CPSC 481 Course Project Stage 5

Final Report

HealthEat - Group 3.2

Table of Contents

Executive Summary

Everyday, people have to dedicate a huge mental effort to housework, what to cook, when to buy it, remembering that something is expiring soon… are all an important part of this load. Of course, there are apps in the market that help the user to know if they are having a healthy diet, or if they are buying the most nutritious food but none of them helps the user form a habit, as our survey indicated not one application is used for more than a few weeks on average. We believe the solution to that is eliminating the mental load the user has to put into making this habit stick.

In Canada, people throw 170kg of food on average every year, in a house of 4, around 680kg of perfectly edible food is thrown, wasting not only food but also the money and effort to achieve it. Money that could be used for getting a new car, going on vacation or even strengthening the user's retirement plan.

To help the user, HealthEat (with association of supermarkets*) implements a solution for knowing what is in the fridge at all times but also what is going to expire soon. In addition it helps the user perfect their eating habits by creating the most suitable meal plan for them. Also, HealthEat includes a wide variety of recipes and the app acknowledges when some ingredients are missing for the weekly meal plan and automatically adds them to the user's shopping list.

To achieve this objective, the app is divided into three main features, a recipe list into which the users can add their favourites, a calendar so they can check when the supermarket is going to send the groceries and what to cook every day, and the fridge which has information about what is about to expire, so in case the algorithm fails to put every ingredient in the meal plan, the user can ask the app to suggest a recipe and include it as a snack.

We believe that, the association with big supermarket branches that already have the confidence of the end user will help the user to develop a strong loyalty to HealthEat. Therefore, this union is crucial for the app to succeed since it will increase the reach of any marketing strategy we start. Also, the app would be beneficial for the supermarket branches since it will give them the means to better serve the general public and provide great insight on what to buy themselves since knowing which are the exact deliveries for the next week, month and so on, they would not need to waste more resources attempting to find more ways to solve another worldwide issue nowadays, the excessive consumerism of society.

Introduction

In a world where everyone feels like they are constantly busy and trying to find more time to enjoy ourselves, people are seeking ways to enhance their well-being and make their daily routines more efficient. In this paper we will be sharing the inspiration, research, design and user evaluations that went into the creation of HealthEat. HealthEat is an app designed to merge all of the user's food related routines and values into an inviting and convenient interface. This way, we want to eliminate the huge mental load that goes into thinking what to buy and how to distribute it through the week, and to automate more aspects of users everyday routines so that the user can enjoy newfound time doing more things they love.

Design Problem

Currently, there are a variety of different mobile applications that all relate to tracking nutrition, diet, shopping lists, and other diet related activities. With more and more research being published about proper nutrition, people are becoming more aware of what they put into their bodies. HealthEat will make it easier for users to make sure they are eating a proper diet. There has also been a recent upsurge of concern for the environment and sustainability which our app tries to address by reducing food waste. The third main problem our app addresses is how people desire more time to enjoy themselves and slow down in a world that seems to be speeding up with all the technological advances and other factors. HealthEat will help users save time and energy that would normally be spent on dietary planning and shopping so they have more time and energy to focus on other interests in their lives.

The inspiration behind HealthEat is to combine all the must have features from the number of apps that our target users are familiar with while adding in new desirable capabilities. These features that we decided to include in HealthEat all have the purpose of reducing the amount of mental load on our users and time required with planning and keep track of food related activities. The main design features that our app implements are; suggestions for healthy recipes using the food in your fridge and personalized settings, connecting to your

favorite supermarket cards to automatically update your fridge, planning your future meals, nutrition info, ordering food directly from the app, notifications when food is nearing the expiry date, and linking accounts with other people in your household to use the same fridge and calendar. These features along with a simple interface will ensure our app is useful, usable, accessible, desirable and valuable for a positive user experience.

As mentioned, the mental load and time required related to planning meals, picking up groceries and buying what is healthiest for your family or yourself and keep it as a habit, not just as a two week post-new year routine is something people really find hard to manage. For that reason, HealthEat has associated* with the biggest supermarkets so that the user does not even need to go out shopping, they are able to order food directly through the app which is then sent directly to their door. This is a feature that will be very valuable as more supermarkets adopt grocery delivery to compete with Amazon as this new way to get groceries will save even more time and effort for the users. HealthEat's algorithm will choose what meals best suit our dietary goals and those which use contents in our fridge, prioritizing food that will expire soon, to suggest recipes that you can add to the calendar. This will help reduce all the food wasted in developed countries, another one of the problems our app addresses.

These design features will be expanded on in the Design and Justification section of the paper.

End-user and stakeholders

The design of our app is targeted towards the most likely end users which are; people desiring to make meal planning less time consuming, people trying to eat healthy and wanting to keep track of the nutrients entering their body, and people trying to reduce the amount of food waste they produce. The end users will create their personalized accounts so HealthEat can suggest meals right for them. They will connect their HealthEat account with their supermarket accounts and cards to allow for the fridge in the app to automatically update and to allow users to order food right from the app. End users will choose recipes they like from the app and input them into their calendar within the app, they can also input their own recipes into the app. Users

can connect with other members of their household so the fridge can keep uptodate if multiple people are stocking the same fridge/pantry.

The stakeholders include Supermarkets and online food providers such as Amazon, fitness and personal trainers or applications, local governments, the health care system, insurance companies, and a database company. Supermarkets and food providers because our app will link with these companies so the app can easily and automatically keep track of their purchases and allow users to order from these providers directly through our app. Personal and fitness trainers because they can suggest this app to their clients to assist them with maintaining and health balanced lifestyle. Local governments because our app will attempt to reduce the amount of food waste produced so this will lighten the load on the curbside compost and waste pickup. The health care system and insurance companies because if more people are eating healthy less people will have diet related illnesses. The app will also require a large database to store all the recipes and user data so whichever database company we use would be a stakeholder.

User Research and Findings

The two research methods used were a survey and extreme user interviews via personas. We chose these two methods because together they compliment each other very well. With the survey we are able to gather lots of data from more than 100 potential users and with the extreme user interviews via personas we are able to get deeper into the desires of the ideal user and those of a person least likely to use our app.

During our survey process, we received responses from a wide range of people, both in age and occupation. Our survey captured mostly Student and Full-Time employees between 18-25 and 41-65 years of age. Our survey found that a large majority (>80%) of respondents own a smartphone, are interested in increasing the healthiness of their diet, and do not currently use any method of tracking their eating. These results show that there are relevant end users for our application. Our survey also found that the main reason that people stop using food tracking apps is because entering each item individually is too much work. Users also stated that it is difficult to get into the routine of tracking food and very easy to fall out of the routine .

Our survey found that respondents will follow recipes about half the time they are cooking, and more than half are interested in trying new recipes. This result shows that the recipe feature will be useful in our application.

FInally, we saw that most people (>50%) are not checking their refrigerators, pantries and cupboards for expired food weekly. This may cause some food items to go bad unnoticed. In our survey we found that ⅓ of respondents threw away more than 10%, on average, of the food they purchased.

For our extreme user interview with personas we created Valerie and Hubert. Valerie is the persona that is super familiar with existing health apps and cares about what she puts into her body and wants to make her daily routines more efficient. Hubbert is the opposite, someone who doesn't care about their health and planning meals. What we found valuable from Valerie's interview is that people may use more than one application to track their diet since some apps have unique features that the user likes compared to another but is lacking another important feature. This means that it is crucial that our application can combine the positives of the different apps so users can have one app that meets all their needs. This would allow the user to be more satisfied and accomplish their tasks more quickly.

Valerie also really values the feature of our app that will remind her when she has food that is about to go bad. Valerie likes that our app can directly link up with a users grocery rewards cards to track what has been purchased saving her plenty of time that she would spend to scan or input everything. Lastly, Valerie and Hubbert both think the apps capability to let them earn rewards while ordering food from the supermarket is a great feature and to be able to do this directly in the app without having to leave the house adds even more time saved to their daily routines.

Design and Justification

Based on the findings of the user research and our group's brainstorming sessions which discussed our own ideas about what will make this app unique and more desirable than existing diet apps out there, we agreed upon a number of features that our app must have and some we would like to have, these are discussed below.

Must have Features

- A fridge tab that keeps track of the food items in the user's household, and notifies users when items are nearing the expiry date
- Automatically updates the 'fridge' within the app via connections to user supermarket rewards cards or online store accounts
- Automatically order ingredients for recipes right in the app
- Personalized account that allows for dietary restrictions, preferences and linking to users rewards cards
- Recipe suggestions based on the contents of your fridge/pantry, prioritizing using items that will expire soon, and based on personalized settings
- Recipe information including a picture, ingredients, nutrition, procedure, and prep time
- Search and filter function in the recipe page
- Calendar tab where users can easily view their planned meals, produce deliveries and adjust their planned meal schedule
- An overview welcome/homepage providing quick access to essential information
- Simple and easy to navigate design

We decided that the fridge tab that keeps track of all food items in your house is a must have feature because this is what allows our app to notify users when food items are nearing their expiry date. This is a must have because it is what allows our app to reduce the load on the user and reduce food related waste. We decided that the fridge must automatically update when users purchase groceries because this is what makes our app stand out from most existing food apps where users have to scan or manually input items. In order to implement this feature the ability of linking the HealthEat account with your rewards cards and online store accounts is also must have feature. This also enables our application to have the must have feature of automatically ordering ingredients for recipes through the app to be delivered to their door because the user can save time by not buying the ingredients instrse themselves.

We decided that our app has the personalized account that allows for dietary restrictions, preferences and linking to users rewards cards because this is the main purpose of our app, to assist the users to live healthier in the way they want and make it as efficient and convenient as possible to do so. The app must suggest recipes based on what ingredients the users owns,

dietary restrictions, and prioritizing the ingredients that are expiring soon because these are important elements to create a great user experience and the prioritizing of near expiry food items reduces the amount of waste our users produce. The recipes must have a picture, because humans are visual creatures, ingredients so the user and app knows what they need, nutrition info because this is a health app, and the procedure so users don't have to exit the app to find one on their own. Users must also be able to filter and search the suggested recipes as without these features the quality of the user experience would greatly diminish.

The app must have a calendar tab where they can easily see their planned meals, produce deliveries, and adjust their meal plans because without these features our app would be missing key elements to allow for ease of use. The app must welcome users with an inviting home page that displays essential information at a glance and have an overall simple to use and intuitive design to improve the overall user experience.

Should Have Features

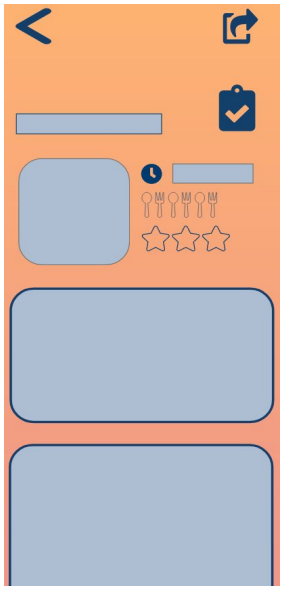
- Appealing colour scheme that makes sense with a health food app and dark mode
- Users can input their own recipes
- Additional recipe information including star rating and difficulty.
- Linking accounts with other users in your household to share a fridge and meal plans
- Auto generate a meal plan for a week/month based on some user preferences
- Quickly swap recipes from homepage

The should have features are features that we decided are important to add to the user experience but do not break the overall goals of our application. These features include an appealing colour scheme so that users enjoy using our app and a dark mode because we know users like this feature in existing apps and it’s easier on the eyes in darker environments. Users should be able to input their own recipes and all the required information for these recipes so they can add their personal favorite meals to their HealthEat experience. The additional recipe information of rating and difficulty are should haves rather than must have features because we agreed they aren't required. HealthEat should allow users to link accounts with other users of the same household as this will help make our application stand out from the other applications by making it a great tool for families and people sharing meal plans. The user should be able to auto generate a meal plan for a week or month based on the user preferences, this will allow users to save even more time if they are willing to try new meals or they can just swap out any that don't appeal to them afterwards. Lastly we thought that a feature should exist that allows users to quickly swap out a meal on the current day right from the homepage if they want to make any last minute changes to their plan, but this is not a must have feature since its very simple to swap out meals from the calendar page.

Heuristic Evaluation Findings

We created the high fidelity prototype using Adobe XD and aside from simple linking issues discovered during the heuristic evaluation, such as back buttons not working, there were some critical findings that we will discuss here.

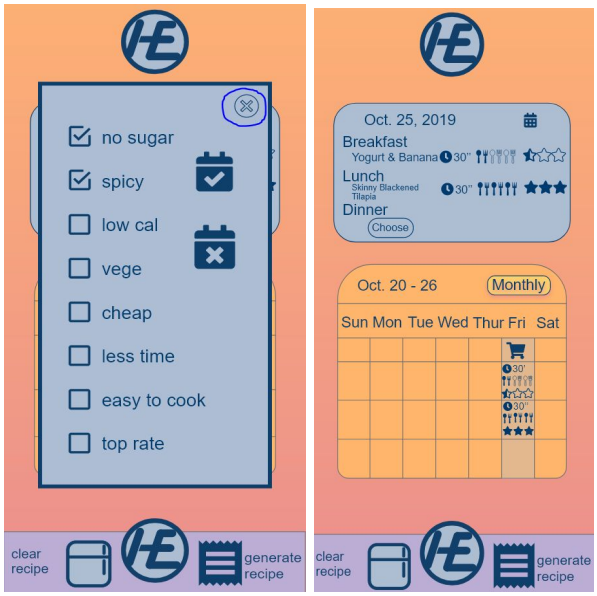
The recipe input page did not have labels for the form input fields so users were confused about what to enter into each field. This issue was related to help and documentation. Users also reported two other issues related to this category, the first being that it was unclear what the ‘Quick Swap’ feature on the homepage does and the second is that the users didn’t understand what the cutlery and star symbols represent in the recipe information.



Recipe Input Form

Homepage Quick Swap and recipe Symbols

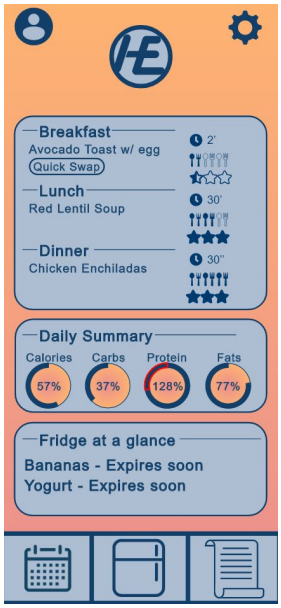
The next issues are all related to the criteria of consistency and standards. There were a couple of incorrectly mapped back buttons as mentioned above that fall into this category. Users also reported that Friday on the Calendar page would fill up with information even after the cancel button was pressed in the Generate Recipe page. Lastly users reported strange behaviour associated with the Replace button on the High Protein Omelette page, where this button will take you back to the homepage without doing anything.



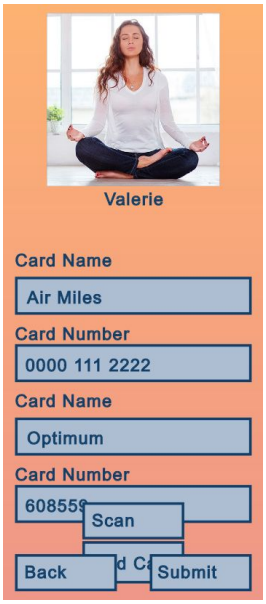
The generate recipe inconsistency

The Replace button inconsistency

Another category which users reported some issues in was the Visibility of System Status. In regards to this criteria users found that the “uppermost menu on the homescreen does not have a proper label.” The users also reported that in the account creation section when users are prompted to enter their rewards cards after pressing “Add Card” to enter another card the buttons would overlay each other.

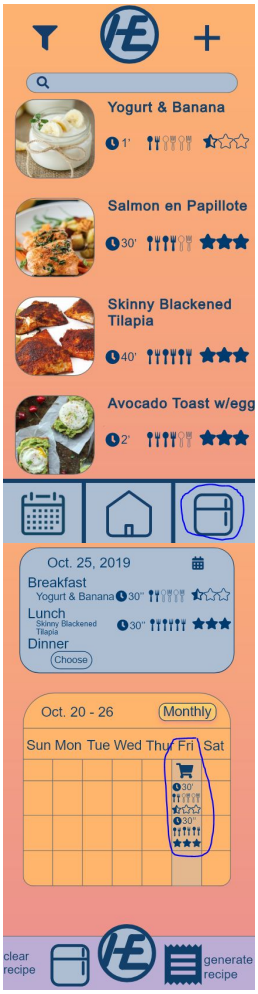


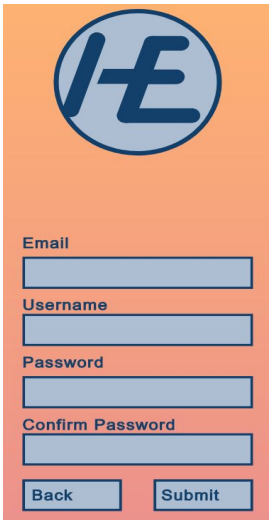
Homescreen showing uppermost menu

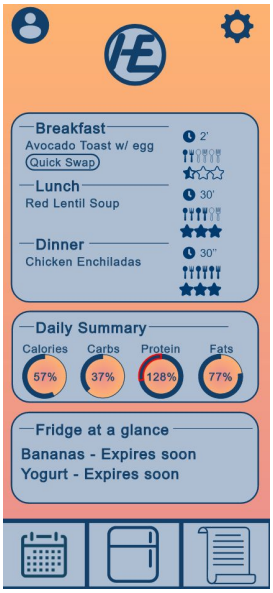


Add cards page

There was one issue related to the category of recognition rather than recall which was that the users found that the fridge icon on the recipes page would take you to page unrelated to the symbol, it would take you to a recipe.





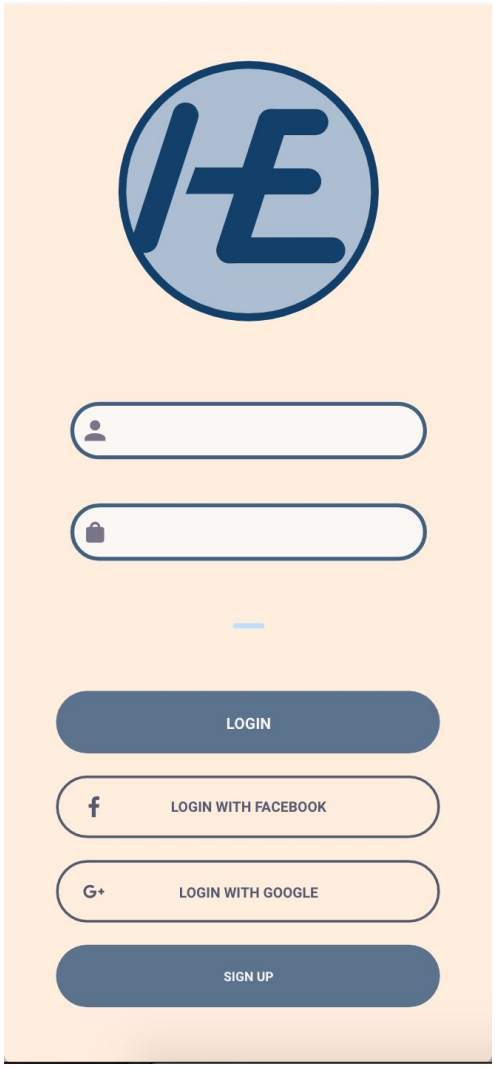


When creating a new account users were able to submit the form without filling out any of the fields, which is not a match between the system and the real world.

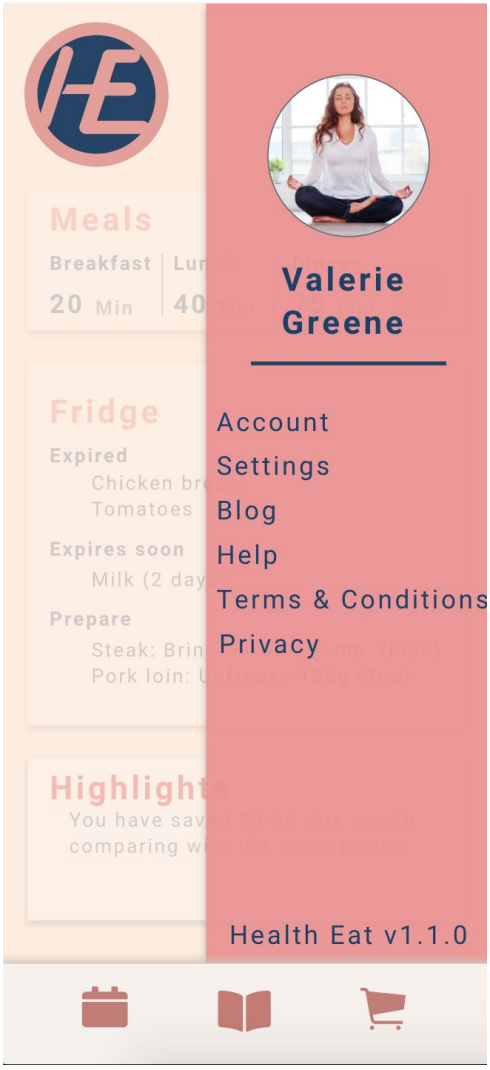
We had a user report that the information was too small to read on the weekly view in the calendar page. A user also reported that the blue used for lots of the aesthetics almost looks grey and suggested we use a more vibrant blue or play around with transparency. A user also stated that there was too much information displayed on the homepage. These relate to the Aesthetics and minimalist design of our prototype.

Lastly, users wanted the “Expires soon” notifications to be more specific, such as stating the amount of time until expiry date and the ability to add snacks to your meal plan. These issues relate to the flexibility and efficiency of use of our design.

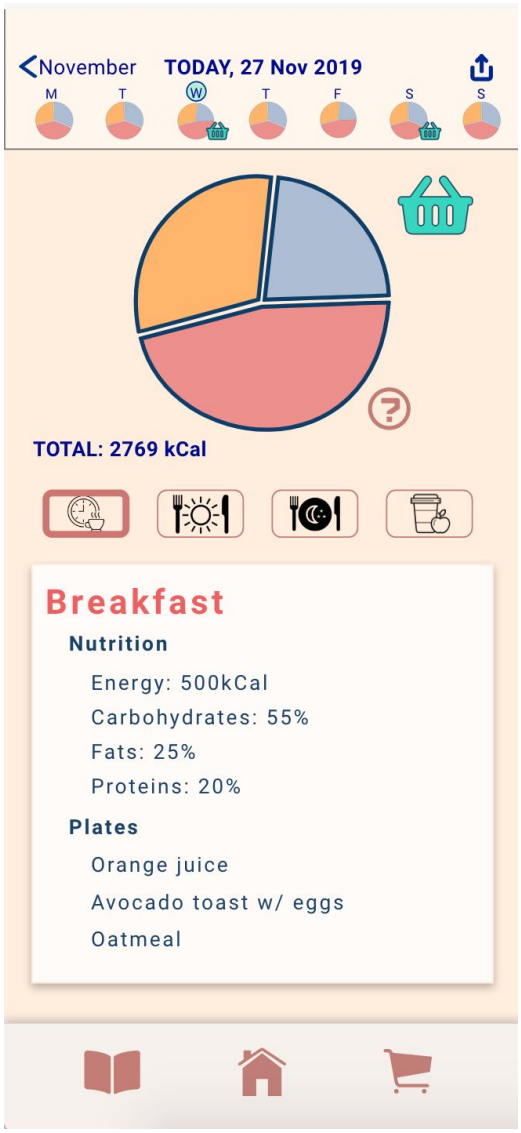
Design Changes Based on the Heuristic Evaluation

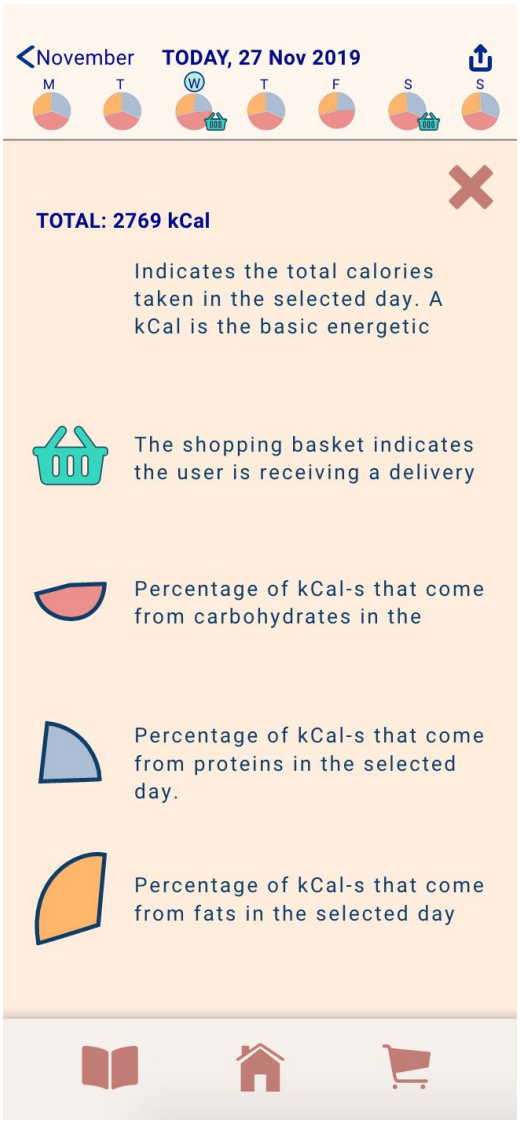


Change the colour to make it less grey and more like a real mobile app

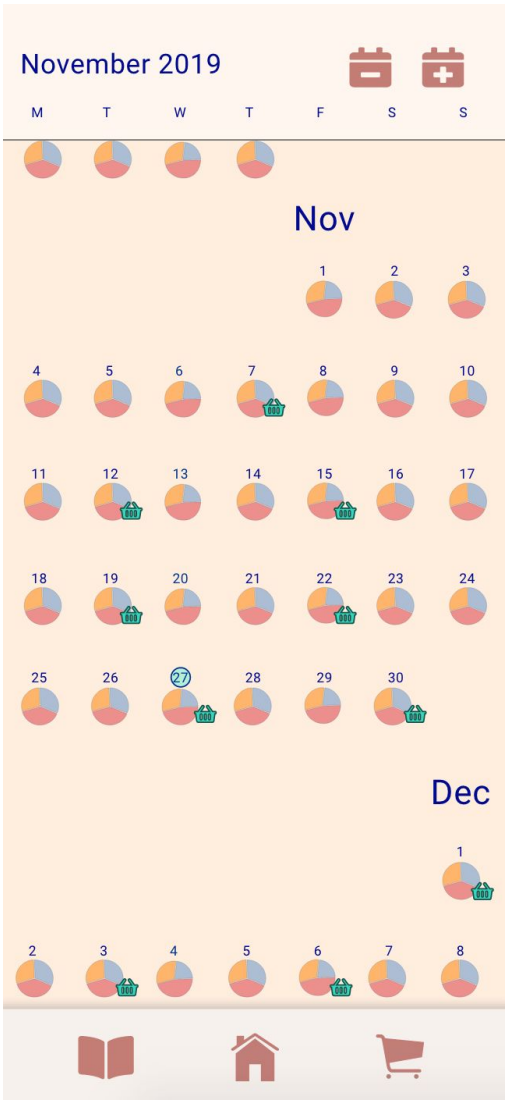


Replace the account and setting buttons into a hamburger menu

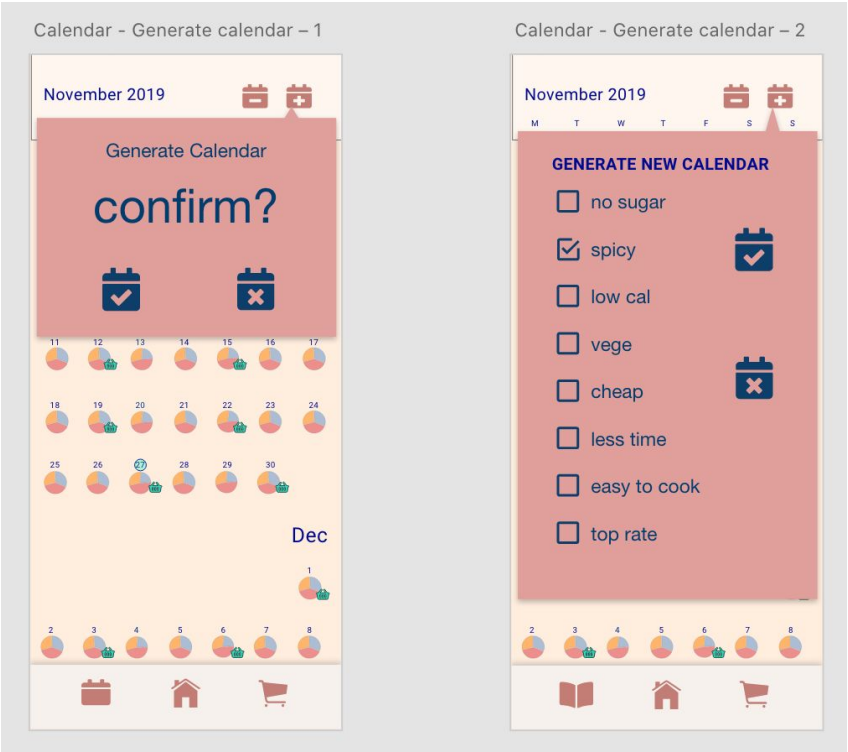




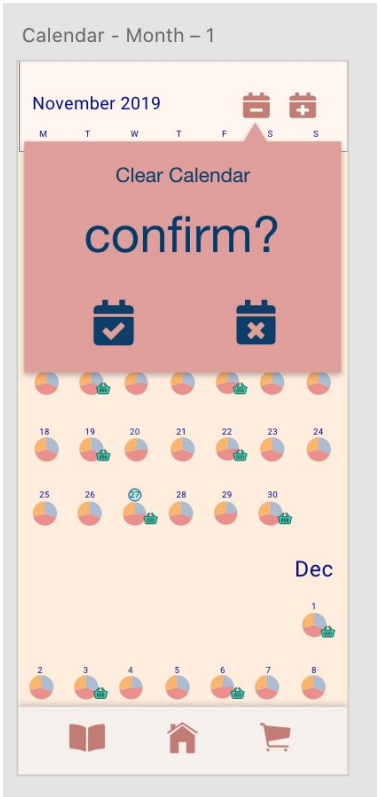
Add help function inside the calendar. And make the calendar less information to make it less crowded.



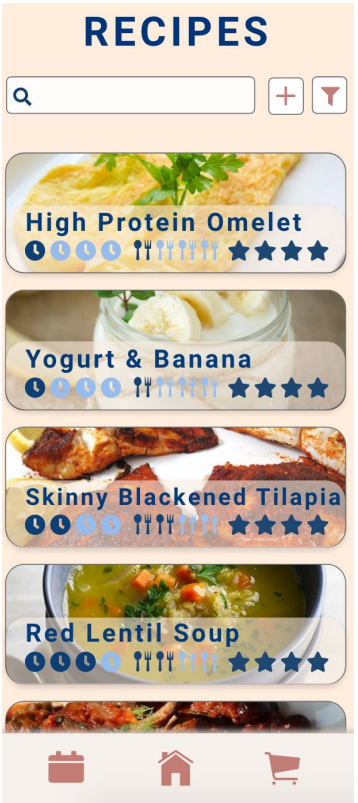
Remove the weekly view for calendar pie charts to represent the general information for users.



Add confirm message when apply generate calendar

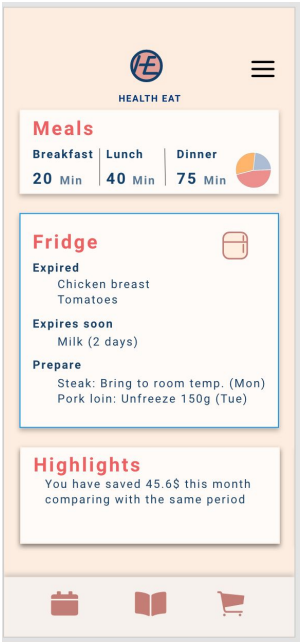


Add confirm message while clear calendar



Make the picture in recipe list larger

Add button for each function in recipes (nutrition, ingredients, procedure), make it more organized. Create a swap bar for the ingredients ,make it more convenient to use.



Rearrange the layout for the homepage, emphasis the important messages like preparation time for the meals to the user.

Recommendations for Next Iteration of Design

We addressed all of the issues presented to us in the first heuristic evaluation. We fixed all the linking issues, remade the whole design and colour scheme to look more appealing to the users and be more organized, added proper labels to everything, added a ‘snack’ meal to allow for more than three meals per day, added more confirmation boxes for important user actions, created a more user friendly homepage, and added more help and documentation for anything the user might find unclear. Since the newest version of the high-fidelity prototype is vastly different from the one that received the initial heuristic evaluation we believe it would be best to conduct another heuristic evaluation before the next iteration of the design. One thing that we could improve in the next iteration of the design is to make the number of meals per day completely customizable as some people do not eat 3 meals a day and a snack, but rather lots of small meals or maybe just two meals a day.

Conclusion

Overall we learned a lot through the process of building this application up from an idea in our minds to the high-fidelity prototype presented at the end of this stage. We began with brainstorming about what problems exist out in this world that we and other people are passionate about. Next we discussed the potential end-users and stakeholders to further understand the implications of HealthEat. We then started conducting research on whether people agreed that this was indeed a problem and on what the users would be looking for in the solution to the problem. From our survey and extreme user interview results we found that there was lots of support for our mission with HealthEat, people want to eat healthier, have an effective way to meal plan, an efficient app to keep track of their diet, to reduce their time and effort needed for managing their diet, and to reduce the amount of food waste produced in this world. From there we were able to proceed with confidence in planning what feature our app must have what it should have to create a quality user experience.

We then began building the first prototype of our app which was a paper prototype, followed by a low-fidelity prototype built with Balsamiq, and finally a high-fidelity prototype with Adobe XD. Once the high-fidelity prototype was complete we conducted a heuristic evaluation with another group and found that there were a number of issues needing to be addressed. The issues were addressed and more refined prototype was constructed. We believe that another heuristic evaluation should be conducted before the next iteration of our design because most of the initial findings were corrected, the overall look and feel of HealthEat has changed dramatically since the first heuristic evaluation so this would mostly be testing the aesthetics and minimalist design. The real appeal of this app would come from the backend, with a fully functioning version we believe users would really be able to see the value in what HealthEat has to offer. In conclusion, we can see that designing a quality product requires immense amounts of consideration, planning, and replanning. The success of a new product depends greatly on the overall user experience which is largely affected by the user interface, designing the perfect user interface for human computer interaction is no easy task but the final prototype of HealthEat is definitely an appealing sight to see.