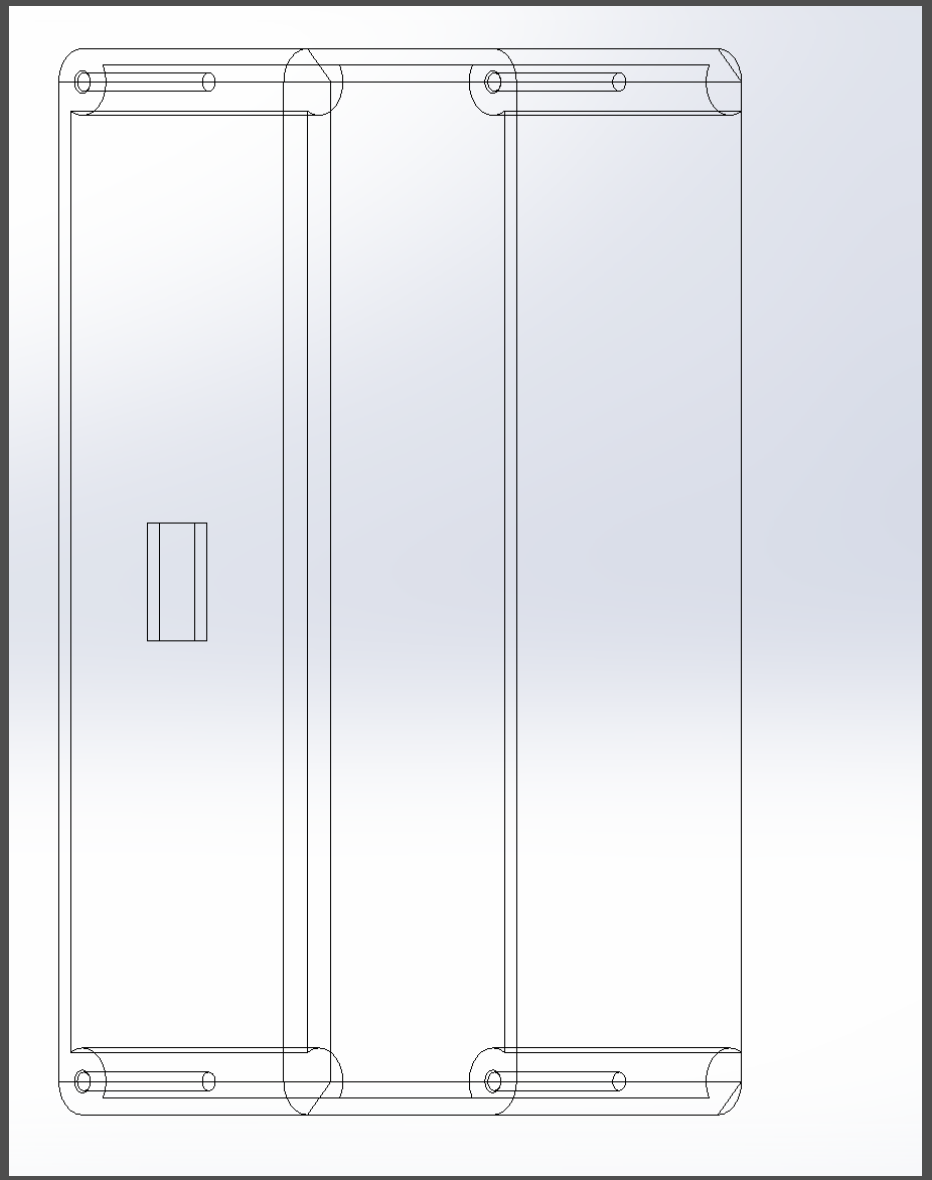
RFID Reader



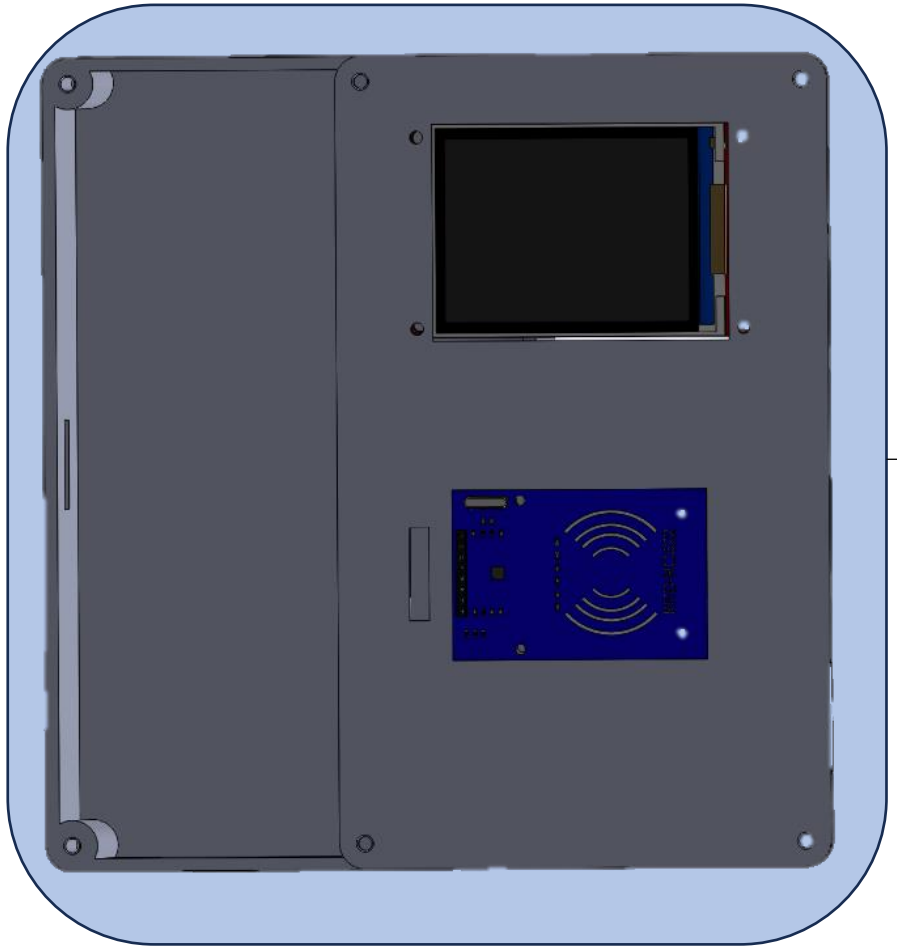
Exterior design



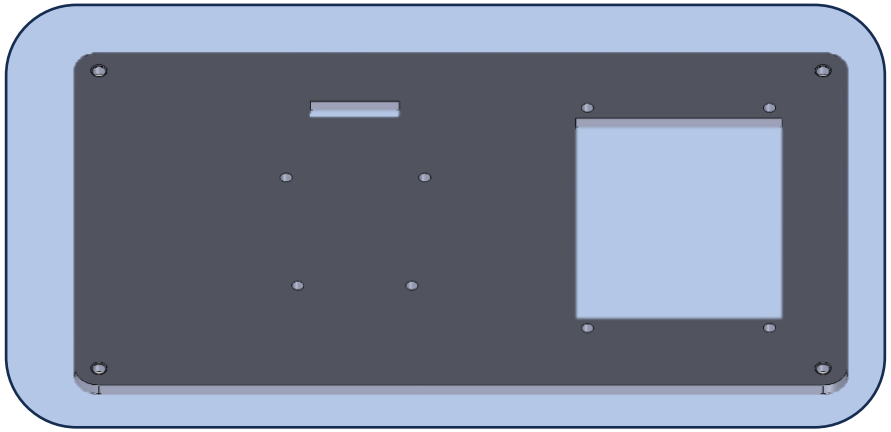

RFID-RC522



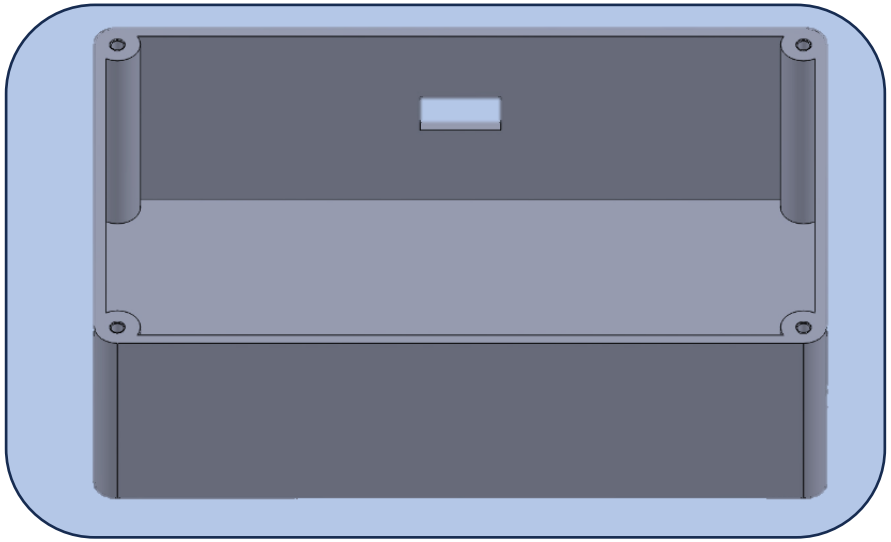
Enclosure



Front cover



Back enclosure



Code

Code is split into 5 different files, each containing the functionality of a different module/feature of the prototype.

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Video