

my **COOKINGPAL**

An ingredients
management &
cooking application.

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Introduction

In the first coursework, with all the data that I got from my contextual inquiry, I have been working on designing an application to help people with daily cooking and managing ingredients. I named this application **myCookingPal** to make the report easier to read and follow. **myCookingPal** is an application that will get all the information about products that you have already bought at supermarkets and store it in the system. Users can easily gain access to their current ingredients/products anytime anywhere with the application installed on their mobile devices. Moreover, **myCookingPal** also has a database of thousands of recipes for users to choose from. The special feature of **myCookingPal** is that it can suggest recipes that only using the ingredients that are available in the user's pantry/fridge.

The conceptual design and low-fidelity prototype of this application has been developed in the previous coursework. In this individual coursework, I will keep going on two more cycles of the interaction design life cycle. These works include improving the conceptual design, evaluating, upgrading the low-fidelity prototype, and repeat with the medium/high-fidelity prototype. This report explains detailed every stage during my progress. It also contains the data and results (interview questions, surveys, records, etc.) from my interviews.

Low Fidelity Prototype Evaluation

Evaluation Methods

The methods that I used for this evaluation are Technology Assessment Evaluation (TAM) and Design Walkthrough. In my opinion, these two methods support each other very well. The reasons why I chose TAM are:

- It gives the quantitative data and it is effortless to use.
- Easy to get overview feedback from users about the application.
- The data from the survey can be display under charts/graphs which are easy to comprehend.

The reason why I chose Design Walkthrough are:

- Both Design Walkthrough and TAM require the interviewees to complete some tasks so why not combine both?
- Having the interviewees completing simple tasks will help to figure out existing errors in the functionality of the application.
- Observation while the interviewees interacting with the application.
- Get interviewees' expectations of the features why trying them out.

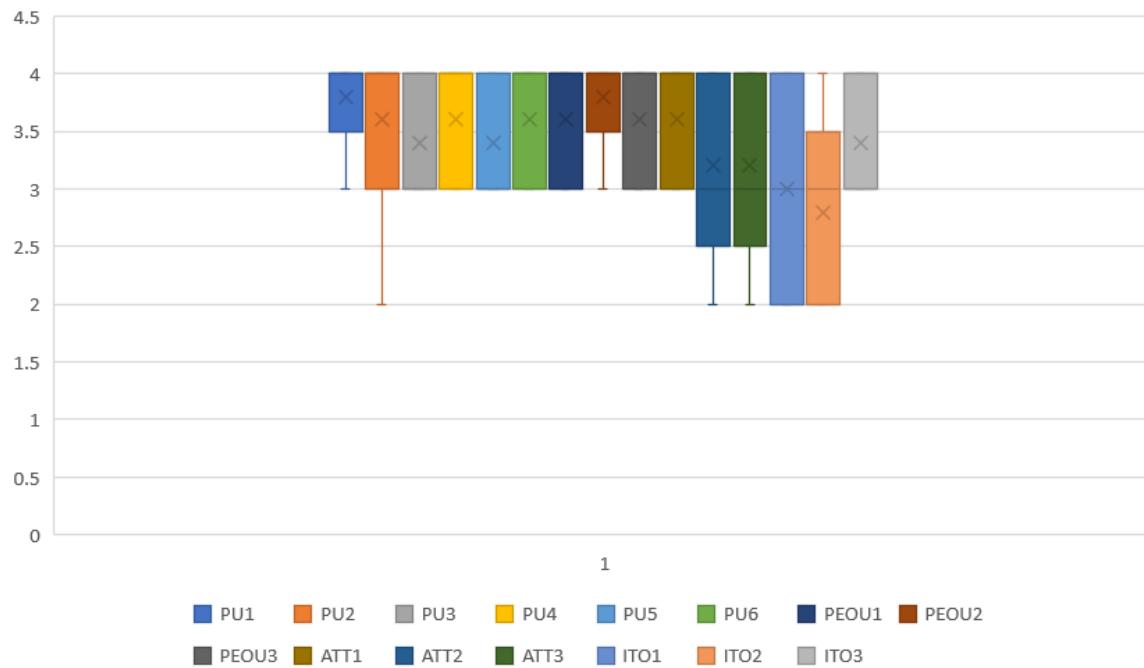
In the Design Walkthrough, after the user finished the tasks, I gave them an I have briefly reviewed how the functions in this application works. Because this is still the low-fidelity prototype so there are some features that I have not implemented yet, which can cause difficulties for users when they first try out the application. Getting users to understand **myCookingPal** makes it easier to obtain valuable advice from them to develop it.

After these two methods, I also ask the interviewees a few questions to improve **myCookingPal**. The reason I want these questions is to ask users' ideas to contribute to this app. Although my application already has the necessary functions, I still want to know if there are any more functions that users want. In addition, I would like to ask users about further features that I plan to add to **myCookingPal**. Some questions that I asked the interviewees in the post-interaction interview:

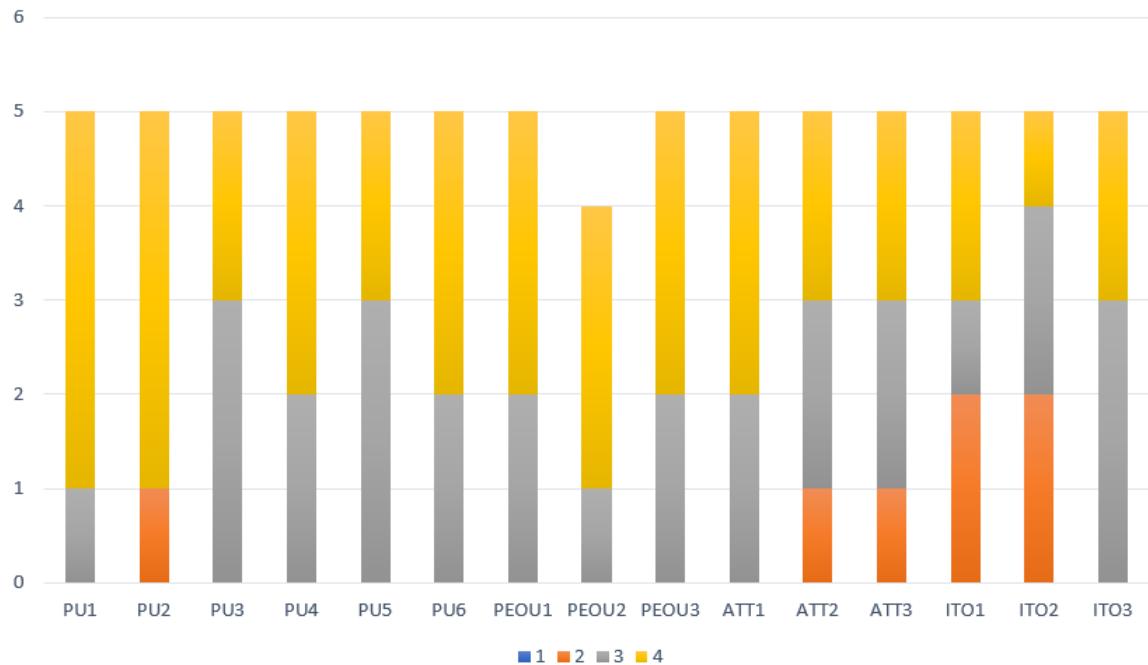
- Are there any features that you want to add to the application?
- Do you think this application needs any modification in the interface or functionality?
- I plan to add the account management features to **myCookingPal**, do you have any suggestions for this feature?
- Do you think this application needs sorting function when users search for recipes?

Analysis of Data

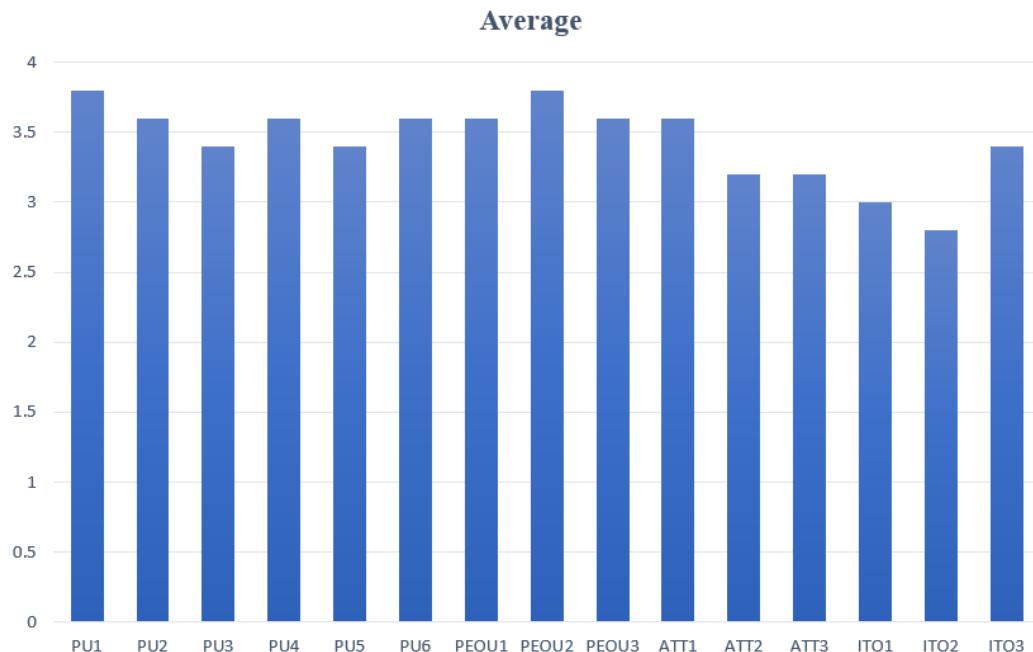
Box & Whisker Plot of Responses



Distribution of Responses



Distribution of TAM Responses



Average of TAM responses

Overall, the feedback from 5 interviewees are quite positive. They all agreed that **myCookingPal** has a lot of potential for future development. The evidence is that the upper quartile and the lower quartile of answers for 6 Perceived Usefulness questions (from question 1 to question 6) are 4 and 3. There is one interviewee who disagreed in the second question because he misunderstood how this application works. He thought that **myCookingPal** only searches for recipes that only use available ingredients. In fact, users can use this application to find many recipes, and searching for recipes that use available ingredients is just one of its main features.

It seems to be that the workflow of this application is understandable. As proof, in the box & whisker plot, the median of three Perceived ease-of-use questions (from question 7 to question 9) questions are between 3.5 and 4. Nearly all interviewees have no troubles in performing the 2 tasks. Apparently, all the icons in this low fidelity prototype are clear enough for users to understand. As far as I observed the interaction between the interviewee and the application, they had no inconvenience in understanding those icons. It may also because the system is not complete do people find it easy. This is still the low fidelity prototype of the application so there are several features that I have not implemented yet. Users also asked about many features that are available on the screen but not yet working. These features will definitely be added to the medium fidelity prototype.

After the interviews, I found out more about the users' needs as well as contexts of use. Users said that they wanted to use **myCookingPal** to help them with managing their items. There are some people who are struggling with remembering the expiry date of each product. This problem can lead to food spoilage and cost the user money. They said that with this application, they can keep tracking the remaining time of the item in the storage. Therefore, they can plan to use those ingredients in a proper order. There is an interviewee who said that he would surely use this application to find new recipes. Currently, he only cooks a few dishes over and over again which is boring. **myCookingPal** will probably improve his cooking experience by recommending new recipes. One more reason is that he can find recipes that use familiar ingredients so he does not have to shop for new ingredients every time he wants to learn how to cook new dishes. Another interviewee said that

this application is suitable for housewives. For housewives, cooking and managing storage are their main tasks so this application will be very helpful for them.

The average of responses for question 13 and question 14 is 2.75 and 3 respectively. There were two interviewees who answer that they would not use this application often in the future. When asked why, they all said it was because they did not enjoy cooking. For them, cooking is time-consuming and laborious. Usually they only cook the easiest dishes to eat without bothering with finding new recipes. They also added that not for that reason they would not try out this application. There will be a few cases where this application is handy for them. For instance, when they want to cook a delicious dish to reward themselves after stressful study days or when they want to cook new dishes for their relatives on special occasions.

The notable points from the interviews are:

- Additional features are required in the medium fidelity prototype.
- The workflow of the system is reasonably clear.
- Add label to each item in the storage screen.
- Your account feature is a great way to personalize user experience.
- Two key features, which are Saved list and Preferences, should be implemented in Your account.
- Allow users to upload recipes.
- Change the shelves format from two dimensional to three dimensional.
- Sorting function is useful.
- Information of each product or recipe must be complete but also not too long to avoid confusing the user.
- A feature to let users manually add/remove products is handy in certain cases.
- This application is suitable for people who love cooking and people who are beginners in cooking.
- Some people only want to use the application to manage their foods.

Iteration 2

Conceptual Design

System Concept Statement:

One Sentence Problem Statement

Develop an application on a smartphone that notify the user how much time he/she has left before the foods are spoiled and suggest recipes that the user can try with the ingredients already available.

High-level Description of the System

The system will:

- link to supermarket parties to find out what items that the user has bought.
- let the user knows what's left in their refrigerator anytime, anywhere, and display detailed information of each item (e.g., category, expiry date, price, nutrition information).
- suggest lots of recipes that user can try to cook.
- be able to filter out recipes that only use the ingredients and foods that users have bought.

Interaction Paradigm

- Mobile: cooking is a daily affair for everyone and nowadays almost everyone owns a mobile device so mobile application is probably the best solution to address this problem. Users can easily access their storage anytime anywhere with this application installed on their smartphone. A mobile application is yet convenient when users are cooking.

Interaction Modes

- Instructing: users can select options and press buttons while managing their storage or going through new recipes.

- Conversing: users can communicate with a virtual assistant in the step-by-step mode.
- Exploring: users can learn countless recipes with **myCookingPal**.

Key Interface Metaphors

- The interface in the storage screen looks like a food pantry which will make users feel like they are managing the real storage.
- Avatar of the head chef might make the presence of this virtual assistant more realistic.

System Requirements:

- Easy for users to find the exact item/recipe: some people they buy a lot of products for their family so it will hard for them to find one if they are not well organized in the system. All the items/recipes must be categorized base on their features so that it is not time-consuming when users look for them.
- Users can review and rate recipes: users can rate the recipe from 1-5 and leave a comment whether it is good or not. This section will be noticed when user want to find out others' opinion about a specific recipe. For example, there are a lot of recipes of pasta and the do not know which one to choose. Therefore, the rating of the recipe may help them to choose the best one. Moreover, if they find that the recipe is not good as they expected they can rate that recipes and leave a complaint on that recipe.
- Clear guidance: there needs to be pictures or videos in the step-by-step mode to illustrate the cooking process. There are some people who just learned how to cook so they need more images/videos about the recipe in order to follow the instruction. Sometimes words are not enough in describing the steps.
- Automatic system: the system automatically adds items after users buy them at the supermarket and removes items after users complete a recipe. This feature will save a lot of time for the users. For instance, after the user finished a recipe named “Beef Burger”, the system will remove the exact number of ingredients that were used to cook that recipe.

- Sharing recipes: the application allows user to upload their own recipes to the database. Sometimes users want to share their recipes with others to try it out and rate it. Moreover, letting users upload their recipes will increase the diversity of the recipes' database.
- Succinct description: the description of each recipe must be briefly and clearly expressed. When users are looking for recipes, they just want to skim through a description to find key some major information about that recipe. A long and rambling description can cause trouble for users while searching for new recipes.
- Cookbook: the system must let user to save/like recipes and after that they can access the list of those recipes. There will be situation when users finish a recipe and they love that recipe so they want to save for next times.
- Add/delete items: users now can manually add/delete their items. Although the system will automatically add items after users shop at supermarkets or remove items after users finish a recipe (Automatic system in System requirements), there are some cases that users want to do things manually. For instance, users might use an item without following any recipes of the application. With this “seems to be insignificant” feature, users can help **myCookingPal** to track the correct number of items left in their storage.
- Find recipes based on available ingredients: they reason why many users find cooking videos on the internet are hard to follow is because they do not have enough ingredients to follow those tutorials. Therefore, there must be a feature to filter out recipes that only use available ingredients.

Design Guidelines:

- Metaphors [1]: There are some people, who want to learn how to cook, cannot cope with new technology. Using metaphors will give them an intimate approach to the application.
- International [2]: Cooking is a daily task for everyone around the world. Not only just translating texts but also adjusting the experience depends on the regions.

- Exquisite design: Keep the interface clean and simple but also elegant to draw users' attention.
- Flexibility [3]: Suitable for beginners and competent users.
- Feedback [4]: There needs to be feedback (i.e. sounds, popup screen, spinning wheel) every time users finish an action.
- Consistency [4]: Maintain consistency throughout the application will help users to learn quicker.
- Evident instruction: Instructions must be detailed to suit all users.

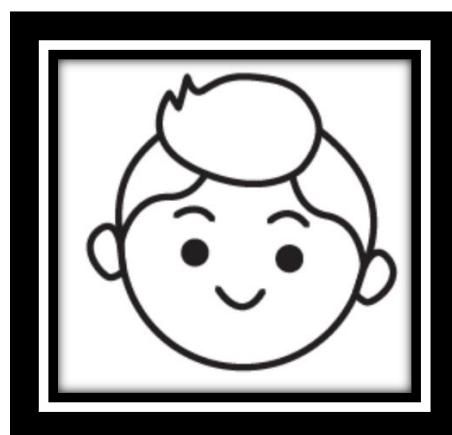
Modifications

Things that I have changed in the Conceptual Design compared to the version in the previous coursework:

- In Key Interface Metaphors, I have changed “the voice of a virtual assistant” into “the avatar of a virtual assistant”.
- New guideline which is Evident instruction has been added in Design Guidelines.
- New requirements which are Sharing recipes and Succinct description have been added in System Requirements.

Personas & Interaction Scenarios

Liam



Who is Liam?

He is 21 years old and he is an international student. He is now studying a bachelor of engineering in Australia.

What is his lifestyle?

Since this is the first time he studies abroad so he is still struggling to get used to his new life. Studying here is also different from studying in his former university so he is also facing a bit of difficulty. His schedule is quite hectic due to the high amount of workload from his part-time jobs and assignments from courses that he is taking.

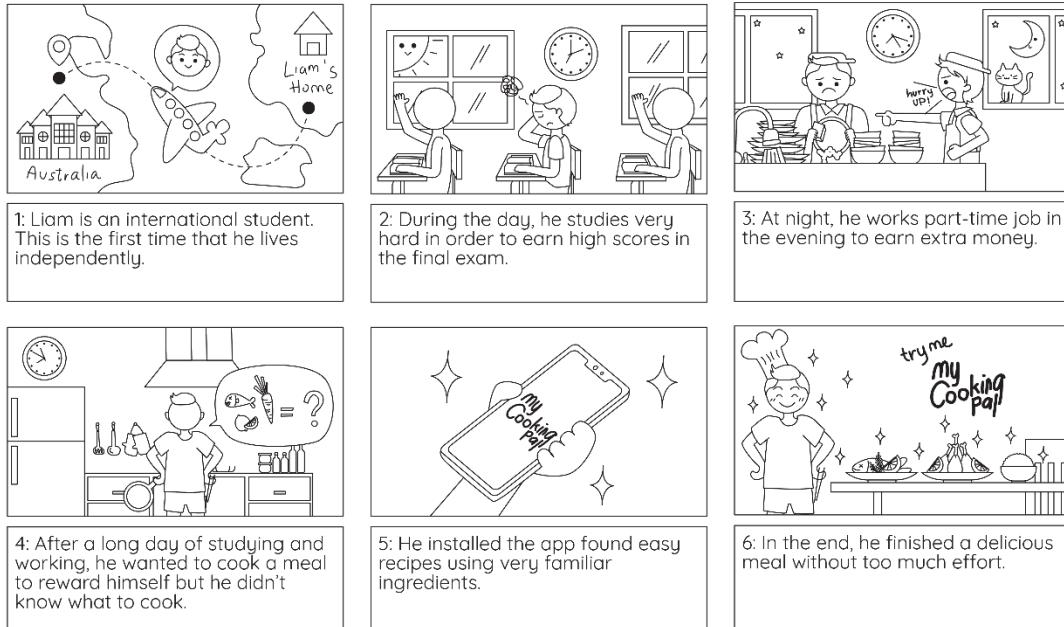
Why he might use this application?

Because he had to work part-time and go to university at the same time, he had very little time to cook. He also said that he has only been practicing cooking for the last few months so he is not very good at it. Therefore, he just wants to cook familiar dishes to save time. Although he tried to watch some cooking tutorial clips on the internet, he found that those videos are hard to follow. Cooking tutorials on the internet tend to use lots of curious ingredients and require decent cooking skills.

With this application Liam can search for recipes that using only the ingredients available in his fridge and pantry so that he does not have to worry about buying new ingredients anymore. Moreover, he can also filter recipes based on the difficulty level to choose the recipe that best suits his cooking ability.

PERSONA: LIAM

DATE: 30/04/2020



CREATOR: MINH QUAN NGUYEN

Joe



Who is Joe?

He is 27 years old and he is studying master.

What is his lifestyle?

Because the university is very far from his home, he has no choice but to rent a house near the university to facilitate his travel. To save on housing costs, he decided to share the house with friends who are also going to the same university.

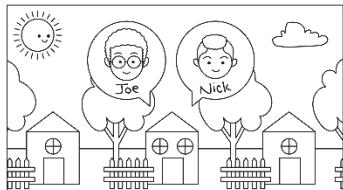
Why he might use this application?

Joe has to share the refrigerator with his roommates. Sometimes, all the things in the fridge are all mixed up and he forgot which items or ingredients belong to him. He said he once forgot that he had bought a bag of broccoli and when found out it was out of date.

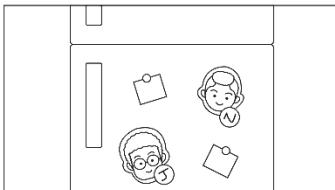
With this application, it will be handy for him to manage all the items that he has bought. He will be able to distinguish which ingredients are his and there will no longer be cases he misused other people's stuff. The shelf life of products is saved to the application so that Joe can easily check the remaining time of every product. Therefore, Joe can arrange the order of using the product in the most reasonable way and not afraid of expired products.

PERSONA: JOE

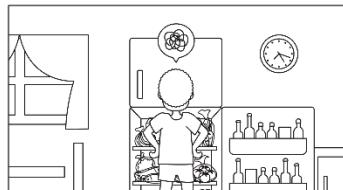
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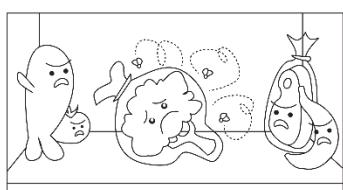
1: Joe rents a house near his school and share the house with his friend - Nick.



2: Not only the house, they also have to share the fridge because there is only one fridge.



3: Everytime Joe wants to find his stuffs, he can't find it because everything is so messed up and he doesn't know which one belongs to him.



4: While finding his food to make dinner, he found his broccoli in the deepest corner of the fridge, spoiled. He totally forgot about it.



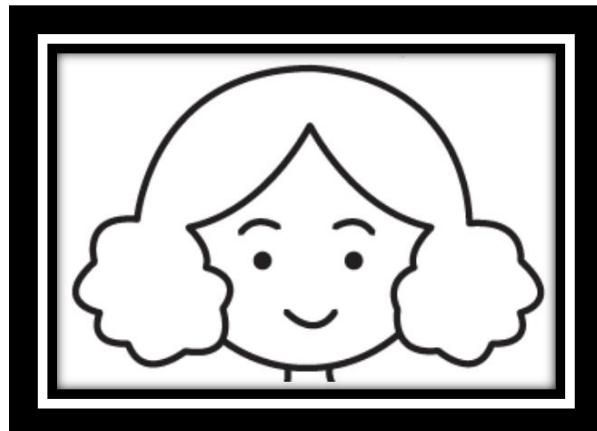
5: Joe decided to install My Cooking Pal app to manage his stuffs easier.



6: Now he will never let his stuffs forgotten in the fridge anymore. The app will tell Joe which one he needs to eat first and help Joe manage his stuffs better.

CREATOR: MINH QUAN NGUYEN

Chloe



Who is Chloe?

Chloe is 40 years old and she lives with her husband and two children.

What is her lifestyle?

Because she is a housewife, she is in charge of everything from cooking to cleaning the house. She also goes to the supermarket once a week to buy foods and essential household items.

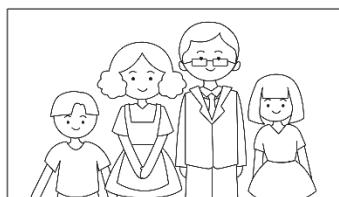
Why she might use this application?

Chloe is a very forgetful person so sometimes when she goes to the supermarket she does not remember what to buy. With the application downloaded on her smartphone, she can access her fridge and pantry anytime anywhere. When she is shopping, she can use the application to find out which ingredients are gradually running out to buy.

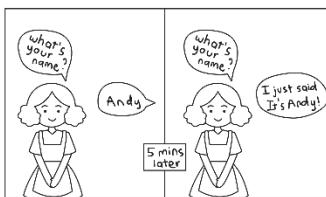
This application is useful when she wants to find new recipes for a special occasion. For instance, if her friends unexpectedly visit her house and she has not prepared anything for the dinner, the application can suggest some unique recipes using ingredients that she has already got in her pantry. Discovering new foods is also a way to entertain and bring new spices to the boring life.

PERSONA: CHLOE

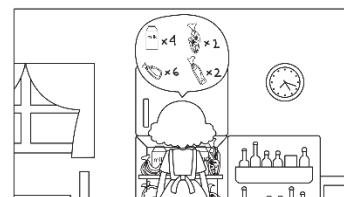
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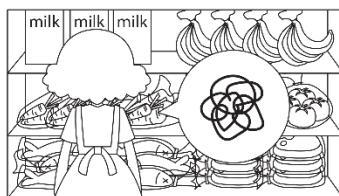
1: Chloe is a housewife and she lives with her family. She does all the house cooking and responsible for buying groceries and essential household items.



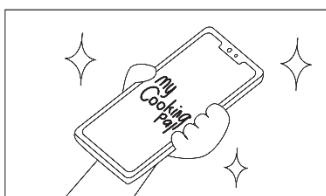
2: Chloe is known as a very forgetful person. It caused a lot of trouble while she was doing her chores.



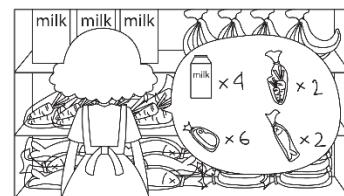
3: Today, Chloe has to go to the supermarket to buy more food for her family. When she opened the fridge, she could see what was out of stock and what wasn't.



4: When Chloe arrived at the supermarket, she totally forgot what she wanted to buy.



5: Chloe decided to open her new app to check which items were out of stock and how much she needed for that item.



6: With the help of the new app, now she knows what she has to buy and how much she needs. This app has helped Chloe a lot.

CREATOR: MINH QUAN NGUYEN

UX Goals

UX Goals	UX Measure	Measuring Instrument	UX Metric	Results
Easy to find products	Initial user performance	Find a specific item in the storage	Average time on task	<i>would be measured in the next evaluation</i>
Upload recipes	Initial user performance	Upload a recipe to the application	Average time on task	<i>would be measured in the next evaluation</i>
Add recipes to favorite list	Initial user performance	Save a recipe	Average time on task	<i>would be measured in the next evaluation</i>
Find recipes using available ingredients.	Initial user performance	Find a recipe that only uses available ingredients	Average time on task	<i>would be measured in the next evaluation</i>
Initial customer satisfaction	First impression	Question 1 -10 in SUS questionnaire	System Usability Scale	<i>would be measured in the next evaluation</i>

Medium Fidelity Prototype Prototype

Link to the medium fidelity prototype:

<https://xd.adobe.com/view/f833733e-a48a-42dd-73c3-0bd0450dfa84-8e02/>

New features that have been added to improve the prototype:

- Base on the feedback that I received for my previous coursework submission, I should have created a home screen for my prototype so that it will make the prototype easier to understand. Therefore, I designed a home screen that contains three main features of **myCookingPal**. There are “Storage”, “New recipes”, “Your account”, and the name of the application in the middle of the screen.

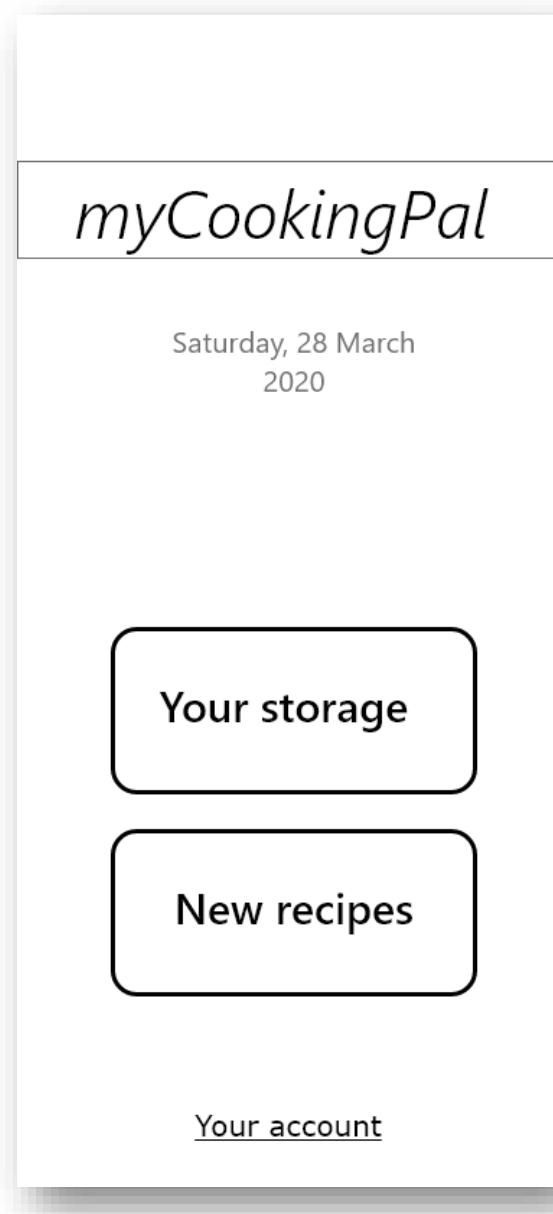
- The sorting function when users are browsing recipes or their items. Because of the large number of recipes in the database so, it could take users hours to find the one that they are going to cook. With the sorting function, users can put those recipes in the order that they want (e.g., most viewed, top-rated and newest).
- Each product in the storage now has its own label.

Button to add/delete items manually.

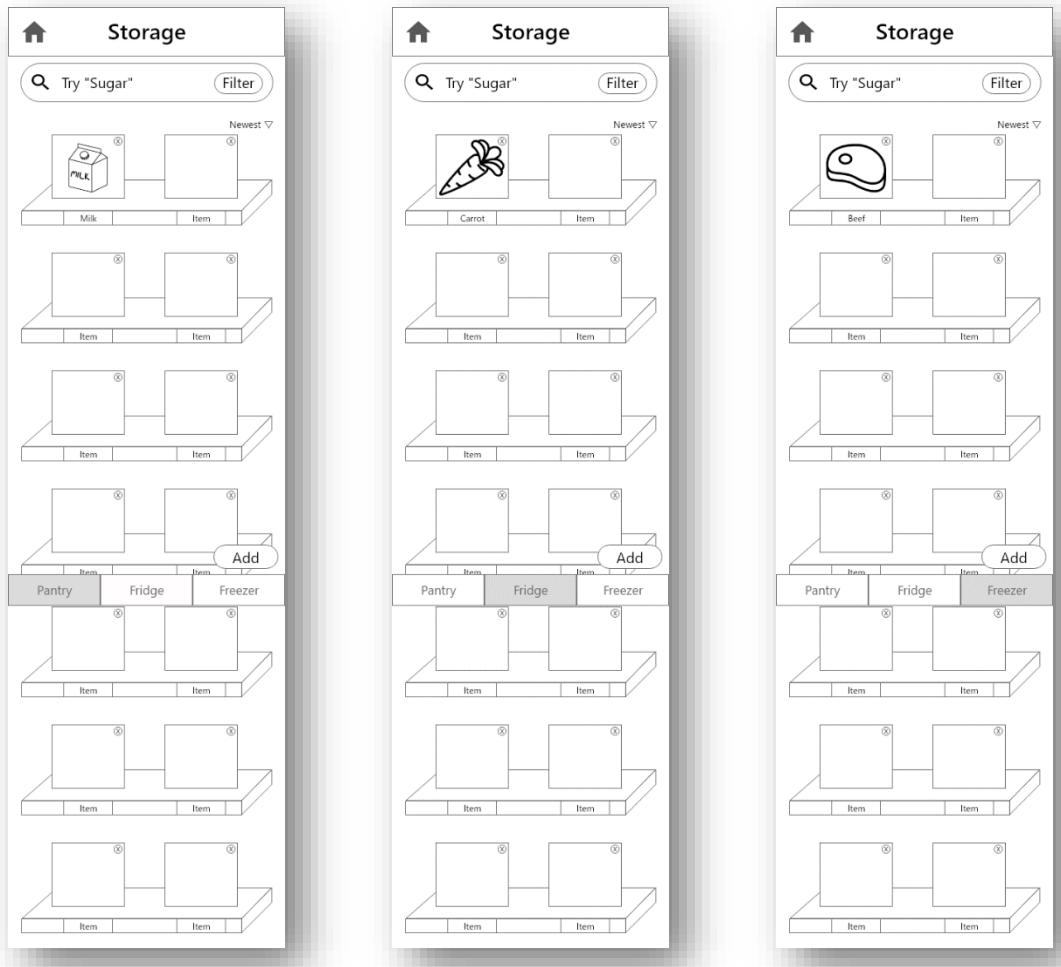
- Since this application necessitates a lot of features, I could not manage to implement all of them in the low-fidelity prototype. Consequently, users have not yet experienced all the necessary features of this application when I was interviewing them about the low-fidelity prototype. One of those main features is the step-by-step mode which guides users on how to cook a recipe. In these modes, there are pictures and/or short clips to demonstrate each step of the recipes. Furthermore, there is a virtual assistant who will deliver out loud so that users do not need to always stare at their smartphones while cooking. While the user is in the step-by-step mode, there is a button that helps users to access the list of ingredients anytime during the progress.
- The most valuable feature that has been added to this application is the “Your account” feature. This feature can improve the experiences of users while using **myCookingPal** and it contains many small features:
 - “Edit profile”: this is where users can edit their personal information.
 - “Preferences”: this is where users can set their preferences. When users first access **myCookingPal**, it will ask them to set up their preferences so that the system can personalize their experience. Users can list the supermarkets that they usually go to, their favorite cuisines, etc. It also asks if users have any food allergies, if they are on any type of diet or how good their cooking skills are. After that, when users are exploring, the system will suggest recipes based on those preferences.
 - “Your recipes”: this is where users can upload their recipes. This feature will increase the interaction between users. Users can

easily share their recipes with their friends via **myCookingPal** and get comments from them.

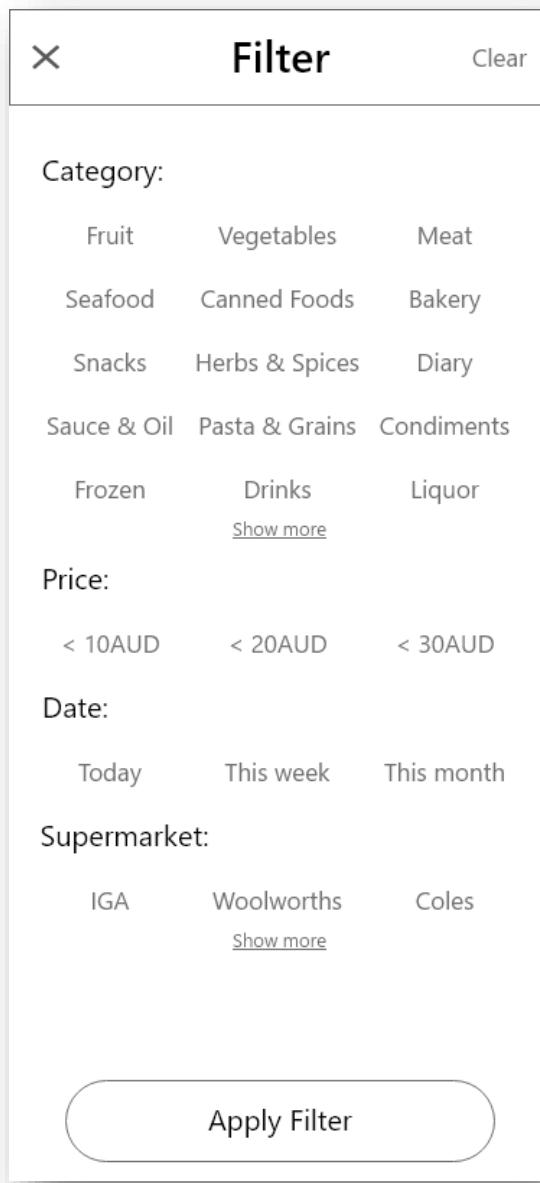
- “Saved”: this is where users can find the list of recipes that they have saved.
- “History”: this is where users can find the list of recipes that they recently viewed.
- “Settings”: this is where users can adjust the settings of this application.
- “Help & Support”: this is where users can access the help center and report errors.
- “Sign out”: a button to log out of their current account.
- The system now asks for confirmation when users want to perform important tasks (like remove an item) and gives feedback after users finish these tasks.



This is the home screen of this application. This screen includes three main buttons which lead to three main features of the application. The “Your account” button has been enlarged and put in the middle of the screen to make it more noticeable.



These are three main screens in the “Storage” feature. By dividing into three screens like this, users will be able to find their products more easily (follows Easy for users to find the exact item/recipe in System Requirements). Each screen contains a search bar, sorting button, add button and a footer with three tabs to switch between screens. The products are placed on a shelf to create a sense of familiarity to the users. Every product is label and there is a delete button for users to manually delete it.



This is the filter screen in the “Storage” feature. Users can filter by the category of the items (namely meat, vegetable, seafood, etc.), the price, the date and the supermarket that they bought that item (follows Easy for users to find the exact item/recipe in System Requirements).

The image shows two sequential screens from a mobile application titled "Storage".

Screen 1: A form for adding an item. It includes fields for Name (Orange Juice), Date Of Purchase (dd/mm/yyyy), Expiry Date (dd/mm/yyyy), Price (xxxAUD), Type Of Storage (Pantry), Nutrition information (placeholder text), and Description (placeholder text). An "Add Item" button is at the bottom.

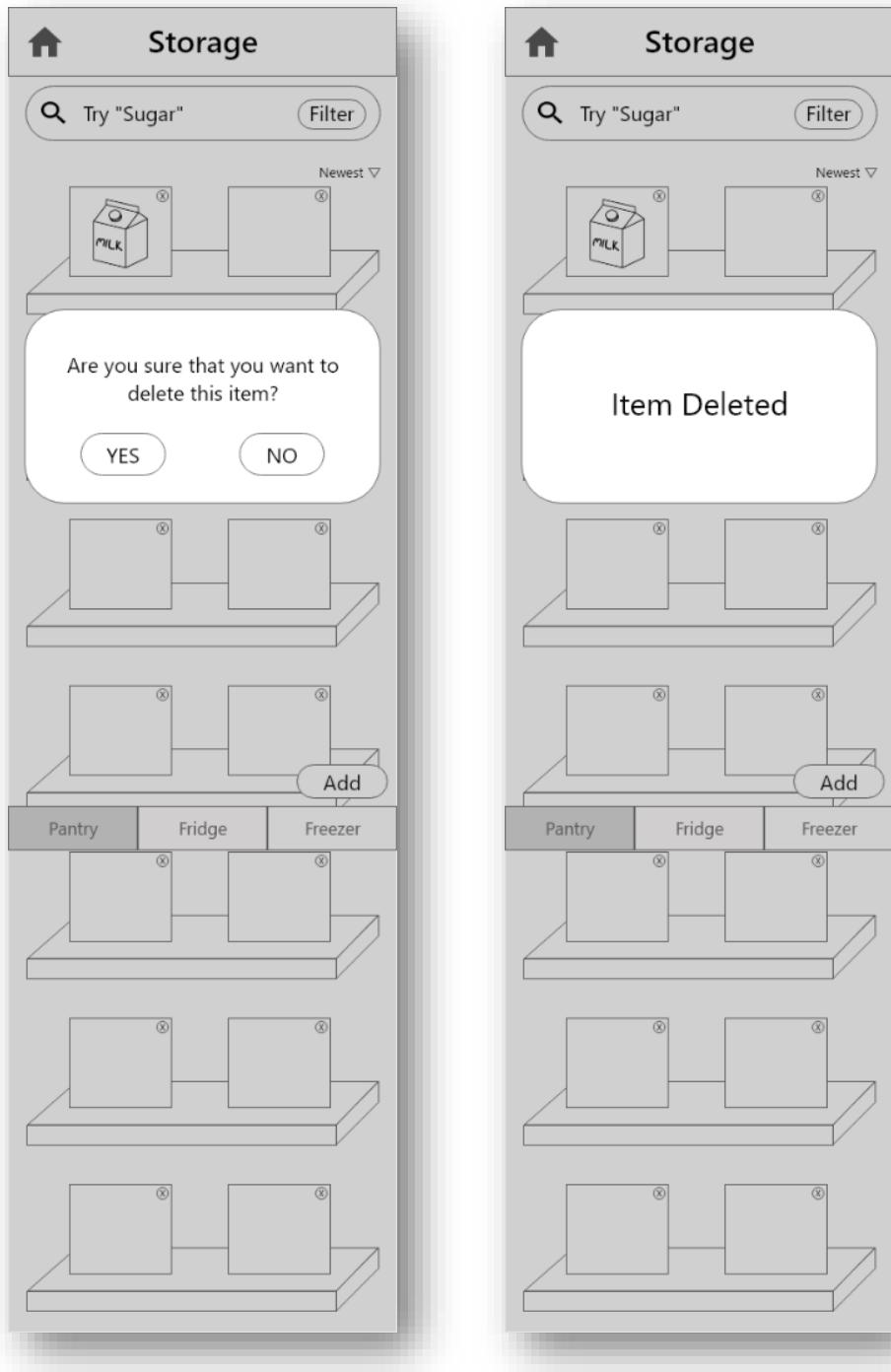
Screen 2: A confirmation dialog box asking "Are you sure that you want to add this item?" with "YES" and "NO" buttons. The background shows the same form fields as Screen 1.

The image shows a third screen from the mobile application.

The top half of the screen is identical to the first screen, showing the "Storage" title, an icon of a juice bottle, and the "Add Item" button.

The bottom half contains a large, semi-transparent rectangular box with rounded corners containing the text "Item Added". Below this box are the same form fields as the previous screens: Name (Orange Juice), Nutrition information (placeholder text), and Description (placeholder text).

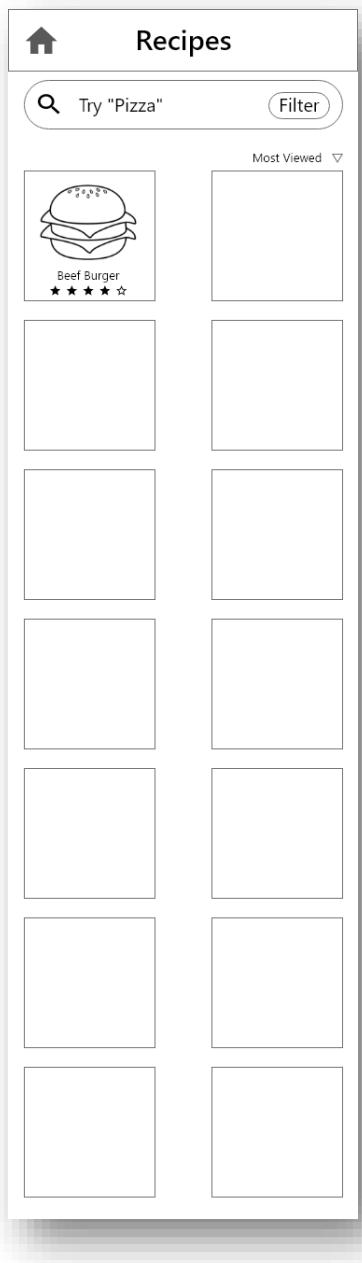
These are the three screens when users add an item by hand (follows Add/delete items in System Requirements). The first screen is for users to fill the information about the item that they want to add to the database. Two important fields are “Name” and “Description”, which need word limit (follows Succinct description in System Requirements). If these two fields contain tons of words, it will confuse users when they are searching for products. The second screen asks for users’ confirmation and the third screen returns feedback to notice that the item has been added successfully (follows Feedback in Design Guidelines).



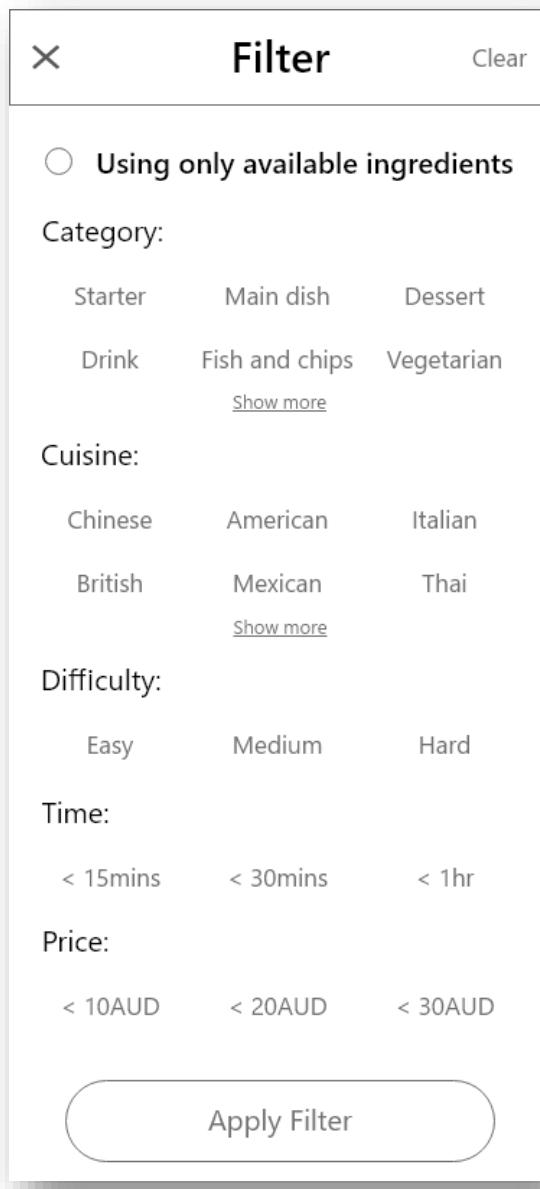
The first screen pops up when the system asks for confirmation when users want to delete an item and the second screen returns the message to show that the item has been successfully deleted (follows Feedback and Add/delete items in Design Guidelines).



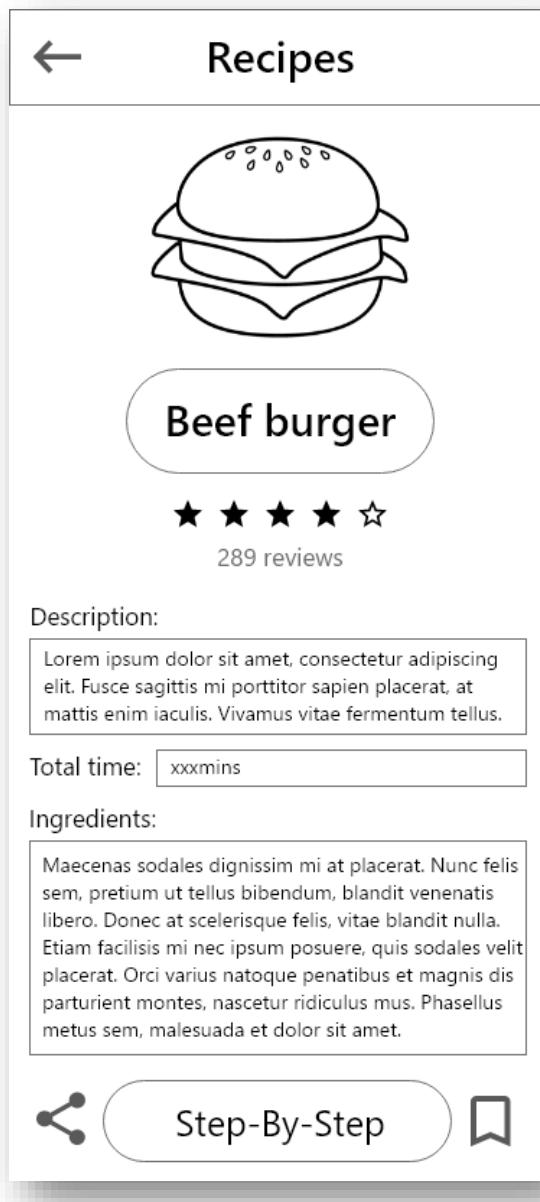
This screen shows detailed information about a specific product. It displays significant information such as expiry date, where they bought it, nutrition info, price, etc. At the bottom is a button that let users search for recipes using this product. This feature is very handy because they just need to find the product and then click the button and the system will immediately suggest them several recipes relevant to that product (follows Find recipes based on available ingredients in System Requirements).



This screen is the main screen to display new recipes for users. It contains a search bar with a filter button and a sorting button. The sorting button can be used to sort recipes by order like newest, top-rated or most viewed. Every recipe is inside a container which contain the picture, name and the rating of that recipe.



The filter screen where users want to filter recipes by category and cuisine (follows Easy for users to find the exact item/recipe in System Requirements). There are also many useful options. For example, users can choose to find recipes that suit their cooking skills or choose the time that they want to spend to cook a dish. There is an option at the top which request the system to find recipes that only use available ingredients (follows Find recipes based on available ingredients in System Requirements).



This screen displays detailed information of a recipe. There are pictures of that recipe, the rating, the reviews from other users (follows Users can rate and review recipes in System Requirements), description, total time to cook that recipe and most important the required ingredients. At the bottom of the screen, the icon on the left is used when users want to share this recipe to others. Whereas the icon on the right is to save the recipe so that they can access it easily later. The “Step-By-Step” button brings users to the mode where they will be guided to cook that recipe.

1 of 6
→



Gordon

X

Ingredients

Beef mince	750g
Breadcrumbs	70g
Brown onion	1
Egg	1
Chopped continental parsley	1/4 cup
Crushed garlic cloves	2
Worcestershire sauce	1 tbsp
Tabasco sauce	2 tsps
Salt & ground black pepper	
Olive oil	2 tbsps
Cheddar cheese, thinly slice, to serve	150g
Hamburger buns, halved	6
American mustard	1/3 cup
Lettuce leaves, to serve	6
Medium ripe tomatoes, sliced, to serve	450g
Tomato sauce, to serve	

Place the beef mince, breadcrumbs, egg, parsley, onion, garlic, Worcestershire sauce and Tabasco sauce in large bowl. Season with salt and pepper. Mix with your hands until evenly combined

Season with salt and pepper and mix with your hands until it evenly combined

←
Ingredients

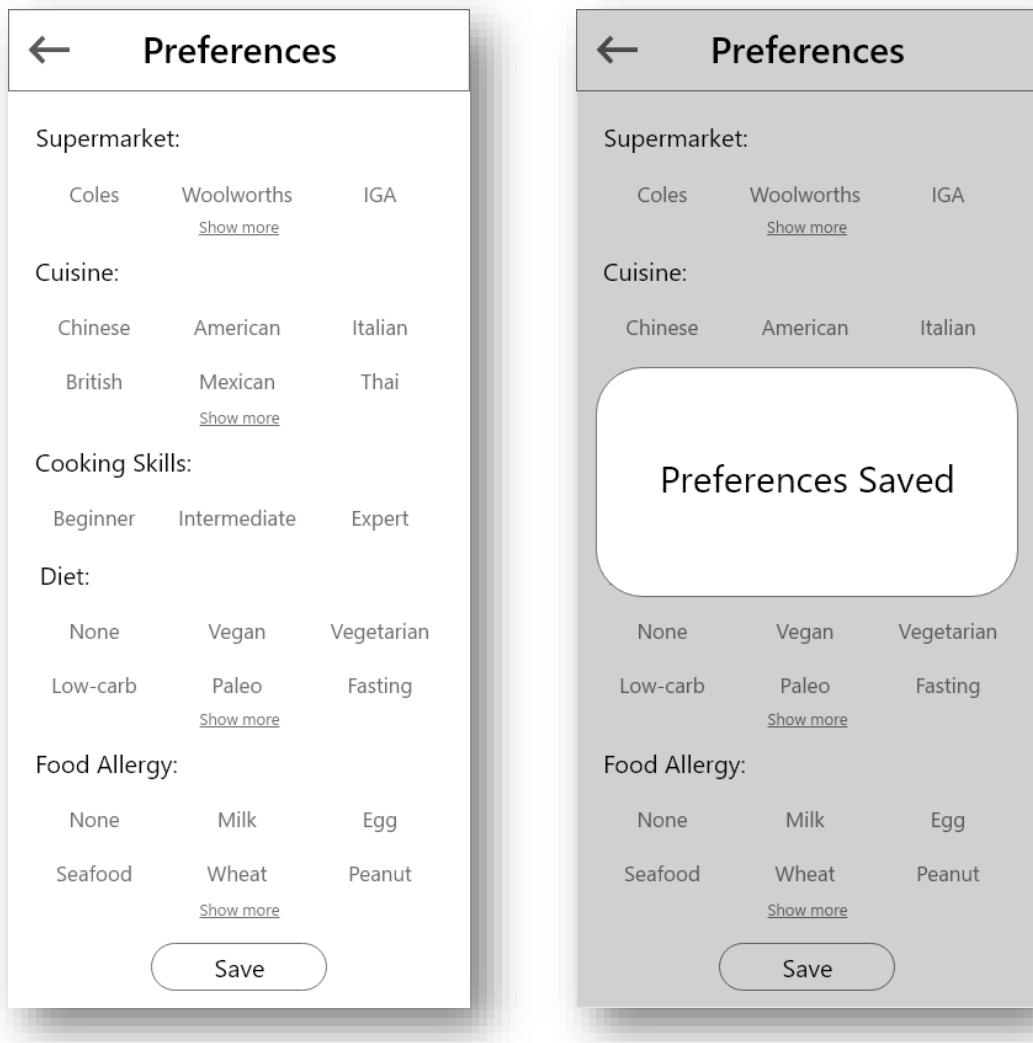
The first screen demonstrates each step of the tutorial. There is a picture or video about that step in the middle of the screen and text (follows *Clear guidance* in *System Requirements*), which describes the step, below it. A small icon of a head chef is to let users know that there is a virtual assistant who always ready to help. An icon on the left at the bottom is to quit the “Step-By-Step” mode (*Key Interface Metaphors*). Users can easily look at the list of ingredients list (the second screen) anytime during the cooking process by clicking the button at the bottom.



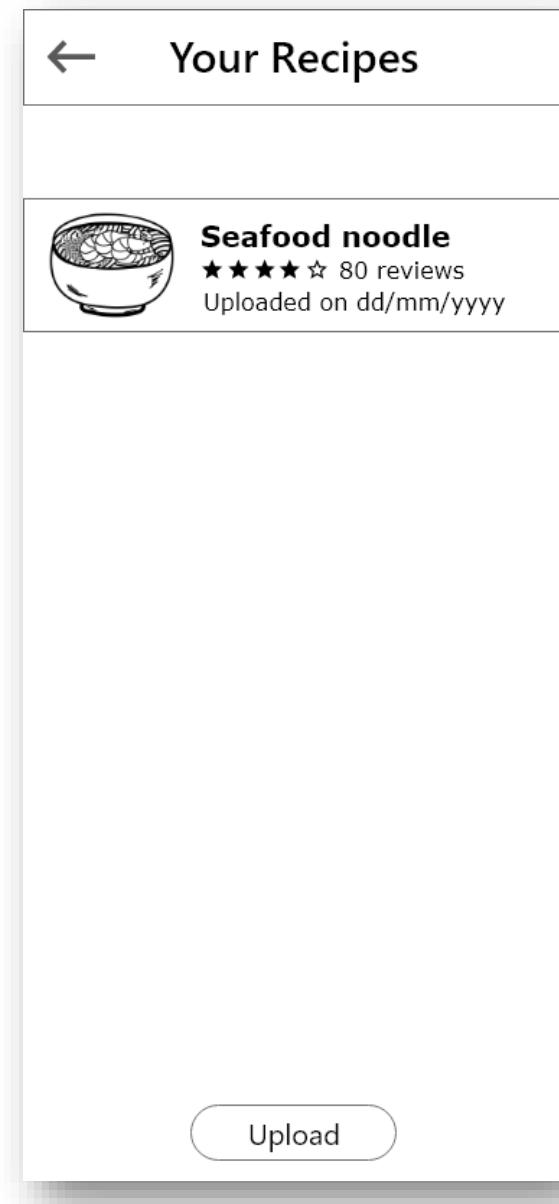
This is where users can manage their account. The profile picture and nickname of the user will be displayed at the top of the screen and below them there are total eight tabs:

- “Edit Profile”
- “Preferences”
- “Your Recipes”
- “Saved”
- “History”
- “Settings”
- “Help & Support”
- “Sign Out”

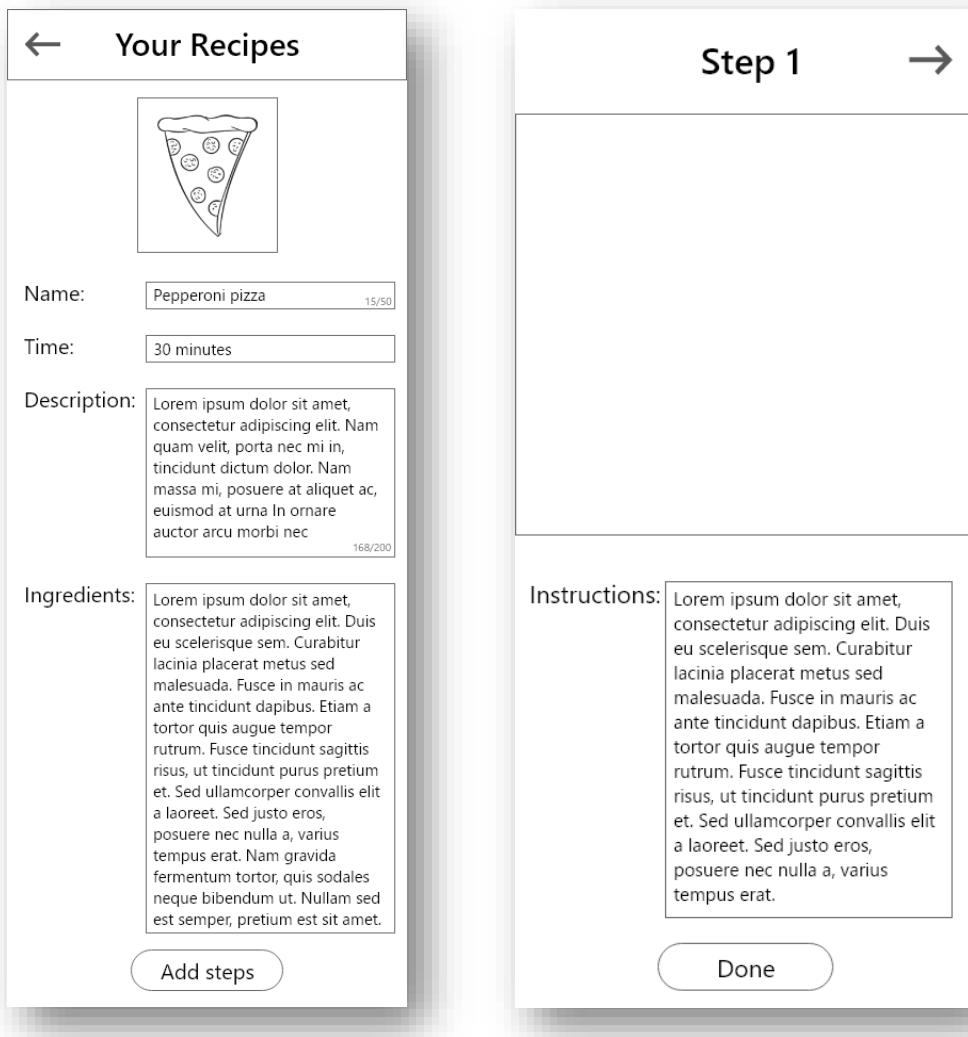
At the bottom is where users can link the account with other well-known account services such as Facebook, Google and Apple.



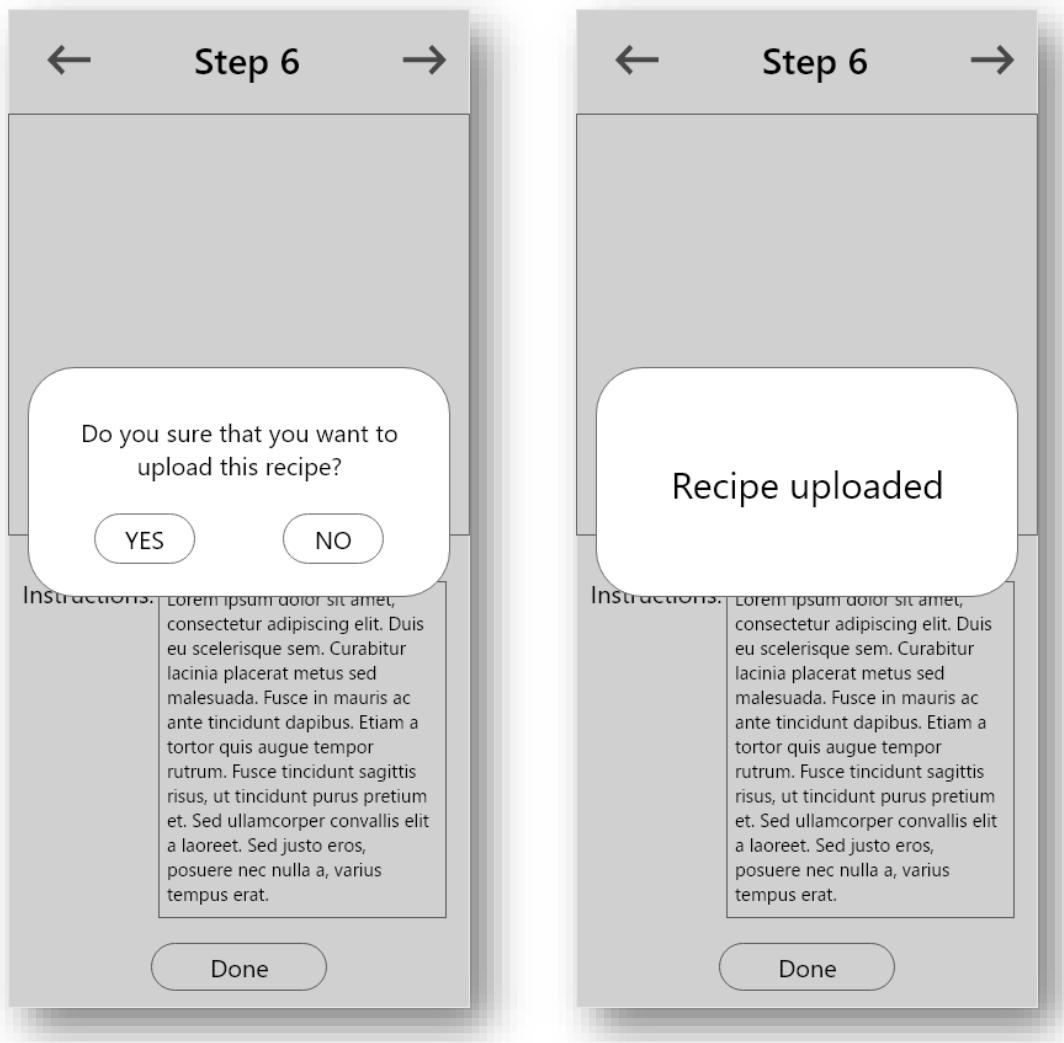
This is the “Preferences” section where users can set those options the way they want to optimize their experience. They can choose the supermarkets that they usually go to, their favorite cuisines, their cooking skills level, their diet or food allergies (if they have one). The second screen is to feedback that all the preferences have been saved when they click the button (follows Feedback in Design Guidelines).



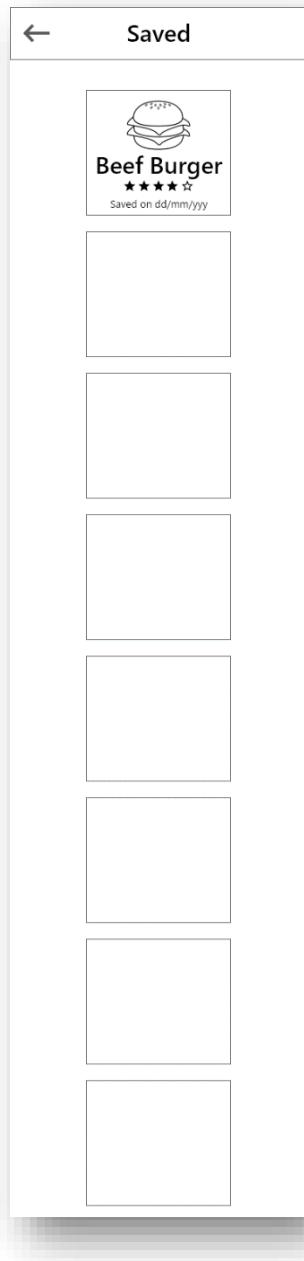
This is where users can manage all of the recipes that they uploaded. At the bottom there is a button to add more recipes (follows *Share recipes* in *System Requirements*).



The screen on the right is for users to fill in the information about the recipe that they are going to upload. They will need to upload main picture of that recipe, the name, time to cook it, description and list of ingredients. Like I have mention above, two important fields “Description” and “Name” need word limit in order not to confuse other users text (follows *Succinct description in System Requirements*). The screen on the left is when users add steps for the step-by-step mode. There must be video about that step and detailed instructions (follows *Clear Guidance in System Requirements*).



The first screen asks if users surely want to add this recipe and the second screen return the message to confirm that the recipe has been add successfully (follows Feedback in Design Guidelines).



This screen is where users can access to the list of recipes that have already been saved (follows Cookbook in System Requirements).

Credits

- Images which were used in the prototype: [5-10]
- Icons which were used in the prototype: [11-13]
- Beef Burger recipe which was used in the prototype: [14]
- Common food allergies which were used in the prototype: [15]
- Types of diets which were used in the prototype: [16]

Medium Fidelity Prototype Evaluation

Evaluation Methods

After pondering, I decided to choose System Usability Scale (SUS) and Time On Task for this stage of evaluation. The reason I chose to combine these two methods is because, like the previous evaluation, they complement each other. The advantages of SUS are:

- It is a simple scale to administrate data from participants. It is quick and persuasive
- It is a simple scale to administrate data from participants.
- Ideal to be used on limited sample sizes and still produce decent results. The current situation, which is cause by COVID-19, make it difficult to have large sample sizes.
- It is accurate although the results are not very specific. It can help to get an overview of the effectiveness, efficiency, and satisfaction.

The advantages of Time On Task are:

- It produces qualitative data.
- Better understand the user's comprehension when using this application.
- Easy to discover errors when users interacting with the application.
- Can compare the data together to have a specific view.
- It also helps to measure the UX goals.

In the Time On Task, I only asked interviewees to do all the required tasks one time and record the amount of time they complete each task. The reason is because I want to analyze user understanding when they first use it. If I gave

them the second chance to do all the tasks again, they can complete without any trouble by remembering how the system works from the first interaction. I also completed all the tasks by myself and recorded the time to set it as the benchmark. Since I am the one who developed this application, no one can understand it like me. The time I perform on each task is the standard that can be compared with the time from users to find out the comprehensibility of the application.

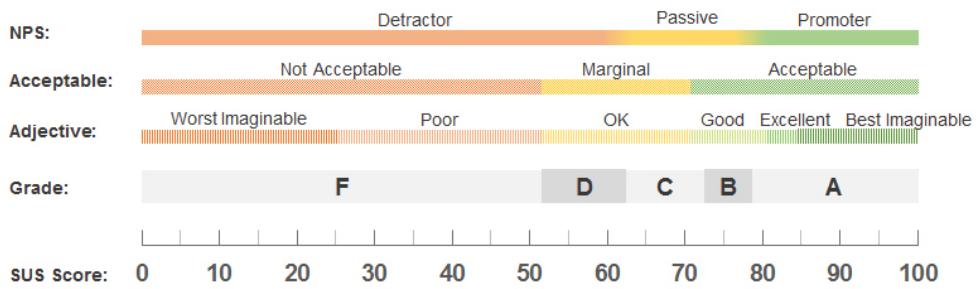
As usual, at the end of every interview, I asked the interviewees some extra questions for their opinions on the application. In addition to specific questions about each feature in the app, I also asked a few questions about the arrangement of the content in each screen and the way the whole system works. For instance:

- Do you think there are any other features that this application should have?
- Are there any problems with the way the content is laid out?
- Are there any specific screen that is hard for you to understand?
- Are all the features easy to understand for you?
- Are there any features you feel are redundant?

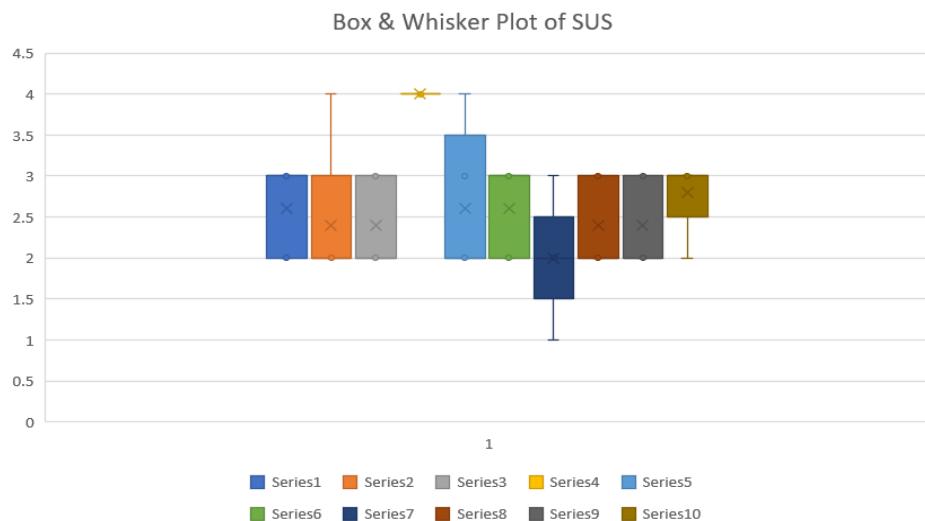
Analysis of Data

	Res1	Res2	Res3	Res4	Res5
I think that I would like to use this system frequently	3	2	2	3	3
I found the system unnecessary complex	4	2	2	2	2
I found the system was easy to use	3	2	3	2	2
I think that I would need support of a technical person to be able to use this system	4	4	4	4	4
I found the various functions in this system were well integrated	4	2	2	2	3
I thought there was too much inconsistency in this system	3	2	3	3	2
I would imagine most people would learn to use this system very quickly	2	1	3	2	2
I found the system very cumbersome to use	3	2	2	3	2
I felt very confident using the system	3	2	2	3	2
I needed to learn a lot of things before I could get going with this system.	3	3	3	3	2
Total for each respondent	80	55	65	67.5	60

Converted data



Grades, adjectives, acceptability, and NPS categories associated with raw SUS scores.



Box & Whisker Plot of SUS

It is clear that the medium-fidelity prototype received positive feedbacks from users. The total scores of each respondent oscillates between 50 and 80. Based on the chart above, the system is in the range from **OK** to **Good**. This can be considered as a good signal because the application is only at the medium stage and has already brought a good user experience. By revising the conceptual model and improving the prototype, this system will win more users' favor.

It seems that all the five interviewees will use the application often or at least install and give it a try (the middle quartile of the first question is about 2.5). Although a few interviewees have reflected that there were some small problems in finding the main feature of the application, the application is well

integrated and easy to use. The proof is that in the SUS questionnaire, all of them answered that they did not need any helps from the technical person to use the application (the median, the upper quartile, and the lower quartile of the fourth question are equal to 4). Moreover, they answered that it did not take long for them to learn how to use it properly. There are not too many difficult features for them to learn because the application has been designed to be as familiar with the user as possible. As in the Box & Whisker Plot, the medians of response from question 5 to question 10 are approximately 2.5, which is above the average. Only the median of the seventh question is 2 because there was one interviewee said that there were some main features that were hidden so users may have some issues while using this application. All of the above indicates that the application has achieved Flexibility and International in Design Guidelines.

	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Benchmark
Task 1	19s	19s	18s	23s	22s	17s
Task 2	90s	99s	77s	91s	82s	60s
Task 3	19s	22s	17s	18s	18s	17s
Task 4	16s	20s	15s	17s	20s	16s
Task 5	20s	13s	12s	15s	14s	12s
Task 6	12s	15s	12s	12s	12s	10s
Task 7	57s	59s	44s	55s	52s	40s

Time on Task Data

Overall, all interviewees completed every task without any severe difficulties. For easy tasks such as task 1, 3, 4 ,5, and 6, interviewees' time to perform each task is just a bit slower than the benchmark (the differences here are negligible). Whereas they had a little problem while doing more complicated tasks such as task 2 and task 7. For the second task, the task description is quite long so that they needed to read the task while performing it. This partly explains why it took them about 20-25 seconds longer to finish the task. Another reason is that some could not locate the “Saved List” feature of the application. Consequently, it took them a few more seconds to find it in the “Your account” section. The seventh task, which asks users to upload their own recipe, pointed out the problem with the location of the “Your recipes” feature. All interviewees thought that it was in the “New recipes” section so they clicked the “New recipes” button instead of the “Your account” button.

After finding it, they realized that it was in another section. Finally, they all found it in the “Your account” section.

The notable points from the interviews are:

- The 3D shelves received positive feedbacks.
- Some buttons should use icons instead of text.
- The “History” feature in the “Your account” section is unnecessary.
- Should rearrange the content in some screen to make them more pleasing to the eyes.
- Rename the “Saved List” feature to something else more recognizable like “Favorite List” and replace the “save” icon by the “heart” icon.
- There are some advanced features that can be added to the application to improve its versatility.
- The most considerable problem of the medium-fidelity prototype is that there are some main features that the interviewees have trouble finding them. They said that all the key features must be in the most obvious place of the application so that the users know those features exist.
- The fact that users have to go back to the home screen to go to other features is quite inconvenient and time-consuming. Must find a way to tackle this issue

Iteration 3

Conceptual Design

System Concept Statement

One Sentence Problem Statement

Develop an application on a smartphone that notify the user how much time he/she has left before the foods are spoiled and suggest recipes that the user can try with the ingredients already available.

High-level Description of the System

The system will:

- link to supermarket parties to find out what items that the user has bought.
- let the user knows what's left in their refrigerator anytime, anywhere, and display detailed information of each item (e.g., category, expiry date, price, nutrition information).
- suggest lots of recipes that user can try to cook.
- be able to filter out recipes that only use the ingredients and foods that users have bought.

Interaction Paradigm

- Mobile: cooking is a daily affair for everyone and nowadays almost everyone owns a mobile device so mobile application is probably the best solution to address this problem. Users can easily access their storage anytime anywhere with this application installed on their smartphone. A mobile application is yet convenient when users are cooking.

Interaction Modes

- Instructing: users can select options and press buttons while managing their storage or going through new recipes.

- Conversing: users can communicate with a virtual assistant in the step-by-step mode.
- Exploring: users can learn countless recipes with **myCookingPal**.

Key Interface Metaphors

- The interface in the storage screen looks like a food pantry which will make users feel like they are managing the real storage.
- Avatar of the head chef might make the presence of this virtual assistant more realistic.

System Requirements

- Easy for users to find the exact item/recipe: some people they buy a lot of products for their family so it will hard for them to find one if they are not well organized in the system. All the items/recipes must be categorized base on their features so that it is not time-consuming when users look for them.
- Users can review and rate recipes: users can rate the recipe from 1-5 and leave a comment whether it is good or not. This section will be noticed when user want to find out others' opinion about a specific recipe. For example, there are a lot of recipes of pasta and the do not know which one to choose. Therefore, the rating of the recipe may help them to choose the best one. Moreover, if they find that the recipe is not good as they expected they can rate that recipes and leave a complaint on that recipe.
- Clear guidance: there needs to be pictures or videos in the step-by-step mode to illustrate the cooking process. There are some people who just learned how to cook so they need more images/videos about the recipe in order to follow the instruction. Sometimes words are not enough in describing the steps.
- Automatic system: the system automatically adds items after users buy them at the supermarket and removes items after users complete a recipe. This feature will save a lot of time for the users. For instance, after the user finished a recipe named “Beef Burger”, the system will remove the exact number of ingredients that were used to cook that recipe.

- *Sharing recipes*: the application allows user to upload their own recipes to the database. Sometimes users want to share their recipes with others to try it out and rate it. Moreover, letting users upload their recipes will increase the diversity of the recipes' database.
- *Succinct description*: the description of each recipe must be briefly and clearly expressed. When users are looking for recipes, they just want to skim through a description to find key some major information about that recipe. A long and rambling description can cause trouble for users while searching for new recipes.
- *Cookbook*: the system must let user to save/like recipes and after that they can access the list of those recipes. There will be situation when users finish a recipe and they love that recipe so they want to save for next times.
- *Add/delete items*: users now can manually add/delete their items. Although the system will automatically add items after users shop at supermarkets or remove items after users finish a recipe (*Automatic system* in *System requirements*), there are some cases that users want to do things manually. For instance, users might use an item without following any recipes of the application. With this “seems to be insignificant” feature, users can help **myCookingPal** to track the correct number of items left in their storage.
- *Find recipes based on available ingredients*: they reason why many users find cooking videos on the internet are hard to follow is because they do not have enough ingredients to follow those tutorials. Therefore, there must be a feature to filter out recipes that only use available ingredients.
- *Notify users of products about to expire*: many users choose to use the application to help them to manage storage. They have so many products that it is impossible for them to remember the expiry dates. Therefore, the application should push notifications of those products that are going to expire soon so that users can use them in proper order.
- *Increase/Decrease servings*: users have the option to increase or decrease the servings of a recipe and the amount of ingredients will automatically change depends on the servings. There are people who cook for the whole family and there are also people who only cook for

themselves so the list of ingredients should be responsive in order to meet the needs of all users.

- *Shopping list*: they system compares the ingredients of the recipe with the available ingredients in users' storage to point out the missing ingredients. The users then have the option to add those missing ingredients to their shopping list. This can help them to buy enough ingredients to cook new recipes.

Design Guidelines

- *Metaphors [1]*: There are some people, who want to learn how to cook, cannot cope with new technology. Using metaphors will give them an intimate approach to the application.
- *International [2]*: Cooking is a daily task for everyone around the world. Not only just translating texts but also adjusting the experience depends on the regions.
- *Exquisite design*: Keep the interface clean and simple but also elegant to draw users' attention.
- *Flexibility [3]*: Suitable for beginners and competent users.
- *Feedback [4]*: There needs to be feedback (i.e. sounds, popup screen, spinning wheel) every time users finish an action.
- *Consistency [4]*: Maintain consistency throughout the application will help users to learn quicker.
- *Evident instruction*: Instructions must be detailed to suit all users.
- *Errors prevention*: The application should aware when a user is about to make a mistake and stop it.

Modifications

Three new system requirements have been added:

- *Notify users of products about to expire*.
- *Increase/Decrease servings*.
- *Shopping list*.

Errors prevention has been added to the *Design Guidelines*.

UX Goals

UX Goals	UX Measure	Measuring Instrument	UX Metric	Results
Easy to find products	Initial user performance	Find a specific item in the storage	Average time on task	20.4s and 18.8s
Upload recipes	Initial user performance	Upload a recipe to the application	Average time on task	53.4s
Add/remove products.	Initial user performance	Add and remove a product.	Average time on task	17.6s and 14.8s
Find recipes using available ingredients and go through the tutorial.	Initial user performance	Find a recipe that only uses available ingredients and try the tutorial.	Average time on task	87.8s
Initial customer satisfaction	First impression	Question 1 -10 in SUS questionnaire	System Usability Scale	Positive

- Easy to find products: Users after interacting with the application, they recognize that the app does a good job in organizing products in their storage. Products are put in three main storage and there is a filter function that allows users search for specific item easily. The average time that they need to find a carton of long-life milk in the storage is 20.4s (the benchmark of this task is 17s). While the average time that they need to find a carrot and meat in the storage is 18.8s (the benchmark of this task is 17s).
- Upload recipes: Users find this feature quite easy to use. They have the option to post photos or videos for each step (because there are some users who are not able to record videos). Users love this feature because it allows them to share recipes and cooking tips for everyone. This feature also helps create a strong community as well as attract new users.
- Add/remove products: There are some cases that the supermarket that users go to does not cooperate with the application or they receive ingredients as a gift from friends. The application must also store the information of those products. The average time that they need to add

a product is 17.6s (the benchmark of this task is 16s) and the average time that they need to delete a product is 20.4s (the benchmark of this task is 12s).

- *Find recipes using available ingredients and go through the tutorial:* The main goal of the user when using the application is to learn how to cook a new dish. The special feature of this application is that it allows users to search for recipes only using available ingredients. This helps users to avoid worrying about preparing ingredients.
- *Initial customer satisfaction:* The results from SUS are quite favorable. Users love the application because it has many versatile features. Based on the outcome from SUS and Task On Task, users have found the application very easy to use, although this was their first time.

High Fidelity Prototype

Prototype

Link to the high fidelity prototype:

<https://xd.adobe.com/view/2ef298a4-c8cd-435d-55ad-96b0b09f9579-58c3/>

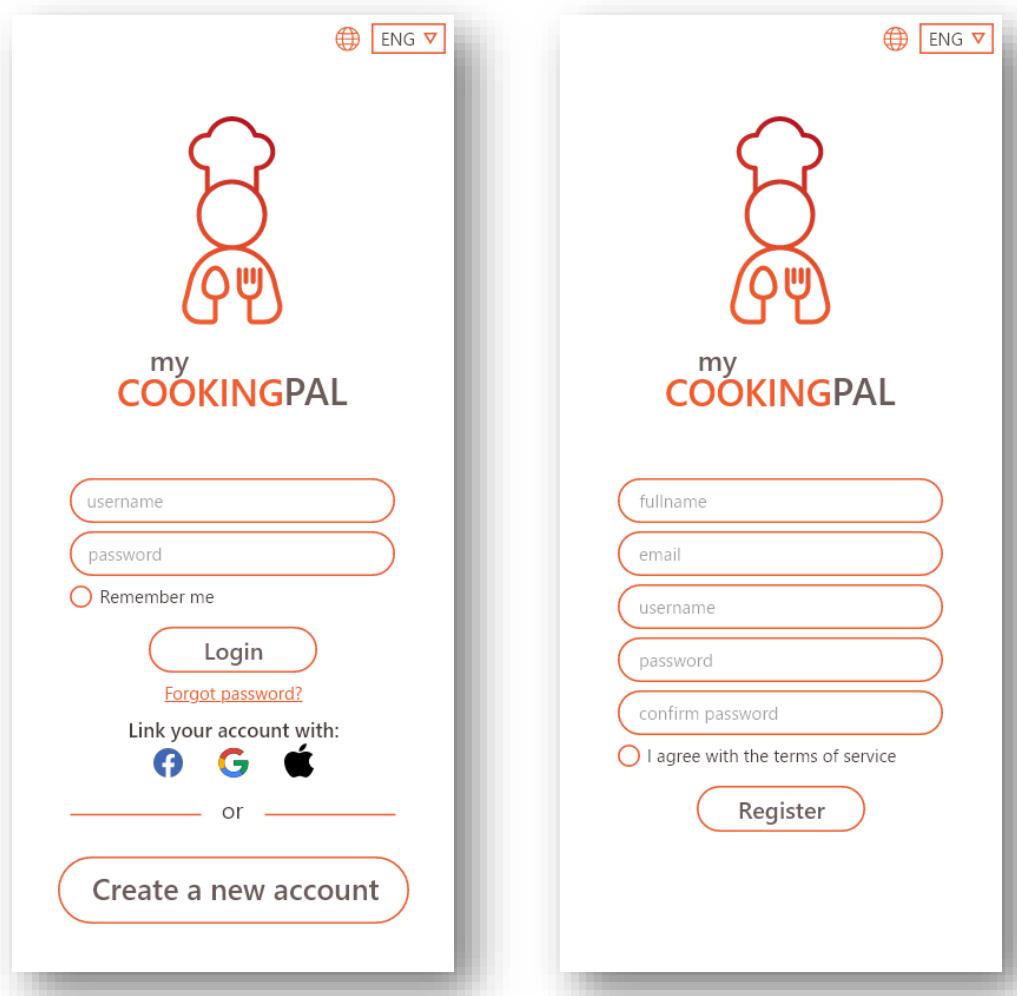
New features that have been added to upgrade the prototype:

- The prototype has been colorized to make it more appealing. The dominant color is orange (#F05C2E). Warm colors, especially red, stimulate our appetite because it affects metabolism [17]. This is the main reason why many fast food restaurant chains (such as McDonald's, KFC, Pizza Hut, etc.) use red for decoration. This is a mobile application and users will pay much attention to the phone during the cooking process. Therefore, pure red can make their eyes aches and discomfort. Orange is softer but still brings enthusiasm and excitement. There are two colors that have been used for text in **myCookingPal**. The color for body text is black (#473D3B) which is easy for users to read. The other color is also black (#6A5C59) but a bit brighter and it is used for headings. The reason why I chose two different colors for text is to separate titles and body text. When users look at the application, they will notice which part is more important due to a slight difference between two colors.

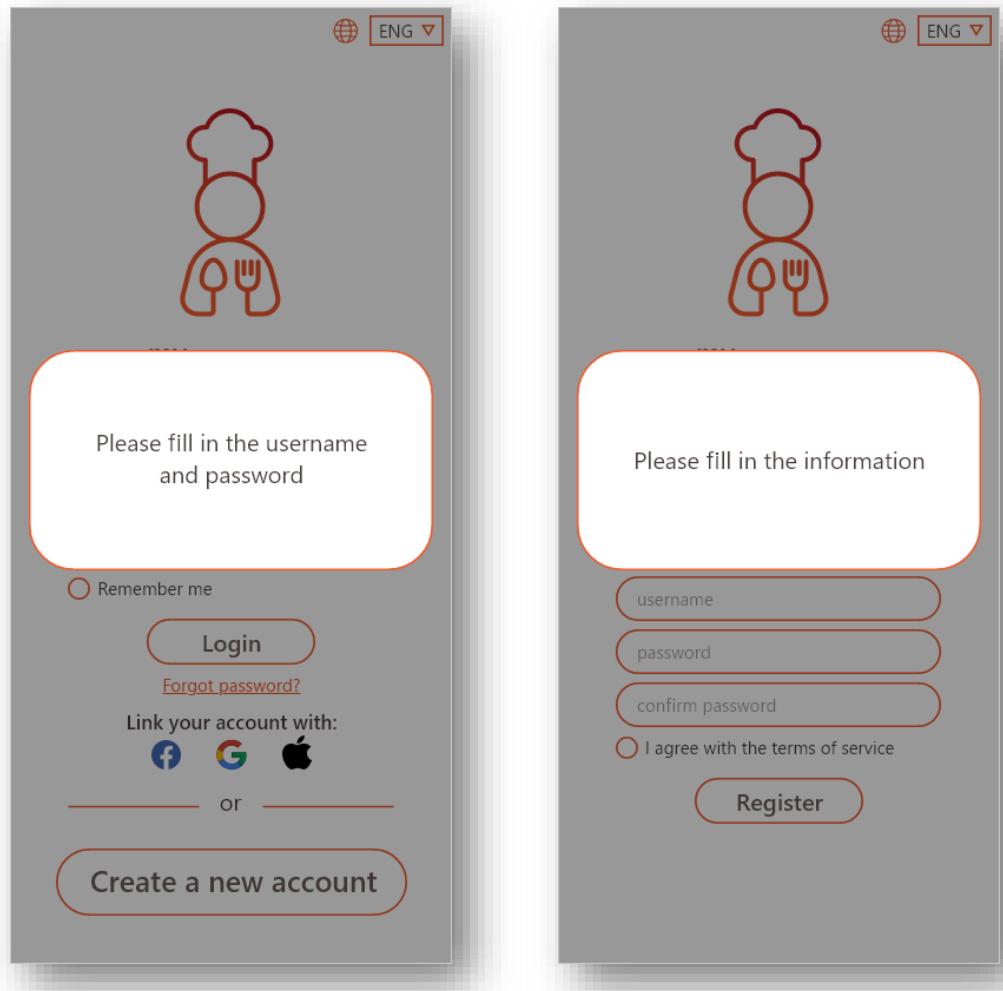
- A simple logo has been designed for this app.
- The “History” feature in “Your account” function has been deleted.
- “Saved” feature is now named as “Favorite” and the “saved” icon is replaced by the “heart” icon. This feature has also been removed from the “Your account” section and moved to the navbar.
- The most considerable change in this stage was removing the home screen. At first glance, the home screen seems to be handy for users to access main features of the application. However, it is quite inconvenient that users must go back to the home screen in order to switch to other features. This problem can be solved by implementing a navbar at the bottom which contains five main features of the application. With this navbar, users can easily switch between “Storage”, “Recipes”, “Favorite”, “Shopping List”, and “Account”.
- Many unnecessary grids have been removed.
- “Your recipes” feature has been moved from “Account” section to “Recipes” section based on feedback from users. Many interviewees thought that placing it in the “Account” section is unreasonable.
- Some buttons have been converted from text to icon. Icons can help to reduce the complexity of the application.
- The content in the filter screen has been rearranged to improve the proximity and similarity.
- A new option in the filter screen in “New recipes” section. This let users chose whether they want to apply their preferences in searching or not.
- Added screens that let users log in or create a new account. With each user having an account, it will be easier to store data and personalize their experience.
- Added pop-up screens that prevent users from causing errors.



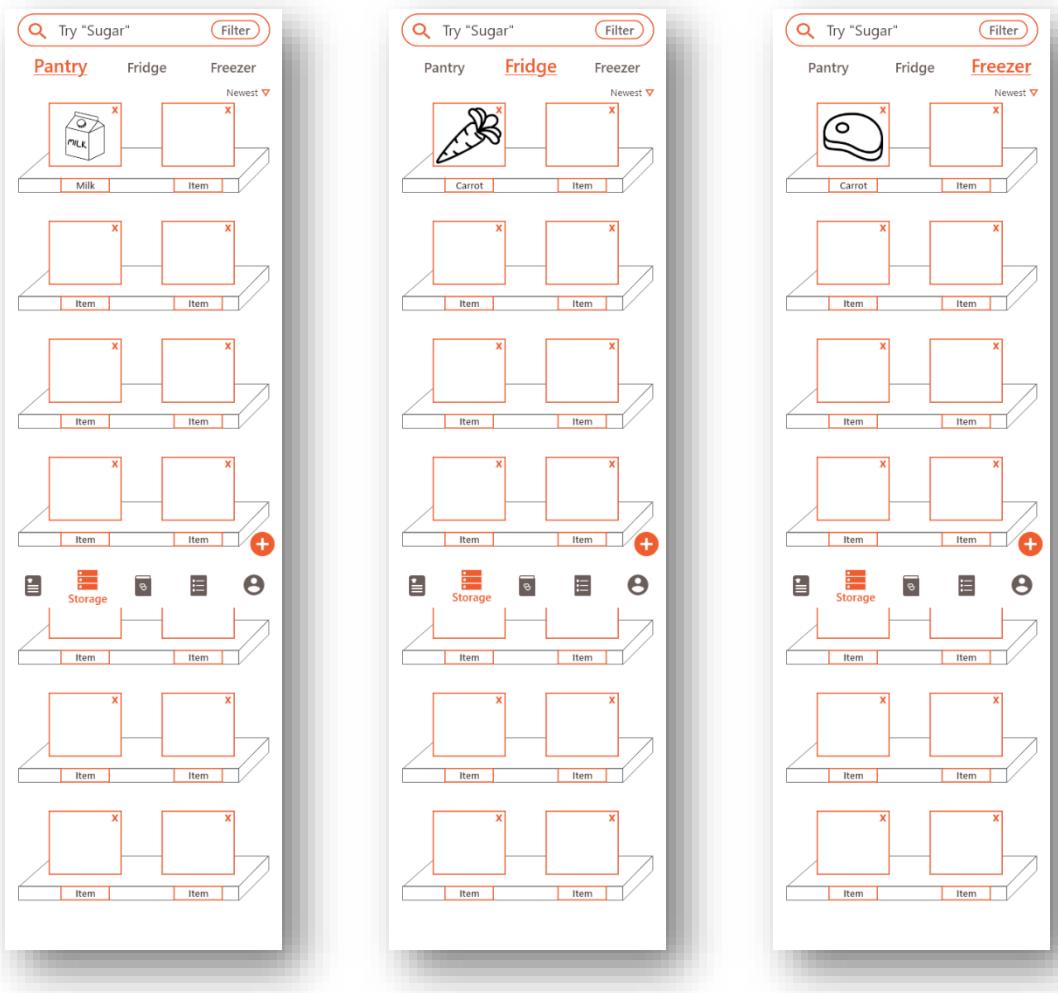
The home screen has been replaced by an initial loading screen with the logo and the name of this application. This logo is a picture of a chef holding his cooking wares. When people look at this logo, they will know that this is a cooking application or at least guess that this application related to the field of cooking. And of course, the color of this logo is a gradient color (#A5001E and #F05C2E).



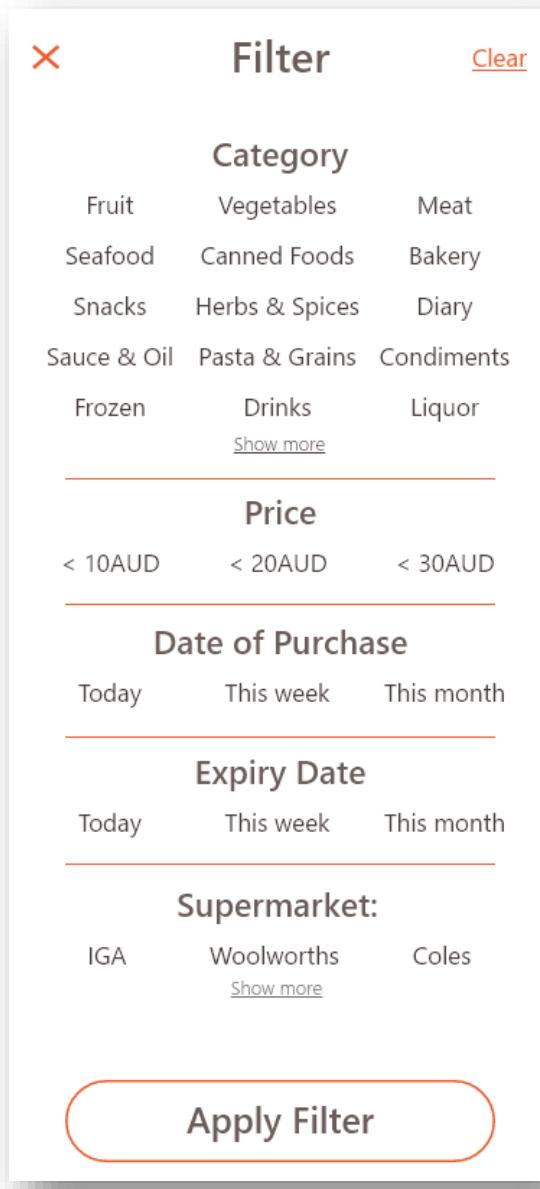
The first screen is the sign-in screen and the second screen is the sign-up screen. Each input field has its own placeholder to describe that field. There is an option that lets the application remember the account of the users so they do not have to sign in every time they open the application. Users can also link their account with popular social media such as Facebook and Google. At the top, there is a drop-down menu that allows users to set the language of the application (follows International in Design Guidelines).



When users try to log in without filling the username and password there will be a notification. The same thing happens when they try to register without filling enough information (follow Errors Prevention in Design Guidelines).



The navbar that allows users switch between three main storages has been moved to the top to make way for another navbar that contains key features of this application. The button that lets users delete an item is now a “plus” icon so it no longer takes up space on the screen. The grid, the tag, and the delete button of each icon have been emphasized to draw users’ attention.



This is the filter screen in the “Storage” feature. Users can filter by the category of the items (namely meat, vegetable, seafood, etc.), the price, the date and the supermarket that they bought that item (follows Easy for users to find the exact item/recipe in System Requirements). This screen has been redesigned to improve the proximity and similarity of the content.

Name: 15/50

Date Of Purchase:

Expiry Date:

Price:

Type Of Storage:

Nutrition information:

Interdum et malesuada fames ac ante ipsum primis in faucibus. Sed nec turpis maximus, buati sapien non, tincidunt justo scelerisque urna. Pulvin sapien et ligula ullamcorper malesuada ayreit.

Description:

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam quam velit, porta nec mi in, tincidunt dictum dolor. Nam massa mi.

Add Item

Name: 15/50

Date Of Purchase:

Do you sure that you want to add this item?

YES
NO

Nutrition information:

Interdum et malesuada fames ac ante ipsum primis in faucibus. Sed nec turpis maximus, buati sapien non, tincidunt justo scelerisque urna. Pulvin sapien et ligula ullamcorper malesuada ayreit.

Description:

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam quam velit, porta nec mi in, tincidunt dictum dolor. Nam massa mi.

Add Item

Item Added

Name: 15/50

Date Of Purchase:

Nutrition information:

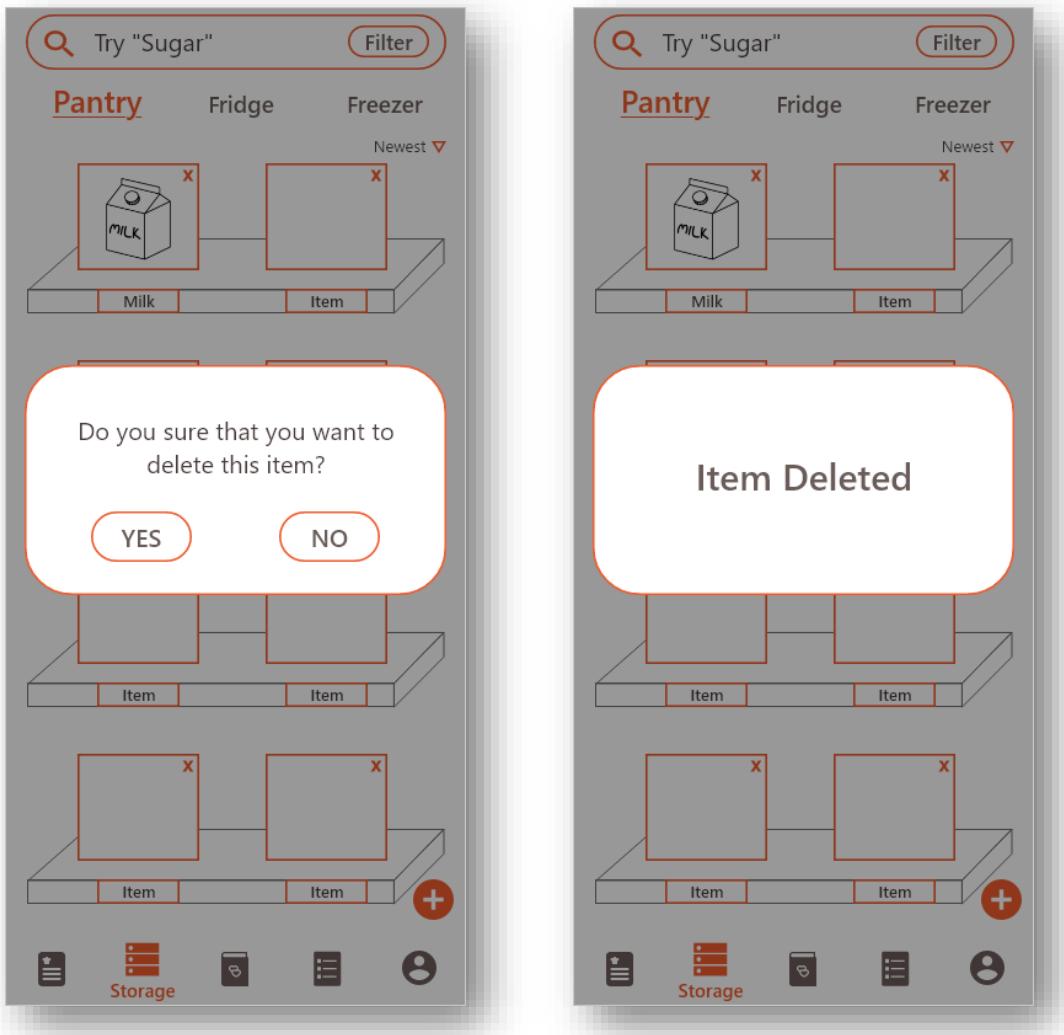
Interdum et malesuada fames ac ante ipsum primis in faucibus. Sed nec turpis maximus, buati sapien non, tincidunt justo scelerisque urna. Pulvin sapien et ligula ullamcorper malesuada ayreit.

Description:

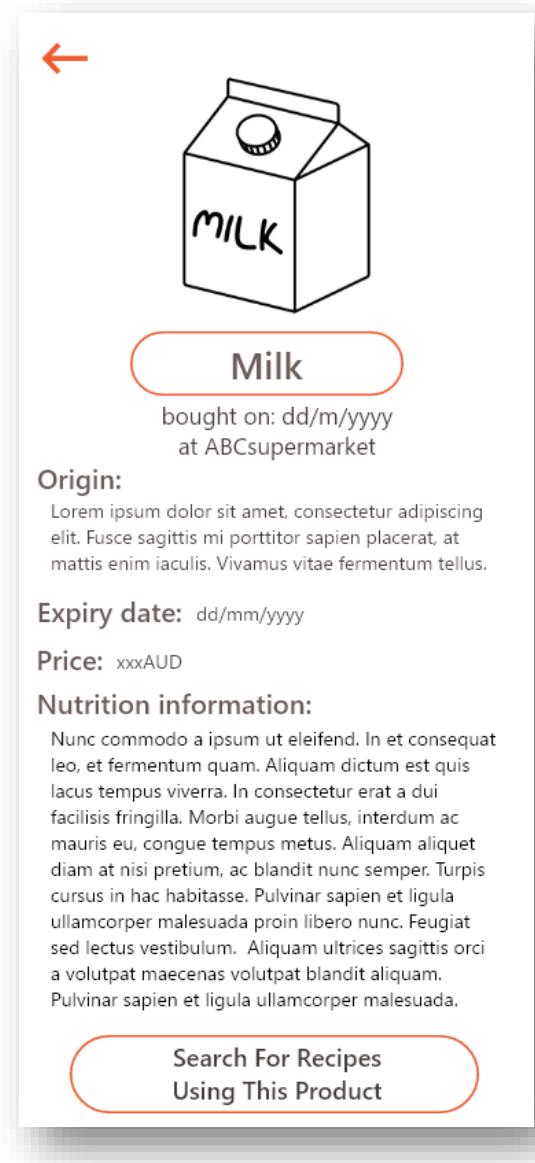
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam quam velit, porta nec mi in, tincidunt dictum dolor. Nam massa mi.

Add Item

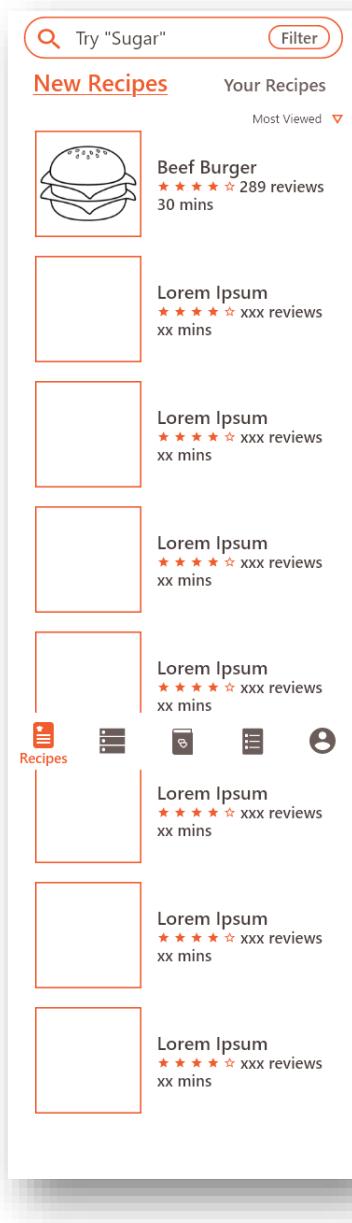
These are the three screens when users add an item by hand (follows Add/delete items in System Requirements). The first screen is for users to fill the information about the item that they want to add to the database. Two important fields are “Name” and “Description”, which need word limit (follows Succinct description in System Requirements). If these two fields contain tons of words, it will confuse users when they are searching for products. The second screen asks for users’ confirmation and the third screen returns feedback to notice that the item has been added successfully (follows Feedback in Design Guidelines).



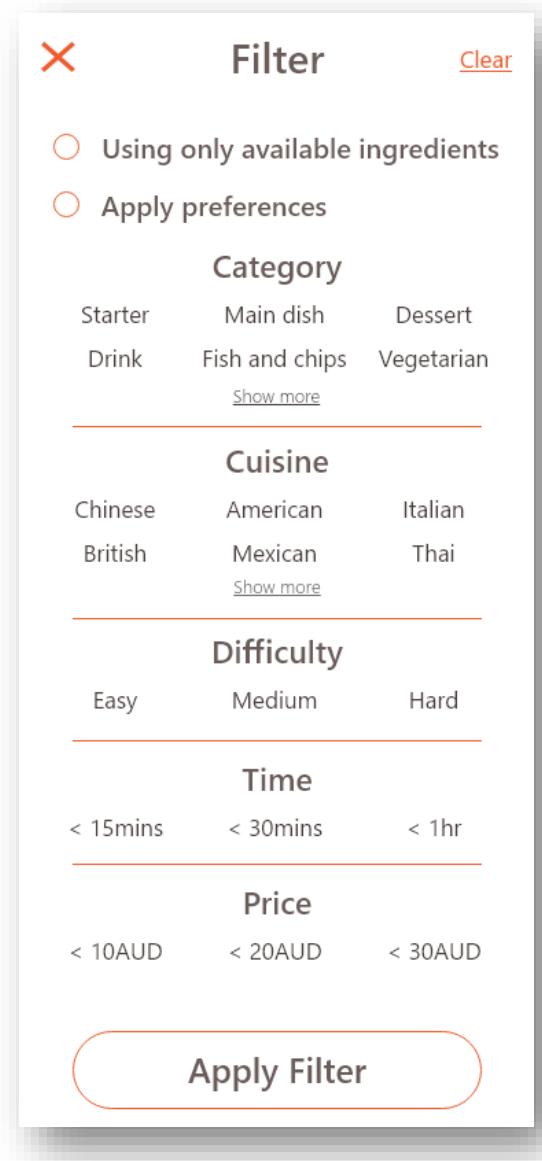
The first screen pops up when the system asks for confirmation when users want to delete an item and the second screen returns the message to show that the item has been successfully deleted (follows Feedback and Add/delete items in Design Guidelines).



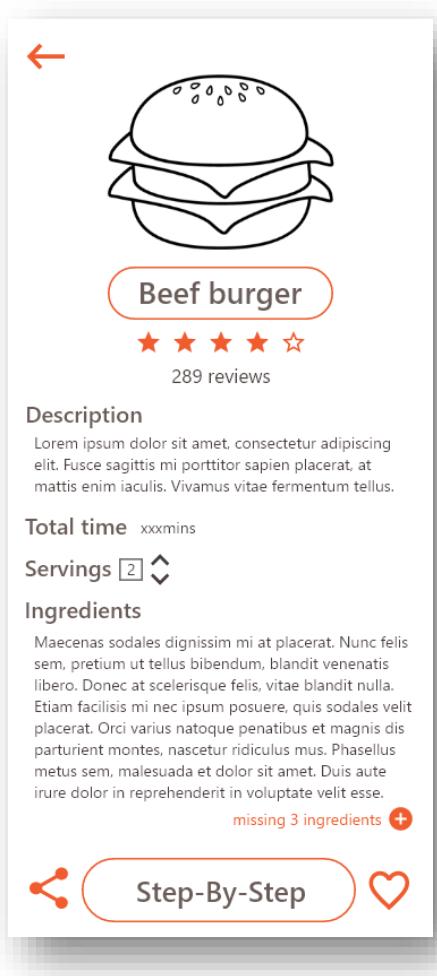
This screen shows detailed information about a specific product. It displays significant information such as expiry date, where they bought it, nutrition info, price, etc. At the bottom is a button that let users search for recipes using this product. This feature is very handy because they just need to find the product and then click the button and the system will immediately suggest them several recipes relevant to that product (follows Find recipes based on available ingredients in System Requirements). Compared to the medium-fidelity prototype, grids around the text have been removed to reduce the complexity of the application.



This screen is the main screen to display new recipes for users. It contains a search bar with a filter button and a sorting button. The sorting button can be used to sort recipes by order like newest, top-rated or most viewed. Every recipe is inside a container which contain the picture, name and the rating of that recipe. In this last phase, this screen now contains two tabs and the top which lets users switch between “New recipes” and “Your recipes”. Many users want these two features in the same screen because they are closely related.



The filter screen where users want to filter recipes by category and cuisine (follows Easy for users to find the exact item/recipe in System Requirements). There are also many useful options. For example, users can choose to find recipes that suit their cooking skills or choose the time that they want to spend to cook a dish. There is an option at the top which request the system to find recipes that only use available ingredients (follows Find recipes based on available ingredients in System Requirements). In the last phase, a new option has been added to let users chose whether they want to use their preferences for searching or not.



This screen displays detailed information of a recipe. There are pictures of that recipe, the rating, the reviews from other users (follows [Users can rate and review recipes](#) in [System Requirements](#)), description, total time to cook that recipe, and most important the required ingredients. At the bottom of the screen, the icon on the left is used when users want to share this recipe with others. Whereas the icon on the right is to save the recipe so that they can access it easily later. The “Step-By-Step” button brings users to the mode where they will be guided to cook that recipe. In the high-fidelity prototype, grids around text have been removed to make the content as minimalist as possible. Users now can increase or decrease the servings of the recipes and of course, the ingredients will automatically vary depends on the amount of servings (follows

[Increase/Decrease servings](#) in [System Requirements](#)). Below the ingredients list, there is a notification that displays the missing ingredients and next to that is a button to add those ingredients to the shopping list (follows [Shopping list](#) in [System Requirements](#)).

1 of 6
→


Gordon

Place the beef mince, breadcrumbs, egg, parsley, onion, garlic, Worcestershire sauce and Tabasco sauce in large bowl. Season with salt and pepper. Mix with your hands until evenly combined

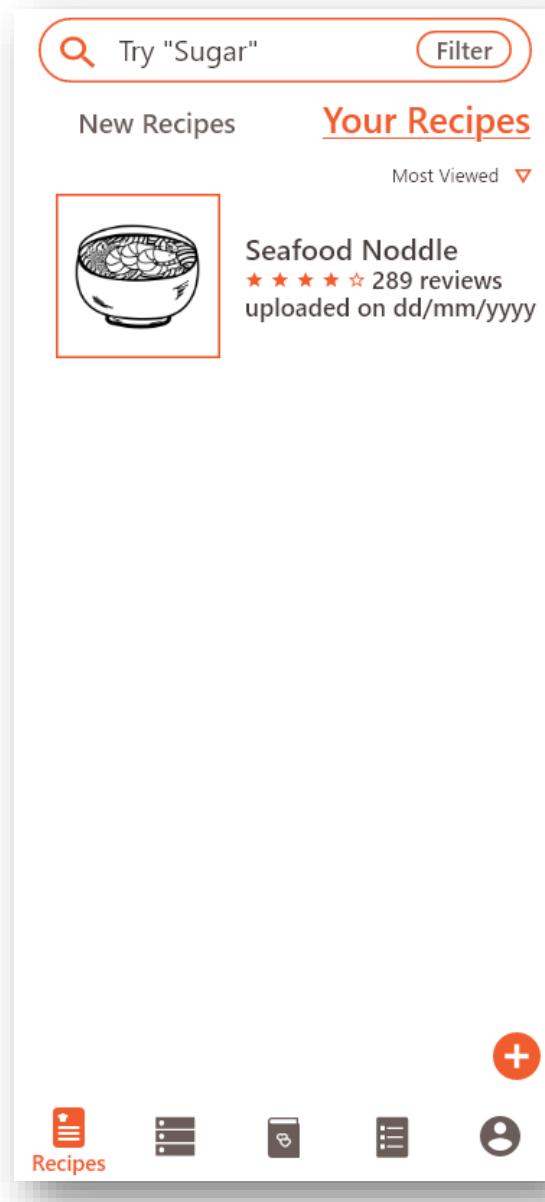
Season with salt and pepper and mix with your hands until it evenly combined

←
Ingredients

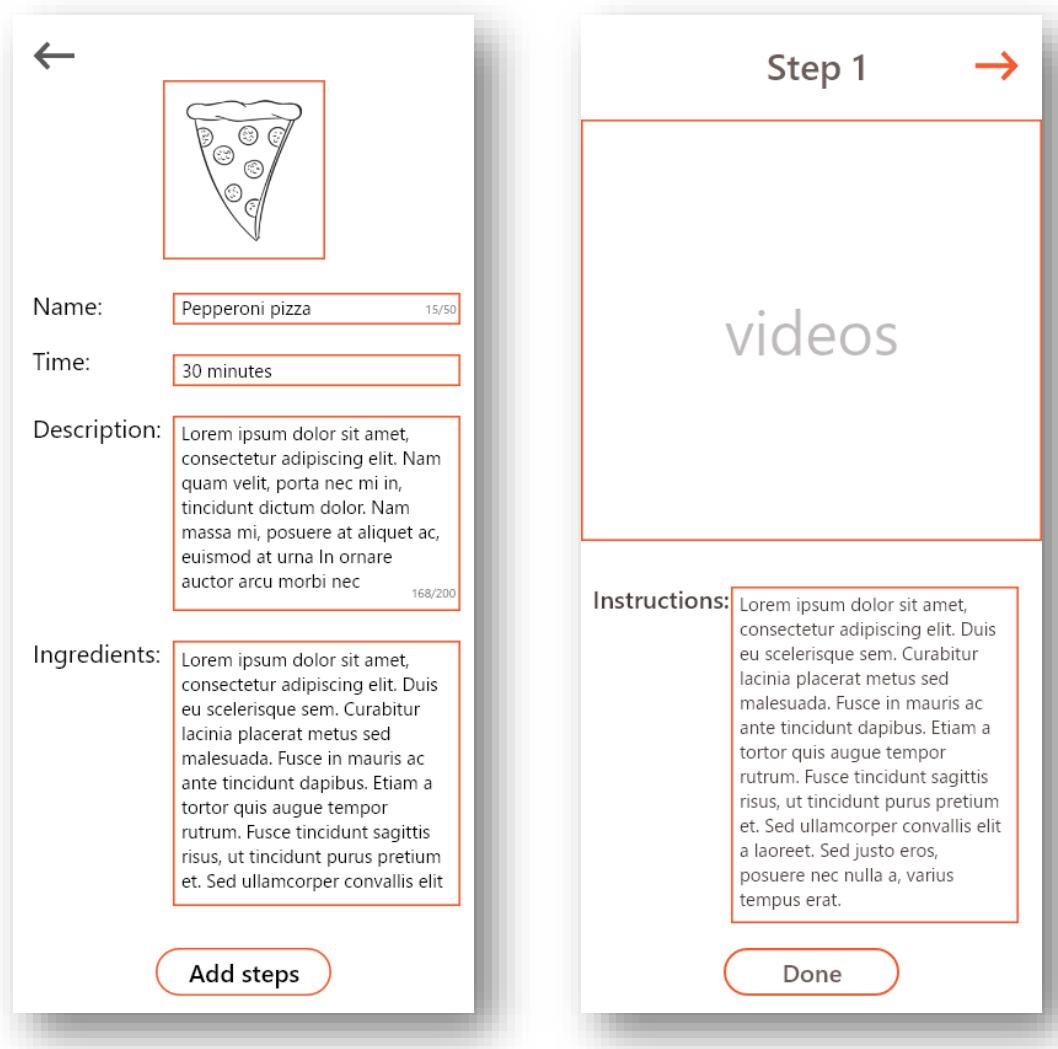
Ingredients

Beef mince	750g
Breadcrumbs	70g
Brown onion	1
Egg	1
Chopped continental parsley	1/4 cup
Crushed garlic cloves	2
Worcestershire sauce	1 tbsp
Tabasco sauce	2 tsps
Salt & ground black pepper	
Olive oil	2 tbsps
Cheddar cheese, thinly slice, to serve	150g
Hamburger buns, halved	6
American mustard	1/3 cup
Lettuce leaves, to serve	6
Medium ripe tomatoes, sliced, to serve	450g
Tomato sauce, to serve	

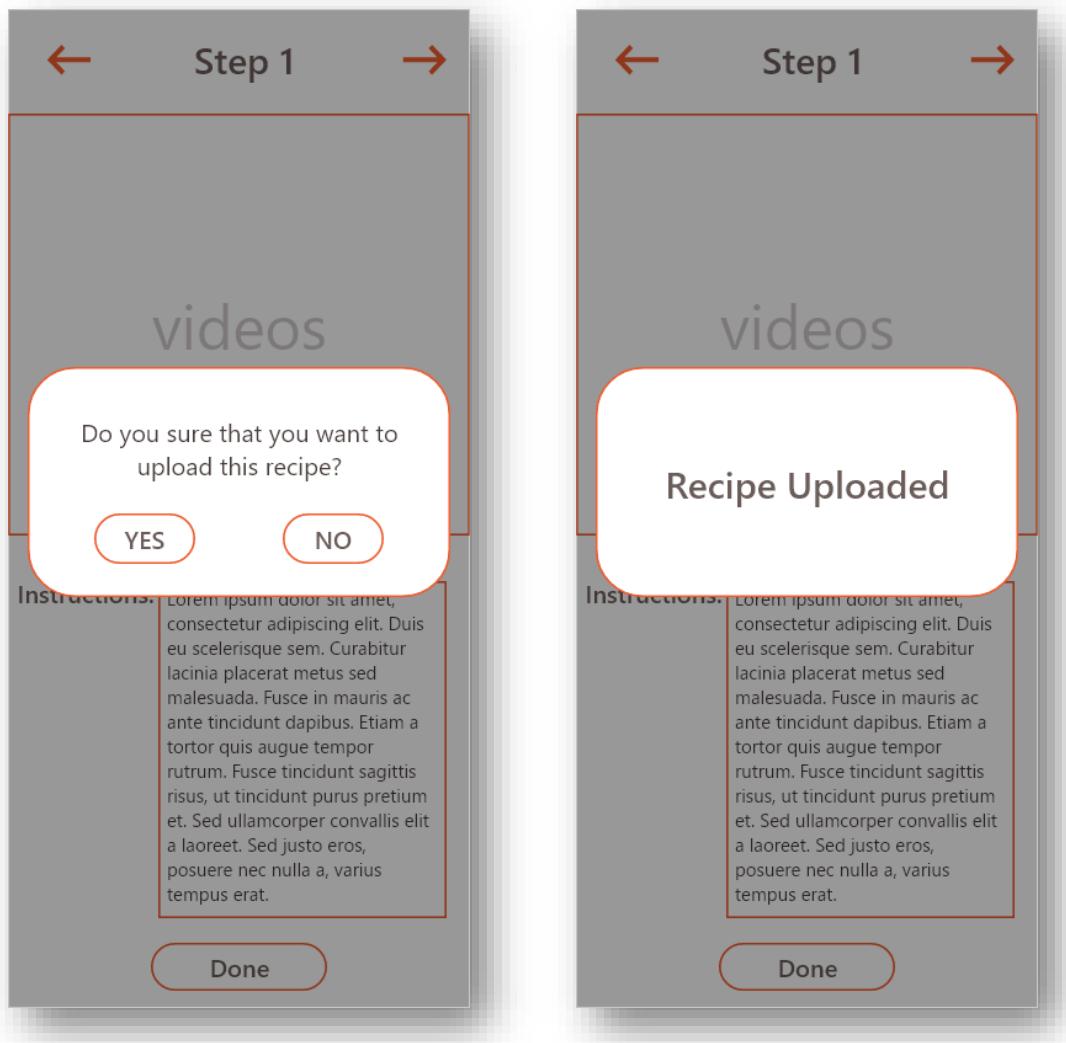
The first screen demonstrates each step of the tutorial. There is a picture or video about that step in the middle of the screen and text (follows *Clear guidance* in *System Requirements*), which describes the step, below it. A small icon of a head chef is to let users know that there is a virtual assistant who always ready to help. An icon on the left at the bottom is to quit the “Step-By-Step” mode (*Key Interface Metaphors*). Users can easily look at the list of ingredients list (the second screen) anytime during the cooking process by clicking the button at the bottom.



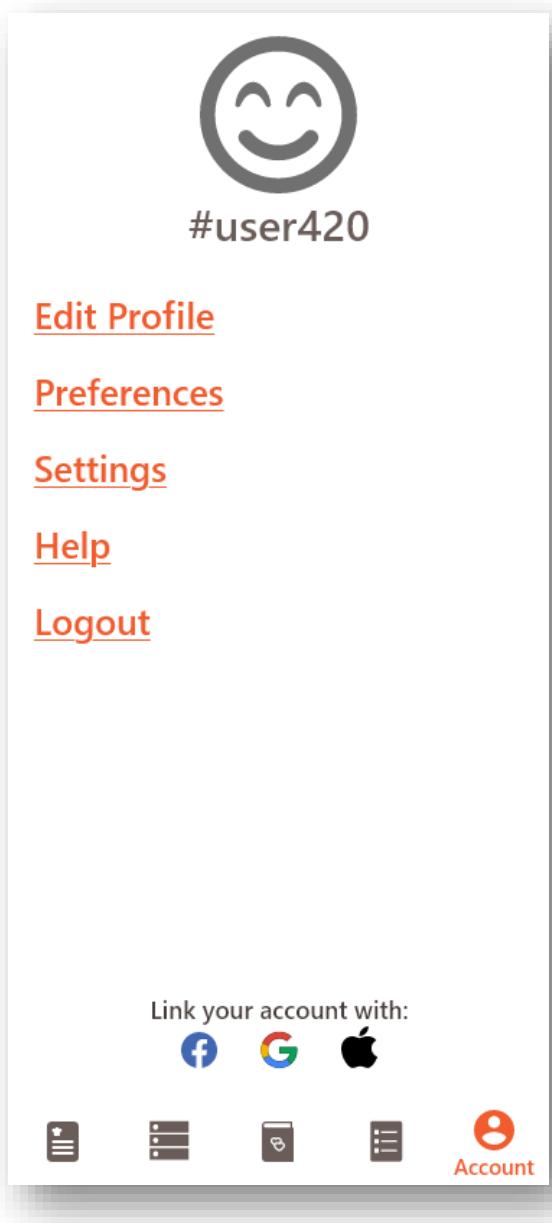
This is where users can manage all of the recipes that they uploaded. At the bottom there is a button to add more recipes (follows Share recipes in System Requirements). This feature used to be in the “Your account” section but it has been moved to “Recipes”.



The screen on the right is for users to fill in the information about the recipe that they are going to upload. They will need to upload main picture of that recipe, the name, time to cook it, description and list of ingredients. Like I have mention above, two important fields “Description” and “Name” need word limit in order not to confuse other users text (follows [Succinct description in System Requirements](#)). The screen on the left is when users add steps for the step-by-step mode. There must be video about that step and detailed instructions (follows [Clear Guidance in System Requirements](#)).



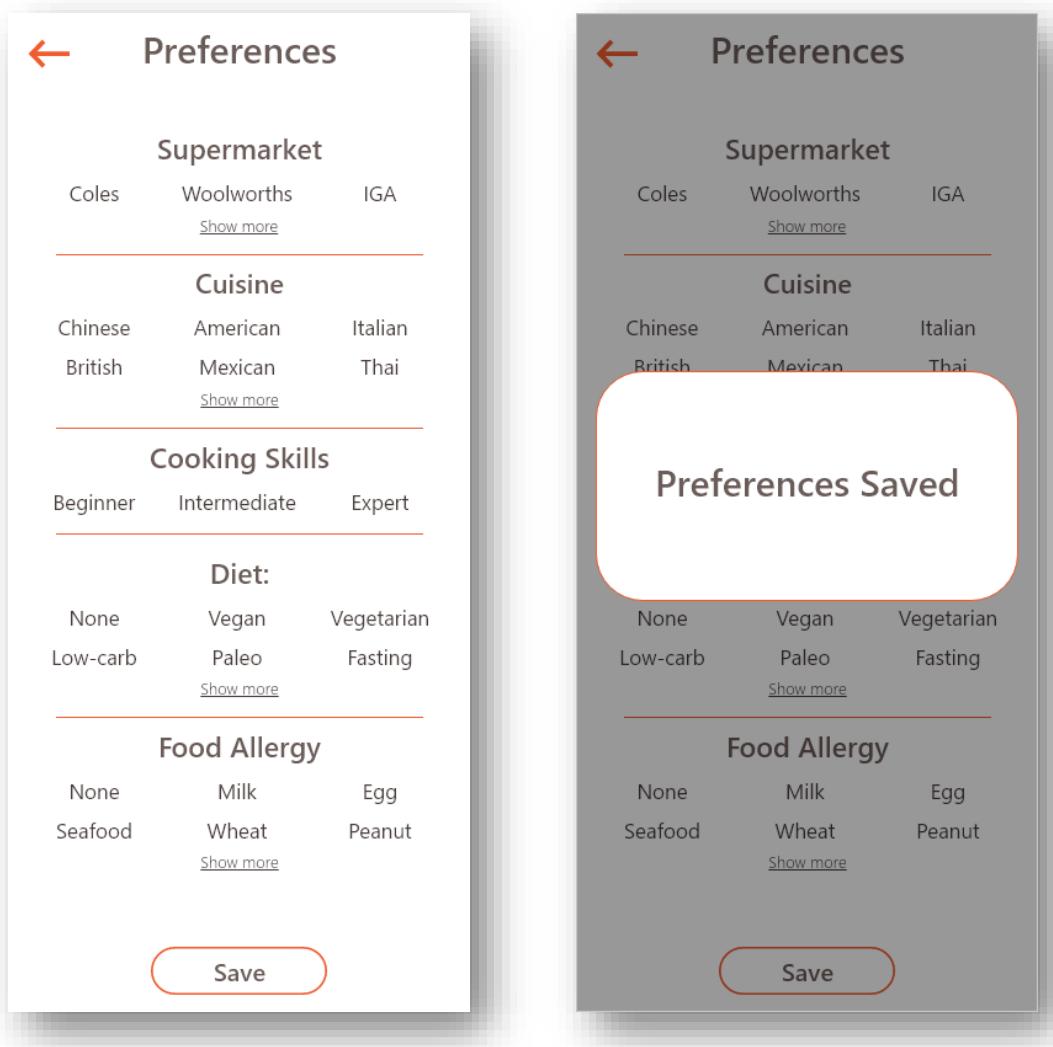
The first screen asks if users surely want to add this recipe and the second screen return the message to confirm that the recipe has been add successfully (follows Feedback in Design Guidelines).



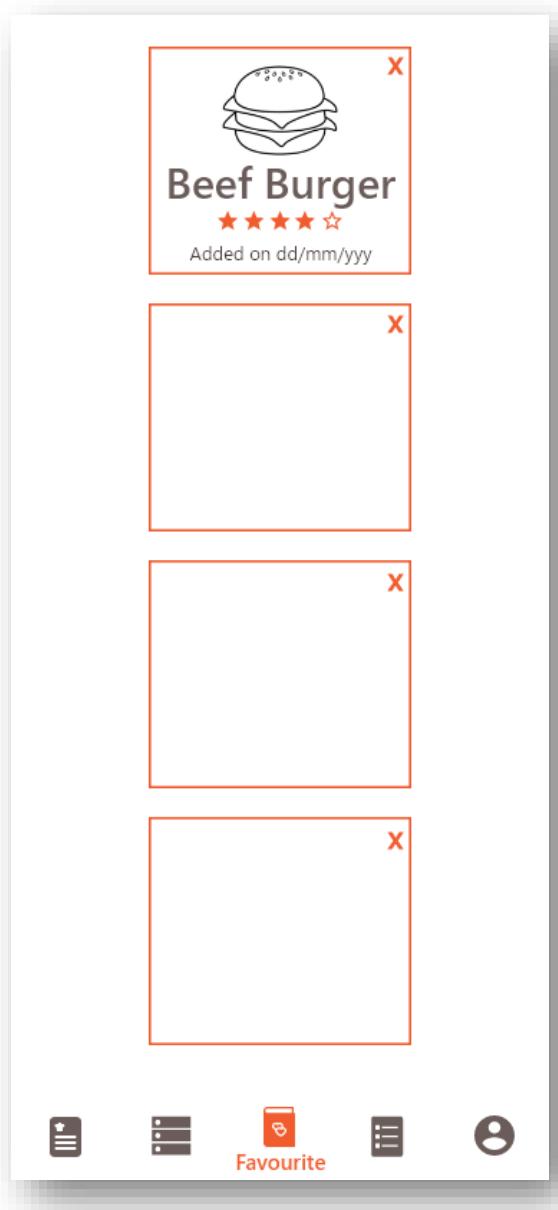
This is where users can manage their account. The profile picture and nickname of the user will be displayed at the top of the screen and below them there are total 5 tabs:

- “Edit Profile”
- “Preferences”
- “Settings”
- “Help & Support”
- “Sign Out”

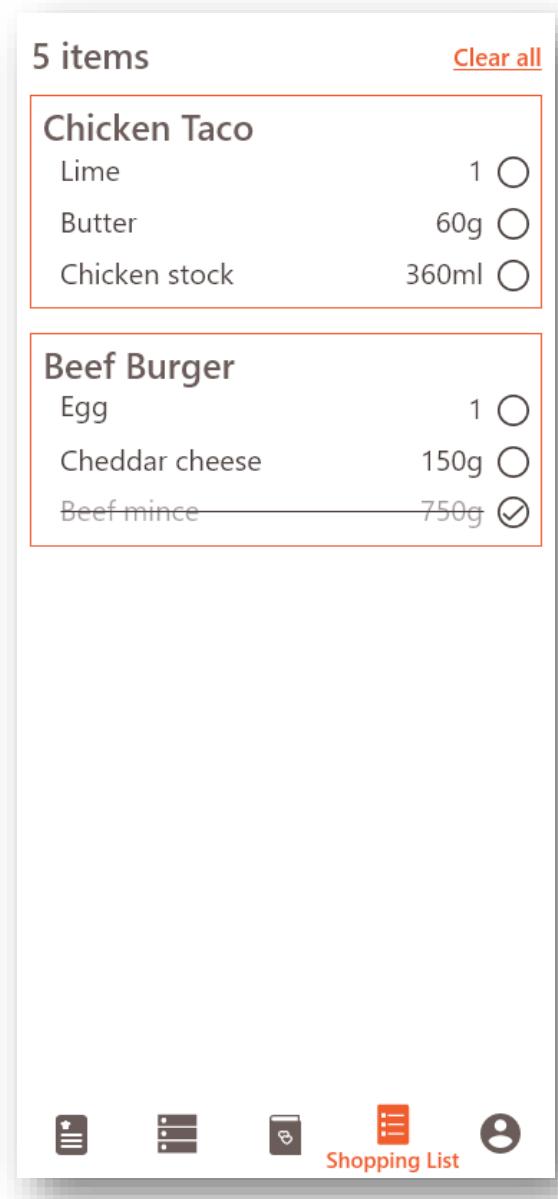
At the bottom is where users can link the account with other well-known account services such as Facebook, Google and Apple.



This is the “Preferences” section where users can set those options the way they want to optimize their experience. They can choose the supermarkets that they usually go to, their favorite cuisines, their cooking skills level, their diet or food allergies (if they have one). The second screen is to feedback that all the preferences have been saved when they click the button (follows *Feedback* in *Design Guidelines*). The content has been rearranged to look more pleasing.



This screen is where users can access to the list of recipes that have already been saved (follows Cookbook in System Requirements).



This list stores the ingredients that users have to buy (follow [Shopping List](#) in [System Requirements](#)). Ingredients will be arranged according to each recipe. Users tick an ingredient and it will be crossed out of the list. The “clear all” button is to delete every existing item in the list.

The image consists of two side-by-side screenshots of a mobile application interface. Both screenshots show a dark grey background with a large, semi-transparent white rectangular overlay centered on the screen.

Left Screenshot: The title "Step 1" is at the top center. At the top right is a red square button with a white plus sign. Below it is a red rectangular input field labeled "Name:" with "0/50" characters remaining. Below that is another red rectangular input field labeled "Date Of Purchase:". A large, rounded rectangular callout bubble is positioned below these fields, containing the text "Please fill in the information". At the bottom left is a red rectangular input field labeled "Nutrition Information.". At the bottom right is a red rectangular input field labeled "Description:" with "0/200" characters remaining. At the very bottom is a red rounded rectangular button labeled "Add Item".

Right Screenshot: The title "Step 2" is at the top center. At the top right is a red square button with a white plus sign. Below it is a large, rounded rectangular callout bubble containing the text "Please fill in the information". At the bottom right is a red rounded rectangular button labeled "Done".

Whenever users upload a new recipe or add a product but they do not fill in the information, the system will prevent it from happening. There will be a pop-up screen to remind the users to fill in the information (follow [Errors Prevention in Design Guidelines](#)).

Credits

- “Recipe” icon by Saepul Nahwan from the Noun Project
- “Favorite list” icon by kurakuricon from the Noun Project.
- “Storage” icon Anhar Ismail from the Noun Project.
- “Shopping list” icon by Kieu Thi Kim Cuong from the Noun Project.

High Fidelity Prototype Evaluation

Evaluation Methods

The method that I chose for this evaluation is Heuristic Evaluation. It cannot be denied that Heuristic Evaluation is one of the most popular methods for evaluating the usability in the field of human-computer interaction. The set of heuristics that is used for this evaluation is released by Jakob Nielsen in 1994. The heuristics are [18]:

1. *Visibility of system status*: The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.
2. *Match between system and the real world*: The system should speak the user's language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.
3. *User control and freedom*: Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.
4. *Consistency and standards*: Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.
5. *Error prevention*: Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.
6. *Recognition rather than recall*: Minimize the user's memory load by making objects, actions, and options visible. The user should not have

to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7. *Flexibility and efficiency of use*: Accelerators—unseen by the novice user—may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
8. *Aesthetic and minimalist design*: Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.
9. *Help users recognize, diagnose, and recover from errors*: Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.
10. *Help and documentation*: Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

The reasons why I chose this evaluation and set of heuristic from Nielsen are:

- Feedbacks from expert users help me with perfecting the application more meticulously.
- It does not require large number of participants. During the lockdown period, it is extremely hard to find a lot of expert users that can participate in the testing session.
- The set of heuristic from Nielsen is reliable and it is the most-used usability heuristics among others.
- In the *Design Guidelines* of *Conceptual Design*, there are some guidelines that follow Nielsen's design principles. Therefore, using heuristics from Nielsen for testing is ideal.

The participants are given approximately 45 minutes to discover the application. During the process they will have to note down any problem of

the system that they found. After 45 minutes, we sit together and discuss each problem. Each issue will be analyzed to see how it affects the user and what heuristic that it violates.

Analysis of Data

1. Problem #1

Screen / Element description:



Usability issue: The “Go back” icon is at the bottom of the screen.

Heuristic category: Consistency and Standards.

Probable effect on user: The “Go back” button on other screens are at the top. Therefore, designing the “Go back” button on this screen at the bottom may make confuse users.

Severity of problem: Cosmetic problem.

Suggestion to fix: Move the “Go back” button to the top left of the screen. The 2 buttons to navigate to other steps and the text that displays the current step are moved to the bottom of the screen.

2. Problem #2

Screen / Element description:



Usability issue: The system does not display the total number of steps while adding a new recipe.

Heuristic category: Visibility of System Status.

Probable effect on user: If the system displays the number of steps it will be easier for users when they are adding a recipe that contains plenty of steps. They will be able to know which step they are at and how many steps they have already added.

Severity of problem: Cosmetic problem.

Suggestion to fix: For instance, it should display “Step 3 of 3” instead of “Step 3”.

3. Problem #3

Screen / Element description: The user clicks the “Go back” button while he/she has not finished completing the information of the product/recipe that he/she wants to add to the storage.

Usability issue: The system does not warn whether the user wants to discard all the unfinished works.

Heuristic category: Help Users Recognize, Diagnose, and Recover from Errors.

Probable effect on user: If the user is adding a new recipe or product and they accidentally press the “Go back” button the system will delete his/her unfinished works and he/she will have to begin all over

again.

Severity of problem: Minor problem.

Suggestion to fix: Add the pop-up screens that ask users if they really want to exit the process. If they want to exit, that unfinished works will be saved as a draft so that they can easily continue later.

4. Problem #4

Screen / Element description:



Usability issue: The “Delete” button for each recipe in the “Favorite” feature is redundant.

Heuristic category: Consistency and Standards.

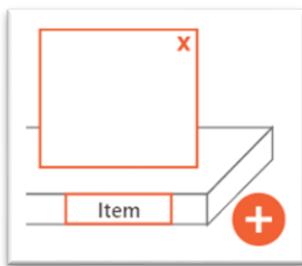
Probable effect on user: If you users want to remove a recipe from their favorite list, they can go to the screen of that recipe and uncheck the “Heart” icon. Therefore, “Delete” button is unnecessary.

Severity of problem: Cosmetic problem.

Suggestion to fix: Remove the “Delete” button.

5. Problem #5

Screen / Element description:



Usability issue: The “Add” icon in “Storage” section is closely packed with other items.

Heuristic category: Consistency and Standards

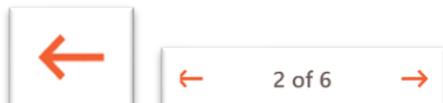
Probable effect on user: Users may have some trouble finding this button because it is too close to other components on the screen.

Severity of problem: Cosmetic problem.

Suggestion to fix: Make the “Add” more visible and move it far away from other components on the screen.

6. Problem #6

Screen / Element description:



Usability issue: Same icon but different meanings. One is to go back to the previous screen, and one is to move to the previous step in the “Step-By-Step” mode.

Heuristic category: Consistency and Standards.

Probable effect on user: The user will question their functionality and may misunderstand it.

Severity of problem: Minor problem.

Suggestion to fix: Use another icon for “Go back” button.

7. Problem #7

Screen / Element description:



Usability issue: While users are adding step for a recipe, there is no button that allows users to quit the process.

Heuristic category: User Control and Freedom.

Probable effect on user: Users cannot emergency exit while they are

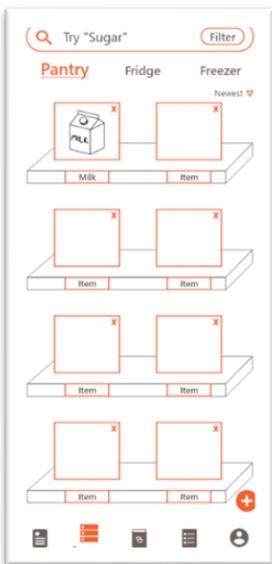
adding steps for recipe.

Severity of problem: Major problem.

Suggestion to fix: Add a button that let users to cancel the process and go back to the main screen.

8. Problem #8

Screen / Element description:



Usability issue: Users cannot arrange products in their storage manually.

Heuristic category: Match Between System and The Real World.

Probable effect on user: They want to be able to move products or drag/drop products like arranging food pantry in reality.

Severity of problem: Major problem.

Suggestion to fix: Add a new requirement in System Requirements to let users drag/drop product in their storage.

9. Problem #9

Screen / Element description:



Usability issue: The pop-up screen does not let the users know where the missing ingredients are added.

Heuristic category: Visibility of System Status.

Probable effect on user: The users do not know where is the destination of the addition.

Severity of problem: Minor problem.

Suggestion to fix: Change the text to “Ingredients Added to Shopping List”.

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Appendix

Low Fidelity Prototype Evaluation

Evaluation Protocols

EvaluationID	User Test 001
Aims	<ol style="list-style-type: none">1. Identify user's expectations of features of the application.2. Identify user's difficulties when trying out the low fidelity of the application.3. Identify user's intentions and wishes.
Dates	04/05/2020
Creator	Minh Quan Nguyen
Prototype	https://xd.adobe.com/view/78c93527-829b-4ea7-7bc4-302dae10f7b5-0ef8/

Preparation before the participant arrives

Required materials:

1. Consent forms.
2. Observation sheets.
3. TAM survey worksheets.
4. Mobile device to record the interview.
5. A laptop with internet connection for the user to finish the survey
6. Follow-up questions after the survey

Introduction

Hi, thank you for taking little time to join me. Today I want to get your feedback from using the low fidelity of the application. Now I will describe briefly about the application so that you can better understand it. I named this application **myCookingPal** and I came up with ideas for it after the contextual inquiry in which I interviewed people about their cooking habits. This application is designed to help people with finding favorite recipes only using ingredients that are available in the fridge/pantry. It cooperates with supermarket chains to get the information about the products that users have

bought and then suggest to them thousands of recipes. It also helps users to manage all the items in the fridge/pantry easier.

You will be asked to complete 2 simple tasks using this application, do the surveys and after that there might be some questions. All of the tasks above is to find out if you have any difficulties during trying out the low fidelity of the application and how you rate it functionality.

There is a consent form that I need you to sign it before starting the session. This consent form is to state the purposes of this survey and how your data will be used for an academic project. You can stop the session anytime you want if you feel uncomfortable.

Consent

Because this is an academic activity, I need your consent. Please read the consent form carefully and sign it. Thanks for providing your consent.

Task 1: Perform 2 tasks with this system

First, I need you to complete 2 tasks in this application. During the process, I will not disturb you so please try your best to complete the tasks. While you are using the application, I will observe how you interact with it. Subsequently, I will ask you about some errors you might facing during the interaction with the system. Here are the 2 tasks:

Find a carton of long-life milk in the pantry.

Find a recipe named “Beef Burger”.

Task 2: Complete the TAM survey

The TAM (which stands for Technology Acceptance Model) is an information systems theory that models how users come to accept and use a new technology. Please complete it.

Now I will ask you several questions based on your answers in the TAM survey.

Task 3: Post-interaction interview

Finally, I will ask you some ideas for developing this application:

- Are there any features that you want to add to the application?
- Do you think this application needs any modification in terms of interface or functionality?
- Which features do you think that are required in the “Your account” section?
- What information do you think a recipe needs to contain?
- What information do you think a recipe needs to contain?

Closing

Thanks for participating in this session. Your data is very valuable and it will certainly help me a lot in the process of perfecting this application. You can contact me anytime if you want to withdraw your data and your consent.

Consent Forms



(Updated version 17 February 2020)

School of Information Technology and Electrical Engineering

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Internet www.itee.uq.edu.au

Informed consent form

User interface testing for DECO2500/7250 class exercise

This user testing exercise is for educational purposes only, and is being conducted as a course requirement for DECO2500/7250, a course about human-computer interaction.

You will be asked to interact with a paper prototype, computer program or system, and/or to answer questions about your interaction. We are testing the design; we are not testing you in any way. The test will require no more than an hour of your time, and potentially less.

Consent is voluntary – you do not have to participate if you don't want to. If you do participate, you may withdraw your consent at any point, and all your data up to that point will be destroyed and not used.

All data collected is confidential and will be kept in a secure location, and your data will be indexed by a participant ID rather than by name.

If AV recordings are taken, they will be seen only by the students doing this particular project and possibly also by their Studio tutors and the course coordinator (Dr Chelsea Dobbins).

All your data, including any recordings, will be erased/destroyed once class grades are released.

There is no reimbursement or payment for participation.

I have read the information above and give my consent to participate.

Participant Name: _____

Participant Email: _____

Signature: _____ Date: 30/04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30/04 / 2020

Researcher Signature:

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

Instructor in charge of DECO2500/7250: Dr Chelsea Dobbins, School of ITEE, UQ
[\(c.m.dobbins@uq.edu.au\)](mailto:c.m.dobbins@uq.edu.au)

Because this is an in-class educational exercise, performed by course students with UQ students, family or friends only, formal ethics approval has not been sought.

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I have read the information above and give my consent to participate.

Participant Name: Minh Nhat Nguyen

Participant Email: nhat.nguyen.cs17@gmail.com

Signature: Nhat Date: 30 / 04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30 / 04 / 2020

Researcher Signature: MQuan

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

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There is no reimbursement or payment for participation.

I have read the information above and give my consent to participate.

Participant Name: Khai Duy Nguyen

Participant Email: khaiduymath@gmail.com

Signature: [Signature] Date: 30 / 04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30 / 04 / 2020

Researcher Signature: [Signature]

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

Instructor in charge of DECO2500/7250: Dr Chelsea Dobbins, School of ITEE, UQ
(c.m.dobbins@uq.edu.au)

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Participant Name: Vu Diap Hung

Participant Email: hungvudiep@gmail.com

Signature: [Signature] Date: 30 / 04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30 / 04 / 2020

Researcher Signature: [Signature]

Researchers:

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Participant Name: Nguyen Thanh Hai Huynh

Participant Email: huynhhai323@gmail.com

Signature: H Date: 30/04/2020

Researcher Name: Minh Quan Nguyen Date: 30/04/2020

Researcher Signature: M.Q.N.

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

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Interview Notes

Interviewee 1

- Complete 2 tasks easily with no probs
- "The app is suitable for people who love cooking"
- "Housewives will use this app a lot"
- He ~~is~~ does not enjoy cooking
⇒ He won't use this app often
- The flow of the system is clean
- App should be more colorful
- The shelves in storage screen should be in 3-D format
- Label each items
- Saved list is good idea
- Sorting Function: useful to when we want to find the most popular recipe.

Interviewee 2

Have some probs while performing 2nd task

"Your app has high potential"

- He thought this app can only search for recipes using available ingredients.

=> misunderstanding.

- The button to search for recipes using available ingredients must be more visible because this is the main feature of the app.

- Saved list is useful.

- Preferences feature is useful to personalize user experience.

- Should allow user to contribute recipes

=> More recipes in the database.

- "Your account" button in the home screen should be bigger.

- Scoring function is useful.

Interviewee 3

- Complete 2 tasks easily
- Will use the app to manage ~~item~~ items in his storage because sometimes he forgets the expiry date of product
- Also use the app to find new recipes.
- Saved list is useful
- Preferences feature is good
- Letting users upload their recipes is a good idea
 - ⇒ Users can learn cooking skills & from others
 - Sorting function is useful
 - ⇒ Sort by lowest price, highest price
- Overall, the app is great
 - ⇒ Help people to cook more efficiently

Interviewee 4

- Complete 2 tasks easily
- Will use the app to check for expiry date of products. He often forgets the ~~z~~ expiry date => spoiled foods.
- Besides virtual assistant, videos are extremely important in the step-by-step mode
 - o tutorial videos are more realistic
- Notify users the ingredients that they missing to cook a dish
- Display the nutrition information of a recipe
- Description of a recipe should be concise
- Save list and Preferences feature are useful
- Ask for time that users want to cook spend to cook a meal in Preferences feature
- Sorting function is useful
- A social network to share recipes
 - o Increase the interaction between users.

Interviewee 5:

- Complete 2 tasks easily
- Will use the app to look for new recipes. He doesn't know how to combine those ingredient that he has bought into meal.
 - => keep repeating familiar recipes
- Filter out recipes by price
- Notify users which item are on discount???
 - => might be out of scope of this app
- Save list is useful
- Let users upload their recipe
- Reward / ranking system based on user contribution
- Sorting function is useful
- Users can manually add / delete items besides the automatic system.

Survey Responses

Dimension	Question	R1	R2	R3	R4	R5
PU1	I can accomplish searching for recipes based on available ingredients more quickly using myCookingPal	3	4	4	4	4
PU2	I can accomplish my searching for recipes based on available ingredients more easily using myCookingPal	2	4	4	4	4
PU3	myCookingPal enhances my effectiveness in utilizing the products' information get from supermarket chains	3	3	4	3	4
PU4	myCookingPal enhances my efficiency in utilizing the products' information get from supermarket chains	4	3	4	3	4
PU5	myCookingPal enables me to make better decisions in utilizing the products' information get from supermarket chains	3	3	4	3	4
PU6	Overall, I find myCookingPal useful	3	3	4	4	4
PEOU1	Learning to use myCookingPal is easy for me	3	3	4	4	4
PEOU2	It is easy to use myCookingPal to accomplish searching for recipes based on available ingredients	4	3	4	4	4
PEOU3	Overall, I believe myCookingPal is easy to use	3	3	4	4	4
ATT1	In my opinion, it is desirable to use myCookingPal	3	3	4	4	4
ATT2	I think it is good for me to use myCookingPal	2	3	4	4	3
ATT3	Overall, my attitude towards myCookingPal is favourable	2	3	4	4	3
ITO1	I will use myCookingPal on a regular basis in the future	2	2	4	4	3
ITO2	I will frequently use myCookingPal in the future	2	2	4	3	3
ITO3	I will strongly recommend others to use myCookingPal	3	3	4	4	3

1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree

TAM Responses

Medium Fidelity Prototype Evaluation Evaluation Protocols

EvaluationID	User Test 001
Aims	<ol style="list-style-type: none"> Identify user's expectations of features of the application. Identify user's difficulties when trying out the low fidelity of the application. Identify user's intentions and wishes.
Dates	22/05/2020
Creator	Minh Quan Nguyen
Prototype	https://xd.adobe.com/view/f833733e-a48a-42dd-73c3-0bd0450dfa84-8e02/

Preparation before the participant arrives

Required materials:

- Consent forms.
- Observation notes.
- SUS survey worksheets.
- Mobile device to record the interview.

5. A laptop with internet connection for the user to do the survey.
6. Follow-up questions after the survey.

Introduction

Hello, I appreciate you agreeing to participating in this testing session. Today you are here to help me to test the usability of the prototype of a mobile application that I am working on. This prototype is in the medium-fidelity phase that is why your comments will be very important so I can improve it at the next stage. Now let me give you a brief introduction so you have an overview of this application before we begin. This application is designed to help people with finding favorite recipes only using ingredients that are available in the fridge/pantry. It cooperates with supermarket chains to get the information of the products that users have bought and then suggest them thousands of recipes. It also helps users to manage all the items in the fridge/pantry easier.

You will be asked to perform a few tasks in this application, do the quick surveys and after that maybe I will ask you some extra questions. All of the tasks above is to find out if you have any difficulties during trying out the medium-fidelity prototype of the application and how you rate its functionality.

There is a consent form that I need you to sign it before starting the session. This consent contains information about how your data will be collected. Remember that you can request to stop the session anytime you want if you feel uncomfortable.

Consent

Because this is an academic activity, I need your consent. Please read the consent form carefully and sign it.
Thanks for providing your consent. Let's get started.

Task 1: Perform several tasks with this system

First, I need you to complete 7 tasks with this application. During the process, I will not disturb you so please try your best to complete the tasks. While you are using the application, I will record the problem and record the time to see how long it takes you to complete each task. Please read the tasks

thoroughly ask me if you do not understand one. Get started whenever you are ready.

Please finish each task below by go back to the home screen:

Find a carton of long-life milk in the storage and search for recipes using that product.

Filter out the recipes that used available ingredients, find a recipe named “Beef Burger”, save it, check it in the saved list, go through the step-by-step mode, look for the ingredients when you at the 3rd step, finish the remaining steps.

Find meat and carrots in the storage.

Manually add an item in the storage.

Manually delete a carton of long-life milk in the storage.

Save your preferences.

Upload a new recipe named “Pepperoni Pizza” which contains 6 steps.

Task 2: Complete the SUS questionnaire

Next, I will need you to complete the System usability scale test. SUS is a quite reliable tool for measuring the usability of my application. There are total ten questions in the questionnaire with five response options for you; from Strongly agree to Strongly disagree. Please do it.

Thanks for completing the questionnaire. Now I will take a look at your answers and ask additional questions based on those answers.

Task 3: Post-interaction interview

Now I will ask you several questions based on your answers in the TAM survey. Additional questions:

- Do you think there are any other features that this application should have?
- Are there any problems with the way the content is layout?
- Are all the features easy to understand for you?

Closing

Thanks for participating in this session. The data you provide me will be very important to me in upgrading this application. You can contact me anytime if you want to withdraw your data and your consent.

Consents forms



(Updated version 17 February 2020)

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Participant Name: _____

Participant Email: _____

Signature: _____ Date: 30/04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30/04 / 2020

Researcher Signature:

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

Instructor in charge of DECO2500/7250: Dr Chelsea Dobbins, School of ITEE, UQ
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Participant Name: Minh Nhat Nguyen

Participant Email: nhat.nguyen.cs17@gmail.com

Signature: M.N Date: 30 / 04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30 / 04 / 2020

Researcher Signature: MQN

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

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Participant Email: hungvudiep@gmail.com

Signature: [Signature] Date: 30/04/2020

Researcher Name: Minh Quan Nguyen Date: 30/04/2020

Researcher Signature: [Signature]

Researchers:

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Participant Email: huynhthai323@gmail.com

Signature: H Date: 30/04/2020

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Interview Notes

Interviewee 1

- the "save" icon is not familiar
- the "delete" button is not visible
 - => make it bigger
- "your" in the name of ~~for~~ features like "your account", "your storage" is not necessary.
- the work flow is quite clear
 - the system should display the missing ingredients when user is looking at 1 recipe
- => new system requirement
- => add "shopping list"
- The layout is good
- The "your recipes" feature should be placed elsewhere

Interviewee 2

- the "me" icon should be changed to "heart" icon
- should use "like" instead of "save"
- should use "favorite list" instead of "saved list"
- the "your recipes" feature should be placed outside the "your account" section
- the "add" button should be converted into the "plus" icon
- the interface in the "your storage" section is great
- the grid in "new recipes" section is not really good => could be better
- it is not convenient when user need to go back to the home screen if they want to go to another feature of the app

Interviewee 3

- The button to delete product in the storage is quite small
⇒ must be more visible
- Have some probs with finding where to upload new recipes. He thought it is in the "New Recipes" section
⇒ must consider moving "Your recipes" to another section.
- The app should use more icons
- Improve the appearance (color)
- A new feature that let user add missing ingredients to the shopping list is useful.
- Put main features in the home screen.

Interviewee 4

- Quite hard to find where to upload new recipes
 - ⇒ "Your recipes" feature must be in the same screen with "New recipes"
- The system must notify users products that are close to the expiry date
 - ⇒ New system requirement
- The ~~for~~ "Shopping list" feature is very useful
- The app should be more colorful.

Interviewee 5:

- Some main features are hidden in the "Your account" ~~for~~ section so the users cannot know that these features exist in the app
 - ⇒ Bring these main features to the home screen?
- The "History" feature is not necessary
- The "Your ~~for~~ account" section should only contain features like "Settings", "Edit Profile"
- A button to apply preferences in the filter screen
- Change the "save" icon to "heart" icon

Survey Responses

	Res1	Res2	Res3	Res4	Res5
I think that I would like to use this system frequently	4	3	3	4	4
I found the system unnecessary complex	1	3	3	3	3
I found the system was easy to use	4	3	4	3	3
I think that I would need support of a technical person to be able to use this system	1	1	1	1	1
I found the various functions in this system were well integrated	5	3	3	3	4
I thought there was too much inconsistency in this system	2	3	2	2	3
I would imagine most people would learn to use this system very quickly	3	2	4	3	3
I found the system very cumbersome to use	2	3	3	2	3
I felt very confident using the system	4	3	3	4	3
I needed to learn a lot of things before I could get going with this system.	2	2	2	2	3

SUS Responses

Medium Fidelity Prototype Evaluation

Evaluation Protocols

EvaluationID	User Test 001
Aims	<ol style="list-style-type: none">Identify users' expectations of features of the application.Identify users' difficulties when trying out the low fidelity of the application.Identify users' intentions and wishes.
Dates	09/06/2020
Creator	Minh Quan Nguyen
Prototype	https://xd.adobe.com/view/2ef298a4-c8cd-435d-55ad-96b0b09f9579-58c3/

Preparation before the participant arrives

Required materials:

- Consent forms.
- Observation notes.
- Mobile device to record the interview.
- SUS survey worksheets.
- A laptop with internet connection for the user to do the survey.
- Follow-up questions after the survey.

Introduction

Hello, I appreciate you agreeing to participating in this testing session. Today you are here to help me to test the usability of the prototype of a mobile application that I am working on. This prototype is in the medium-fidelity phase that is why your comments will be very important so I can improve it at the next stage. Now let me give you a brief introduction so you have an overview of this application before we begin.

This application is designed to help people with finding favorite recipes only using ingredients that are available in the fridge/pantry. It cooperates with supermarket chains to get the information of the products that users have bought and then suggest them thousands of recipes. It also helps users to manage all the items in the fridge/pantry easier.

Today evaluation named “Heuristic Evaluation”. This is the most popular method among others inspection methods. In total, there are 10 heuristics that I need you to look over

There is a consent form that I need you to sign it before starting the session. This consent contains information about how your data will be collected. Remember that you can request to stop the session anytime you want if you feel uncomfortable.

Consent

Because this is an academic activity, I need your consent. Please read the consent form carefully and sign it.

Thanks for providing your consent. Let's get started.

Task 1: Heuristic Evaluation

Today evaluation named “Heuristic Evaluation”. This is the most popular method among others inspection methods. In total, there are 10 heuristics that I need you to look over:

1. Visibility of System Status
2. Match Between System and The Real World
3. User Control and Freedom
4. Consistency and Standards
5. Error Prevention
6. Recognition Rather Than Recall
7. Flexibility and Efficiency of Use
8. Aesthetic and Minimalist Design

9. Help Users Recognize, Diagnose, and Recover from Errors

10. Help and Documentation

Because you are an expert user so I suppose that you so I suppose you already have knowledge about these heuristics. Now I need you to go through this application and discover all its features. I will describe the meanings of any feature if you have question. During the process, you have to note down places where the heuristic is violated and where the heuristics are supported. After about 40-45 minutes, you can end the evaluation if you think you have found all the problems in this application.

Next we will discuss about all the points that you have noted down. I will ask you more detail about each problem and we will put each problem in this form:

Screen / Element description	Usability issue	Heuristic Category	Probable effect on user
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Task 2: Post-interaction interview

Finally, I will ask you questions about the application:

- Can you give your overall opinion on this application?
- Do you think this app does a good job of supporting users?

Closing

Thanks for participating in this session. The data you provide me will be very important to me in upgrading this application. You can contact me anytime if you want to withdraw your data and your consent.

Consents forms



(Updated version 17 February 2020)

School of Information Technology and Electrical Engineering

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Informed consent form

User interface testing for DECO2500/7250 class exercise

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All your data, including any recordings, will be erased/destroyed once class grades are released.

There is no reimbursement or payment for participation.

I have read the information above and give my consent to participate.

Participant Name: _____

Participant Email: _____

Signature: _____ Date: 30/04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30/04/2020

Researcher Signature:

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

Instructor in charge of DECO2500/7250: Dr Chelsea Dobbins, School of ITEE, UQ
[\(c.m.dobbins@uq.edu.au\)](mailto:c.m.dobbins@uq.edu.au)

Because this is an in-class educational exercise, performed by course students with UQ students, family or friends only, formal ethics approval has not been sought.

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Participant Name: Minh Nhat Nguyen

Participant Email: nhat.nguyen.cs17@gmail.com

Signature: Nhat Date: 30 / 04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30 / 04 / 2020

Researcher Signature: MQuan

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

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Participant Name: Khai Duy Nguyen

Participant Email: khaiduymath@gmail.com

Signature: [Signature] Date: 30 / 04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30 / 04 / 2020

Researcher Signature: [Signature]

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

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Participant Name: Vu Diap Hung

Participant Email: hungvudiep@gmail.com

Signature: [Signature] Date: 30 / 04 / 2020

Researcher Name: Minh Quan Nguyen Date: 30 / 04 / 2020

Researcher Signature: [Signature]

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

Instructor in charge of DECO2500/7250: Dr Chelsea Dobbins, School of ITEE, UQ
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Participant Name: Nguyen Thanh Hai Huynh

Participant Email: huynhhai323@gmail.com

Signature: H Date: 30/04/2020

Researcher Name: Minh Quan Nguyen Date: 30/04/2020

Researcher Signature: M.Q.N.

Researchers:

Nguyen Thanh Hai Huynh – Student ID: 46225696

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