Project Deliverable D
Conceptual Design

Group 8

Yang Chen
Claire Christensen
Isaiah Philip
Tye Segal-Kawano
Yufei Zhao

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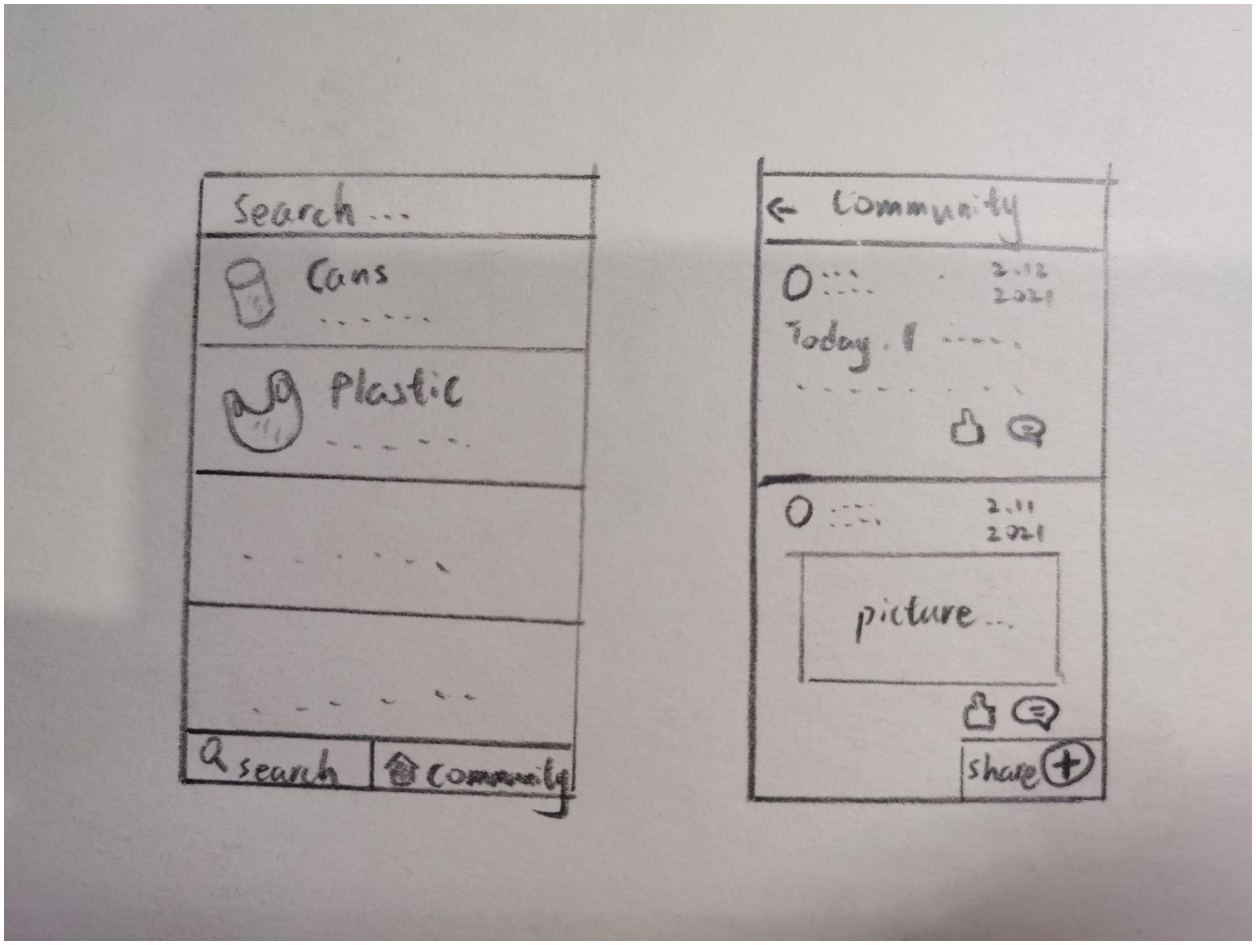
Introduction

For this deliverable, the team had taken criteria from previous deliverables and used them to create conceptual designs that are: interactive, simple, and accurate. Each team member will provide a concept design that follows the listed criteria, after the team will discuss which designs suit the project the best. Finally, the team will combine the top elements from the concepts to create a complete final design.

The Concepts

In this section each team member will present their ideas, based on the criteria found in the previous deliverable. Each will have a description of the concept, as well as some pros and cons.

Yang Chen



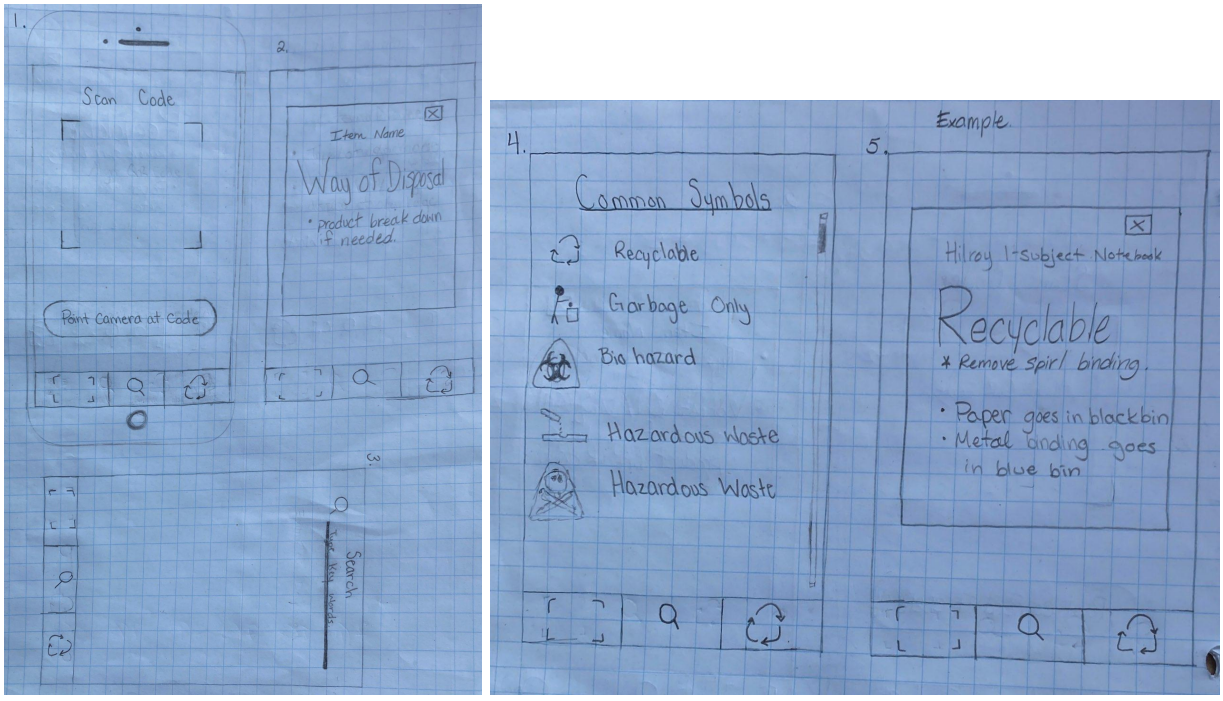
Description:

- APP has two main parts:

a. Search system: in this part, the software will provide the most of the garbage in our life should be classified as what kind of garbage, and give details of the impact of this garbage on the environment, and tell us how to recycle this garbage.
b. Community System: In this section, users can share their environmental protection experiences.They can share their views on the importance of environmental protection with others, and record their environmental protection process every day. When we see everyone doing this, we can stick to the idea of environmental protection.

- pros:
  a. Community features increase the interaction between users.
  b. The search system makes it easy for us to find out what type of trash we need to throw.
- cons:
  a. Communication between users can be difficult for an APP to manage.
  b. The design focus of an APP can be distracted by a community system.

Claire Christensen



Description:

- App has three main parts:
  a. Code scanner: This prompts the user to point their phone camera at a barcode, when the app recognizes the barcode a pop up will appear with information regarding how to properly throw away waste. If the barcode is not recognized then the pop up will say “Not Found”.

b. Search: The user types in keywords and press enter into the search bar, then products with those keywords will be listed with how to properly dispose of the waste.
c. Symbols: This will be a section with all the current symbols used on products to identify which kind of waste the product is, as well as how to dispose of it. In addition this could be used for a matching/sorting game to familiarize users with these symbols and the types of products associated with them.

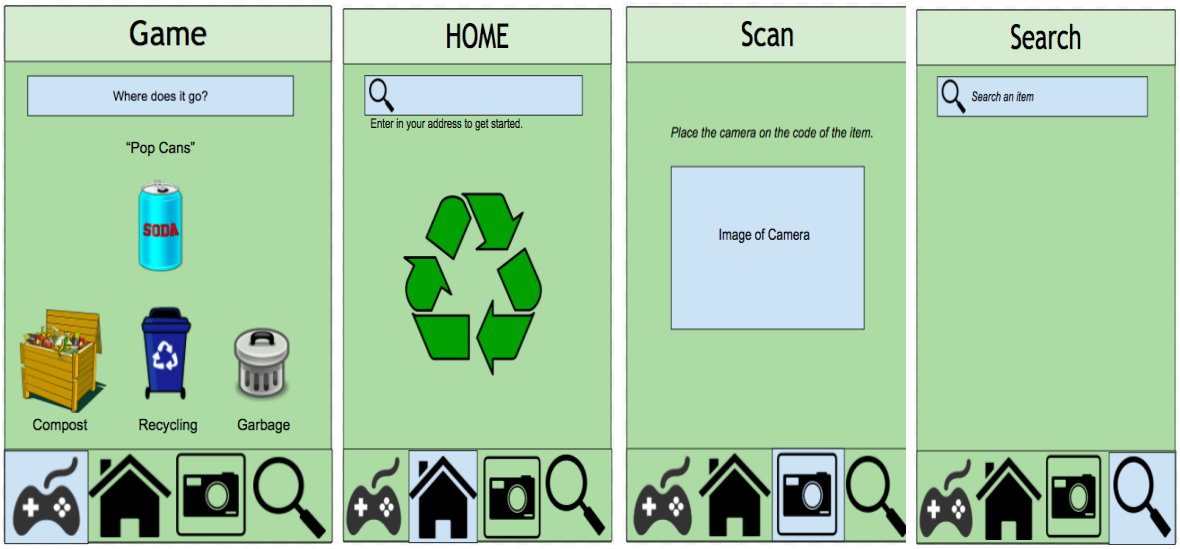
Pros:

- Simple design
- Easy to use/learn

Cons:

- Won't have every code in its database, there will be codes it doesn't recognize

Isaiah Philip



Description:

- The app has four main components:
    a. Home page: The home page prompts the user to enter in their location in order to accommodate the recycling laws of their township. Once the location is entered, the application will provide them with updates as to when the town/city collects the various forms of garbage/recycling.
    b. Scan Page: The scan page will allow the user to scan the barcode on the object (provided that it has one) and will let the user know how to properly dispose of this item.
    c. Search page: As an alternative to the scan page, the user can enter in the name of the object where the app will search the web for how to properly dispose of the item.

d. Game Page: As a bonus, the app provides the user with a small game that allows the user to familiarize themselves with how to dispose of various items. The above image is an example of how the game would look as it would involve prompting an item and asking the user how to properly dispose of it (i.e the user would drag the item to the different bins).

Pros:

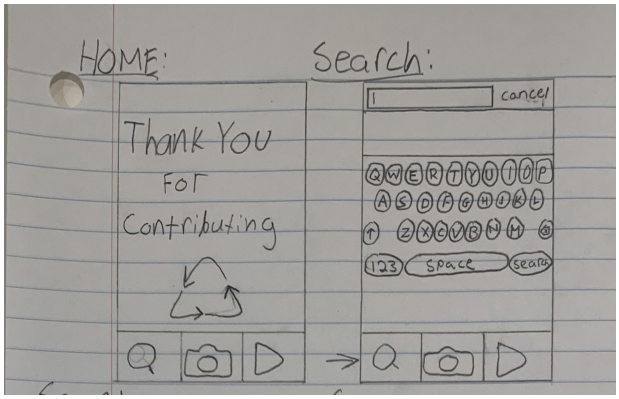
- Easy and to use
- Multiple functions

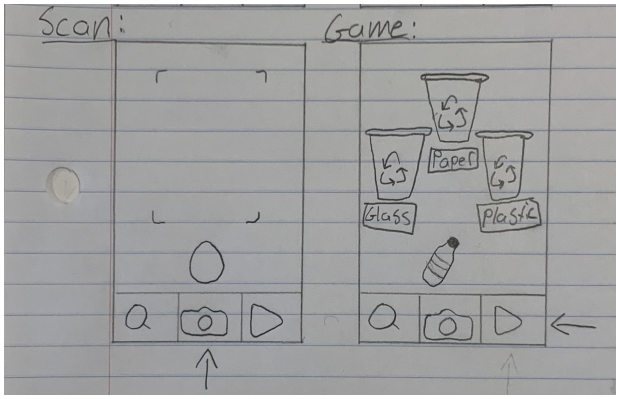
Cons:

- Scan function may not be able to recognize all items

Tye Segal-Kawano

Sketches:





Description:

- App automatically directs user to homepage upon opening the app that thanks the user for their contribution
- The user has two options to identify how it is disposed of:
    - Type in and search for the item
        - Once they have searched for and selected their item, a short description appears explaining how to dispose of the item
    - Take a picture and scan the item
        - This feature uses the picture of the item taken by the user to determine the shape of the item to identify it
        - Once the item has been identified, a short description appears explaining how to dispose of the item
- The user also has an option to access the game feature:
    - The user must attempt so toss a random item into the proper bin by swiping their finger from the given item towards the corresponding bin
    - The distance the item travels depends on how fast the user's finger is swiped
    - The user must also swipe accurately or they will miss the bin

Pros:

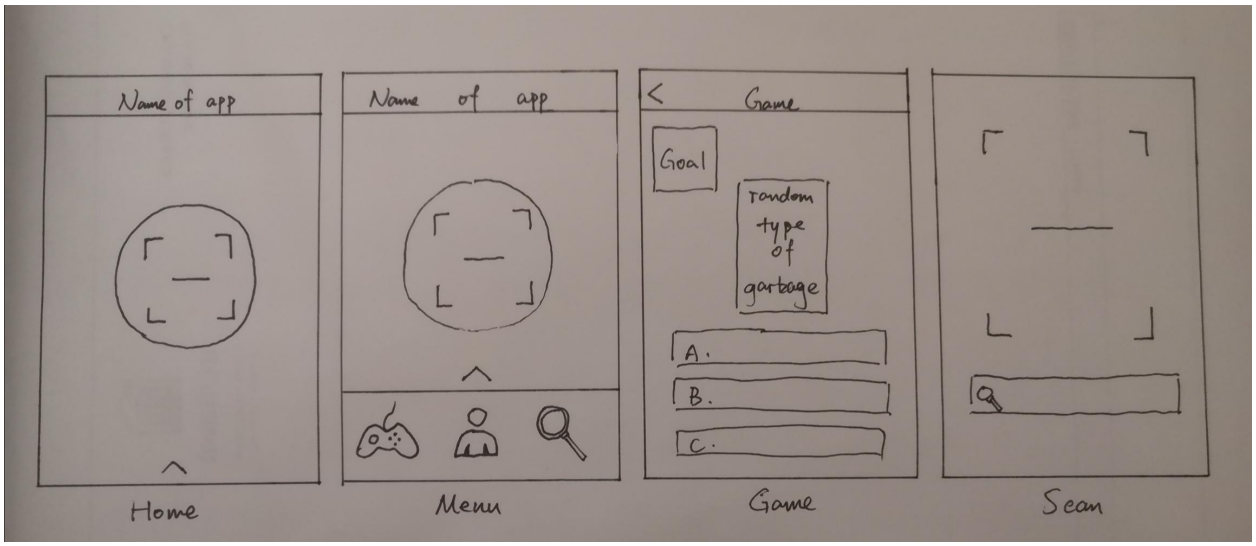
- Easy to manage

- Fun to use
- Multiple item identification options

Cons:

- Some items may not be in the system's database

Yufei Zhao



This app will store some common garbage sorting methods in the database and use a camera to scan the garbage directly to show information on how to recycle it. For unrecognized garbage, we can manually enter the name of the garbage to search information on how to collect it in the database. For garbage types that are not stored in the database, this app will automatically search online and show related recycle information.

We can add a mini game that simulates garbage collection in our app. Its method is to choose the collection method for different kinds of garbage displayed randomly. This will help people remember how to recycle their garbage.

Conceptual Design Rankings

Ranking: Score from 1-3; 1 being the best

Concept	Ranking
Game	-
Yang	N/A
Claire	3
Isaiah	1

Tye	2
Yufei	3
Layout	-
Yang	2
Claire	2
Isaiah	1
Tye	3
Yufei	N/A
Accuracy	-
Yang	3
Claire	2
Isaiah	1
Tye	3
Yufei	3

Game:
We decided that Isaiah's sub-system was the "best" concept due to it being more developed than other concepts, as well as being simple and educational for users. We also liked Tye's concept as the game was easy to learn and also educational. But in the end Isaiah's was chosen for its ease of use.

Layout:
Isaiah's application layout was similar to Claire's and Tye's, however it was the most developed and easy to manage. Also, unlike anybody else's concept sketches, it incorporated the colours blue and green which are symbolic of recycling and the environment.

Accuracy:
Overall majority of the concepts had the same level of accuracy due to similarities within each member's ideas. It was then determined that Isaiah's was the "best" concept as it will be more accurate to scan a barcode on an item than to scan the shape of an item.

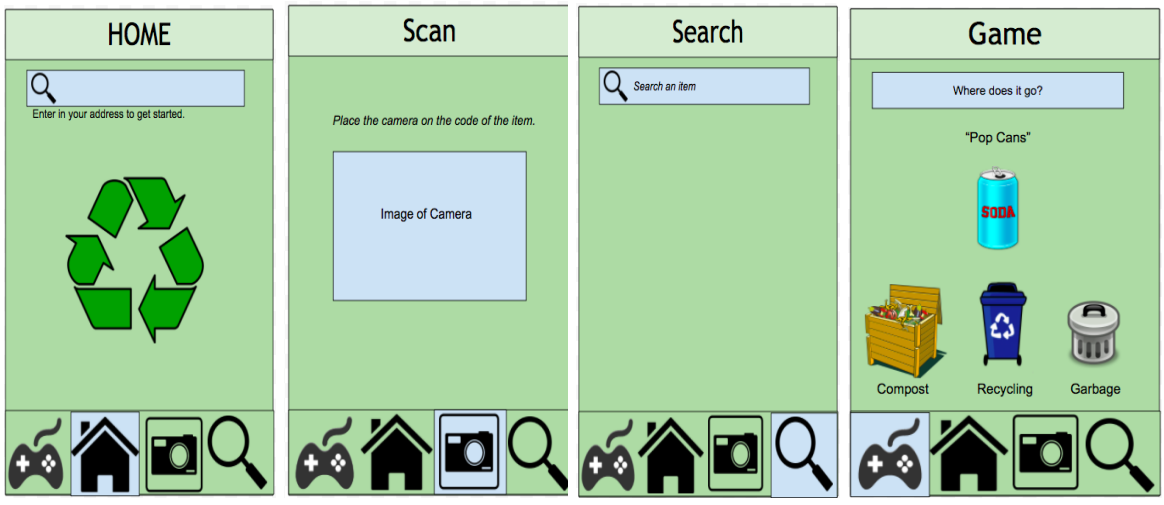
Final Design Concepts

Game

The app provides the user with a game that allows the user to familiarize themselves with how to dispose of various items. In this game the user will drag the item given to the correct bin. A score will be kept for the number of items the user correctly sorted out of all their attempts. The following is an example of the game layout:

Layout

The app consists of four main pages: a home page, a scan page, a search page, and a game page. The home page welcomes the user to the app and displays the options to select either the scan page, the search page, or the game page.



The user can maneuver throughout the different pages using the panel at the bottom which remains consistent throughout each page.

Accuracy

The scan page allows the user to scan either the shape of the item or the barcode on the object (provided that it has one) and will let the user know how to properly dispose of this item. However, if this method fails, the user can use the search feature as an alternative to enter in the name of the object where the app will search the web for how to properly dispose of the item. This variety of item identification methods will ensure accuracy in the system.

Pros of Final Design

- Easy to manage
- Fun to use
- Multiple item identification options

Cons of Final Design

- It may lack in scalability as some items may not be in the system's database

Conclusion

Based on our previous deliverables, we were able to ideate and discuss several system concepts, as well as their pros and cons. After each team member presented their concept we were able to rank and narrow down the "best" ideas for each subsystem: game, layout, and accuracy. We were then able to combine concepts based on the rankings above to create a final concept that will be used going forward with this project.