got recipes?

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TASKS

In order to effectively use our app on the most basic level, users must be able to add and delete items from the grocery list and pantry. Items should move between these pages when users check them off or add them to their list. They must also be able to search for, access, and favorite recipes.

Grocery Page

Our pantry page also has a few extra features allowing users to enter expiration dates and the amount of the food they have left. In order to test all of these features, we used the following tasks:

Grocery List

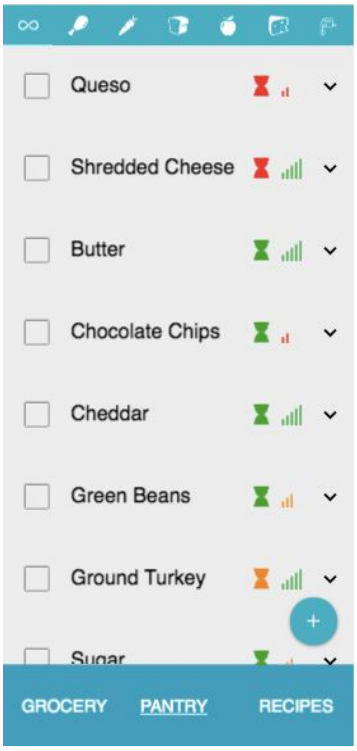
Add, Delete, Move to Pantry

- Add “Ham” to the grocery list
- Delete “Carrots”
- Check off “Pineapple”

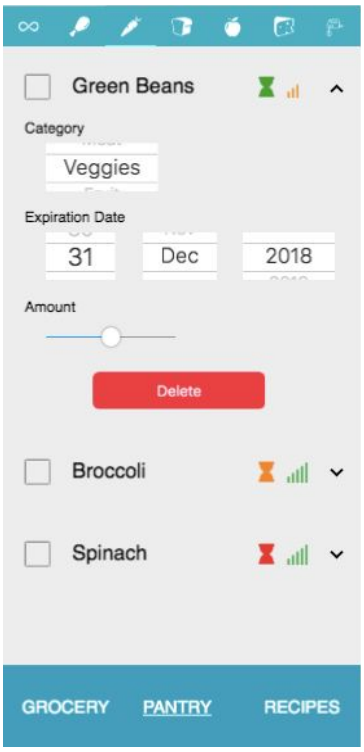
Pantry

Add, Delete, Move to Grocery, Edit (exp date, amount)

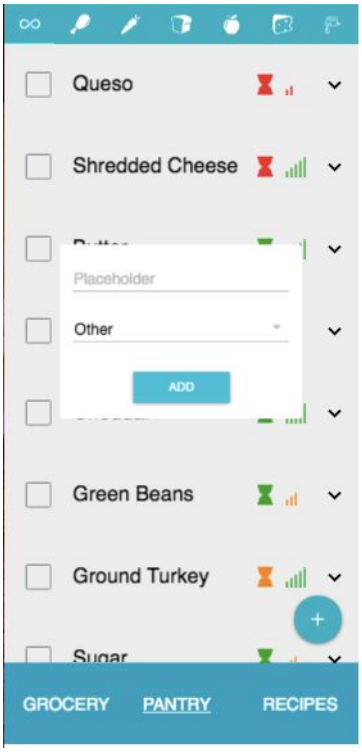
- Add “Bananas” (fruit) to the pantry
- In the baking tab, delete “Flour”
- Select all of the items in your fruit tab and add them to your grocery list
- In the dairy tab, change the amount of “Cheddar” to half full
- In the veggies tab, change the expiration date of “Green Beans” to November 24



Pantry Page



Pantry Page
Expanded View

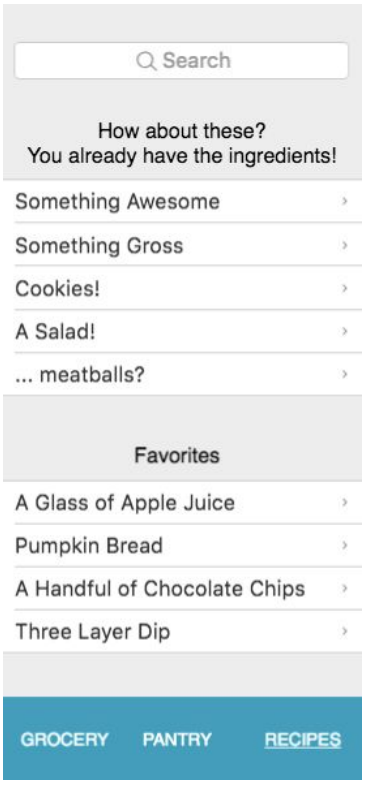


Pantry Page
Adding an Item

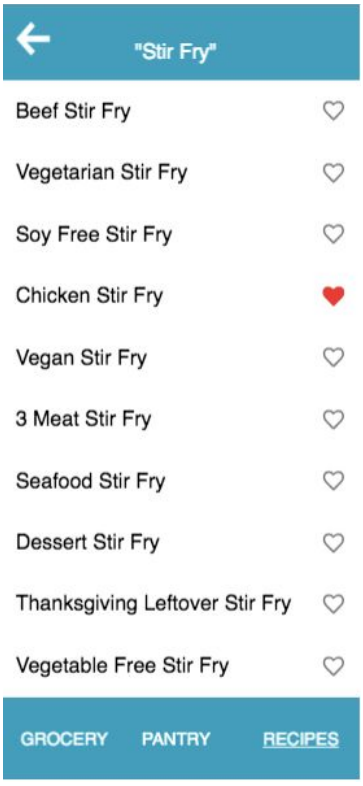
Recipes

Search, Favorite, Access

- Search for stir fry
- Favorite chicken stir fry
- Access the chicken stir fry



Recipes Page



Recipe Page
Searching for an Item

HEURISTIC EVALUATION

Study Protocol

For the Heuristic Evaluation we sat down with a fellow CSCI 4800 student, and had them go through the app completing a number of tasks and identify if it met or failed any criteria of the heuristic evaluation as they went through. Issues were recorded and follow up summary by the evaluator were recorded. Materials used were google docs and the prototype itself. There was no script used. The evaluator just went through each task presented in the evaluation

Evaluation

1.Visibility of system status

I think the system is pretty clear with what pages you are on. I was thinking maybe put titles on each slide, but you have it so that whatever tab you are on is underlined. When in the pantry, the selected tab that is highlighted can be wrong. When I chose fruits, it highlighted dairy, but it took me the fruits tab.

2.Match between system and the real world

The application uses common terminology that the average user will understand**.**

3.User control and freedom

I can't really tell how easy it is to abort or cancel a command in your prototype.

4.Consistency and standards

All actions listed in the activity list work as described.

5.Error prevention

There doesn't seem to be much room for error in your system**.**

6.Recognition rather than recall

Options are clearly visible currently.

7.Flexibility and efficiency of use)

The system allows you to jump directly to a desired location.

8.Aesthetic and minimalist design

I think the design is very simple and nice. It makes it obvious as to where I am in the application. All related objects seem to be grouped correctly.

9.Help users recognize, diagnose, and recover from errors

The system doesn't provide any error help.

10.Provide suitable help and documentation

The system could use a help feature such as a question mark in the corner that would display helpful information on each tab when pressed. Or information on what each action does, like a tiny pop up window when you hover over the action

Demographics

Male, Human Computer Interaction student at UGA, 21

Discussion of Results

The design of the app is simple and easy to follow. However, there was a lack of error prevention, and no help option for the user if they messed up. What worked best was the using pictures as tabs for where to go, and what to press. This helped the user easily identify where they wanted to go, and what they wanted to do. What seemed to work the least was the commands of adding items, and updating them. It wasn't particularly clear for the user to find those commands and to use them at first. The prototype can mainly be improved by adding more user friendly features like a help button, letting a user know an action was completed, and information on each tab in the app.

COGNITIVE WALKTHROUGH

Study Protocol

For the cognitive walkthrough we used the procedure of identifying a task, using a task analysis, walking through the steps, and recording any follow up questions. Materials used were google docs and the prototype itself. No script was used. Instead we just asked the user to perform the task given. Information was recorded via a google doc.

Cognitive Walkthrough

Task analysis: Add “Ham” to grocery (Task 1). Delete Carrots (Task 2). Add “Bananas” to pantry (Task 3). Change “cheddar” to half full (Task 4). Search Stir Fry (Task 5).

Results for new user: User was able to complete task

1. Questions asked for each action in Task 1.
    a. Do the users recognize that this action is necessary to achieve the desired goal? User recognized every action to complete the task of adding ham to grocery list.
    b. Can the users locate the control (link, button, etc.) that triggers the action? User was able to locate the control for each action.
    c. Once the control is activated, do users recognize that it relates to the desired effect? User was able to recognize that it related to the desired effect
    d. After the action is taken do the users understand the feedback they get, so they perceive progress is being made? No, the user received no feedback such as an alert but only could see that it was added to grocery.

2. Questions asked for each action in Task 2
    a. Do the users recognize that this action is necessary to achieve the desired goal? User was able to recognize that each action was necessary to achieve desired goal.
    b. Can the users locate the control (link, button, etc.) that triggers the action? User was able to locate each control required for the task.
    c. Once the control is activated, do users recognize that it relates to the desired effect? User was able to recognize how each control related to desire effect.
    d. After the action is taken do the users understand the feedback they get, so they perceive progress is being made? User was not able to understand feedback at first because no alert was given. Ultimately, user could go through the list to see that the item was no longer there.

3. Questions asked for each action in Task 3

a. Do the users recognize that this action is necessary to achieve the desired goal? Yes, the user recognized that each action was necessary to completion of goal.
b. Can the users locate the control (link, button, etc.) that triggers the action? User was easily able to locate the control that triggered the desired action.
c. Once the control is activated, do users recognize that it relates to the desired effect? User was able to recognize how each control's activation related to the desired effect.
d. After the action is taken do the users understand the feedback they get, so they perceive progress is being made? User could understand feedback given to perceive progress made.

4. Questions asked for each action in Task 4
    a. Do the users recognize that this action is necessary to achieve the desired goal? User was able to recognize that each action was necessary to achieve the desired goal.
    b. Can the users locate the control (link, button, etc.) that triggers the action? User was able to locate each control required for every action in completion of task.
    c. Once the control is activated, do users recognize that it relates to the desired effect? User understood how each control was related to the desired effect.
    d. After the action is taken do the users understand the feedback they get, so they perceive progress is being made? User could see visual feedback of added item to pantry but suggested the possibility of an alert to better clarify completion of task.

5. Questions asked for each action in Task 5
    a. Do the users recognize that this action is necessary to achieve the desired goal? The user was able to understand why each action was necessary to complete desired goal.
    b. Can the users locate the control (link, button, etc.) that triggers the action? User was able to locate the control that triggered each action.
    c. Once the control is activated, do users recognize that it relates to the desired effect? User was able to recognize why each control activation related to desired effect.
    d. After the action is taken do the users understand the feedback they get, so they perceive progress is being made? User had a clear understanding of

feedback given and was able to perceive the progress that was being made.

6. Usability Issues
    a. Being able to understand completion of deleting items in pantry
        i. Solution: Add alert box to confirm deletion
    b. Couldn't understand at first how to change cheddar to half full
        i. Solution: Make drop down more visible and possibility of help page

Demographics
Female, College Student, 19, Single

Discussion of Results
Results of the cognitive walkthrough helped in the area of feedback. Conducting the walkthrough brought up issues with feedback and also allowed the brainstorming of improvements for feedback. One improvement would be to add alert boxes to make user aware of progress in the completion of certain tasks. Most of the apps functionality worked but things like visual feedback and visibility of certain controls did not.

PREDICTIVE EVALUATION

Study Protocol

In this Predictive Evaluation, we use a Keystroke Level Model to predict an average time that it should take for our users to take in completing certain tasks. We chose different participants from the other evaluations to create a more accurate representation of the data in which the users have no prior knowledge of how to complete the tasks. This gives us a better understanding of what our prototype might need work on in areas. The KSLM allows us to create a total of how long these tasks

will take. The activities we chose do an accurate representation in the basic goals our users will be needing to use our mobile application to its fullest extent.

Activities

Grocery Tab

- Add “Ham” (a meat) to the grocery list
- Delete “Carrots”

Pantry Tab

- Add “Bananas” (fruit) to the pantry
- In the dairy tab, change the amount of “Cheddar” to half full

Recipes Tab

- Search for stir fry

Predictive Evaluation (KSLM)

Add “Ham” to the grocery list

1. Find add button in grocery list (M=1.2 s)
2. Place hand on mouse (H = .4 s)
3. Point to add button (1.1 s)
4. Press add button (0.1 s)
5. Type letters “Ham” (T*3 = 2.32*3 = 6.96 s)
6. Drop down to categories (3.04 s)
7. Select Meat (B = 0.1 s)
8. Point to add button (P=1.1 s)
9. Select Add (B = 0.1 s)
   Total = 14.1s

Delete “Carrots”

1. Place hand on mouse (H = .4 s)
2. Scroll down (SC=3.96 s)
3. Find trash icon next to it (M=1.2 s)
4. Point to trash icon (P=1.1 s)
5. Click button (C= 3.73 s)
   Total = 10.39 s

Add “Bananas” (fruit) to the pantry

1. Find pantry tab (M = 1.2 s)

2. Point to pantry tab (P = 1.1 s)
3. Click pantry tab (C = 3.73 s)
4. Find add button in pantry (M = 1.2 s)
5. Place hand on mouse (H = .4 s)
6. Point to add button (1.1 s)
7. Press add button (0.1 s)
8. Type letters “Banana” (T*6 = 2.32*6 = 13.92 s)
9. Click drop down (C = 3.03)
10. Find fruit (M =1.2 s)
11. Select Fruit (B = 0.1 s)
12. Point to add button (P = 1.1 s)
13. Select Add (B = 0.1 s)

    Total = 28.28 s

In the dairy tab, change the amount of “Cheddar” to half full

1. Find pantry tab (M = 1.2 s)
2. Point to pantry tab (P = 1.1 s)
3. Click pantry tab (C = 3.73 s)
4. Find dairy tab in pantry (M = 1.2 s)
5. Click dairy tab (C = 3.73 s)
6. Find Cheddar (M = 1.2 s)
7. Click Drop down (C = 3.03 s)
8. Find amount (M = 1.2 s)
9. Click scroll to half way (SC = 3.96 s)
10. Click drop down to save (C = 3.03 s)

    Total = 23.38 s

Search for stir fry

1. Find recipe tab (M = 1.2 s)
2. Point to recipe tab (P = 1.1 s)
3. Click recipe tab (C = 3.73 s)
4. Find search bar (M = 1.2 s)
5. Point to search bar (P= 1.1 s)
6. Click search bar (C = 3.73 s)
7. Type “stir fry” in text field (K = 8*.28 s = 2.24 s)
8. Click enter (k = .28 s)

    Total = 14.58

Demographics

1. Male, College Student, 20, Single
2. Female, Professional, 47, Single
3. Male, College Student, 18, Single
4. Female, College Student, 22, Single
5. Male, College Student, 18, Single

Participants Results

Participant 1

Add “Ham” to the grocery list

Total = 9.34s

Delete “Carrots”

Total = 8.35 s

Add “Bananas” (fruit) to the pantry

Errors : User spells bananas incorrectly, extra backspace keystrokes
Total = 20.55 s

In the dairy tab, change the amount of “Cheddar” to half full

Errors : User doesn’t know which icon changes amount
Total = 27.38 s

Search for stir fry

Total = 12.05 s

Participant 2

Add “Ham” to the grocery list

Total = 18.42 s

Delete “Carrots”

Total = 2.10 s

Add “Bananas” (fruit) to the pantry

Total = 29.46 s
User initially thought they needed to add from the grocery list to the pantry

In the dairy tab, change the amount of “Cheddar” to half full

Total = 40.51 s

Button to expand the pantry item was very difficult to press

Search for stir fry

Total = 11.97 s

Participant 3

Add “Ham” to the grocery list

Total = 14.31 s

Delete “Carrots”

Total = 1.10 s

Add “Bananas” (fruit) to the pantry

Total = 25.29 s

In the dairy tab, change the amount of “Cheddar” to half full

Total = 30.31 s

Lack of an enter button caused temporary confusion

Search for stir fry

Total = 13.07 s

Participant 4

Add “Ham” to the grocery list

Total = 14.42 s

Delete “Carrots”

Total = 4.45 s

Add “Bananas” (fruit) to the pantry

Total = 18.46 s

In the dairy tab, change the amount of “Cheddar” to half full

Total = 50.51 s

User was confused about drop down feature.

Search for stir fry

Total = 8.46 s

Participant 5

Add “Ham” to the grocery list

Total = 22.07s

User couldn’t understand how to add at first

Delete “Carrots”

Total = 7.2. s

Add “Bananas” (fruit) to the pantry

Total = 17.34. s

In the dairy tab, change the amount of “Cheddar” to half full

Total = 23.38 s

Search for stir fry

Total = 13.54 s

Discussion of Results

The results developed from the interviews with our participants show a generally close relationship with the predictive evaluation from the KSLM. Since there is a strong correlation with the totals predicted, we can conclude our tasks are designed in a way where our participants can accomplish them in a timely manner.

There seemed to be errors facing the amount changer, in which participants found it a little challenging to save the results. For an improved prototype we will add another button for saving the information changed. This isn’t actually an extra step since users already have to close the expanded item view, and it will likely save time on the task execution because users won’t have to spend time wondering whether they were successful.

Other functions in our tasks seemed to work well, with some times being shorter than predicted because the users typed more quickly than anticipated. This is likely because the model was intended for use on a computer, where there is more movement involved in typing.

QUESTIONNAIRE

Following the retrospective tests and the think aloud tests, we sent each participant a follow-up questionnaire. The questionnaire is included below:

Questionnaire

Which aspects of the design do you feel could be improved?

Were you able to understand what each of the symbols in the pantry tab represented?

Did you find the ability to add pantry items to the grocery list useful?

This application was intuitive.

Disagree Agree

1 2 3 4 5

Adding an item to the grocery list was:

Difficult Easy

-2 -1 0 1 2

Editing the amount of a food item left in the pantry was:

Difficult Easy

-2 -1 0 1 2

Finding a specific recipe on the recipe tab was:

Difficult Easy

-2 -1 0 1 2

Which of the three tabs could use the most improvement?

a) Grocery
b) Pantry
c) Recipes

Are there any other features you would like to see in the app? If so, what are they?

Please rank the three tabs from 1 to 3 in terms of usefulness.

Grocery Pantry Recipes

Please rank the following pantry features from 1 to 3 in terms of usefulness (1 being the most useful and 3 being the least useful).

Amount remaining Expiration Date Sorting by category

We asked these specific questions in the questionnaire because we wanted to gain insight on our app's performance in 3 categories:

1) *User understanding* of the app's symbols and functionality
2) *Ease of use* when it came to completing benchmark tasks
3) An *evaluation of usefulness* when it came to various features in our app

Results

Below we have listed some of the more meaningful results from the questionnaire.

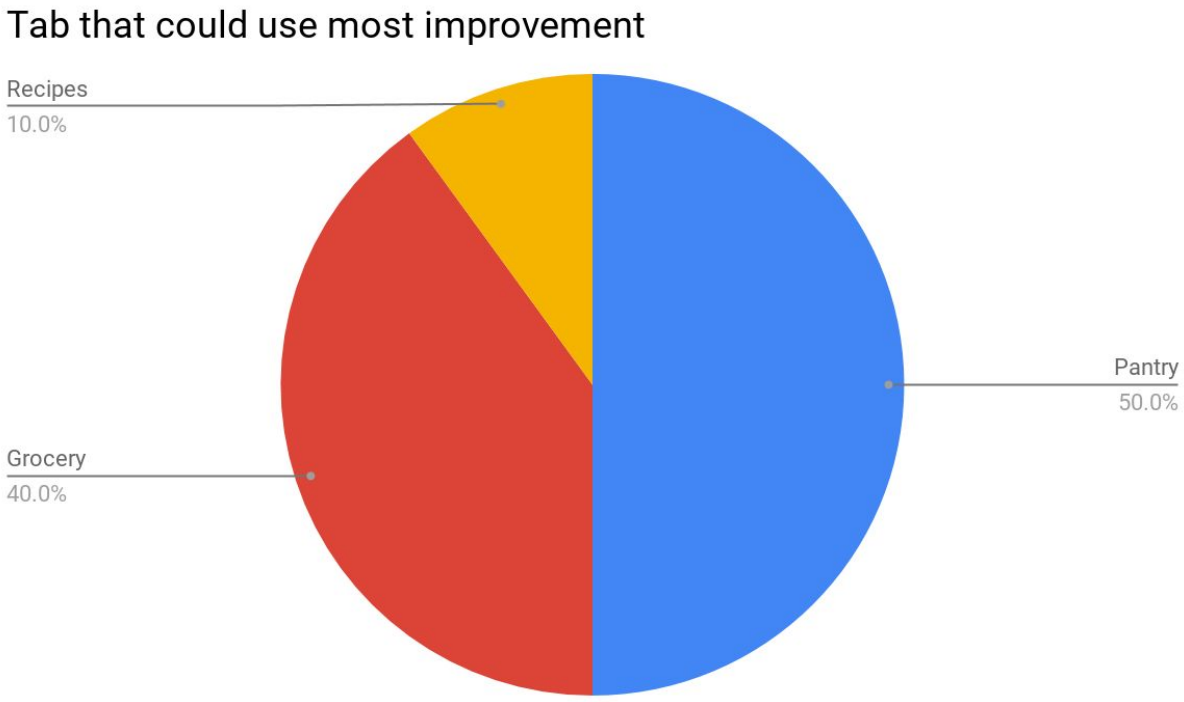
Intuitiveness of the app: All users thought the application was intuitive (ranked 4 or 5). We conclude that our app is intuitive.

Ease of adding item to grocery list: ⅔ of participants gave a 2 for ease. The other ⅓ gave a 1 (on a -2 to 2 scale). We conclude that it is easy to add an item to the grocery list using our app.

Ease of editing the amount of pantry item: ½ of participants gave a 2 for ease. The other half gave mostly 1s, and one -1. We conclude editing the amount of a pantry item is relatively easy. However, there is room for improvement.

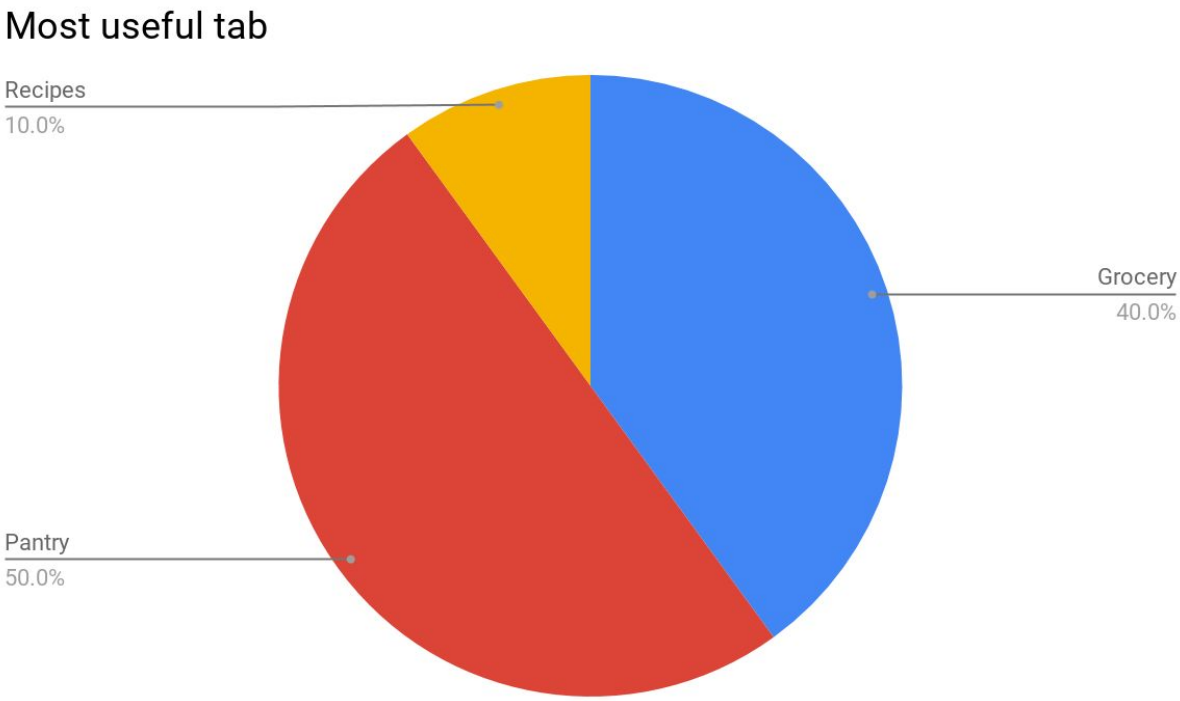
Ease of finding specific recipes: 83% of our users gave a 2 for ease. The other 17% gave 3s. We conclude finding specific recipes is relatively easy. However, there is room for improvement.

Tab that could use most improvement:



We conclude the grocery and pantry tabs could use the most improvement.

Tab that is most useful:



We conclude the pantry tab is most useful, but the grocery tab is a close second.

From the last two questions, we see that the tabs that need the most improvement are also the ones that are the most useful. Therefore, in the future, we will dedicate the most time to the grocery and pantry tabs, and not the recipe tab.

Aspects of the design that need to be improved:

(listed below are common answers among participants)

1. Make tabs and symbols bigger
2. Alphabetically group items within groups
3. Add an enter button/feedback when editing a pantry item

RETROSPECTIVE TESTING INTERVIEWS

Study Protocol

To conduct the retrospective testing evaluations, we sat down with each participant and allowed them to test our prototype on a phone. We had 5 different participants participate in the retrospective testing evaluation. First, we introduced the exercise using the following script:

> Today I will be conducting a retrospective testing evaluation of our prototype for our application “got recipes?”. The purpose of this evaluation is to identify any usability flaws in our design and correct any issues found in the user interface. Remember, this is not a test of you, but a test of our design. If you are ever confused by the prototype, that is a reflection on our design of the interface and not of you.
>
> A retrospective testing evaluation allows us as the experimenters to gain insight from the participant regarding their use of the app. This lets us see where the problems exist and why they are the problem. I will give you a set of tasks to complete using the prototype. While you do this, I will be video recording the steps you take on the prototype. After you are done with the tasks, I will stop the video recording and we will watch it back together. During this portion of the evaluation, I will ask you questions about your thought process while using the application, and I will take notes on your responses.

The purpose of our application is to assist with meal planning. The app includes a grocery list, pantry, and recipes features.

Do you have any questions before we start?

Following the introduction, we gave the participant a phone with the prototype pulled up. We then prompted the participant to complete certain tasks using the prototype. We video recorded the participant using the app, with the video focused on the prototype itself. Once we were done prompting the user with tasks, we stopped the video recording. Then, we watched the video with the participant. We paused the video every few seconds to ask the participant about their thought process or to ask about any issues they may have encountered. The information was recorded by the evaluators on their laptops.

Following the retrospective testing, we sent each participant a follow-up questionnaire. From here, we were able to gain valuable feedback about our prototype. See the "Questionnaire" heading for more information.

Demographics

- Sam, college student
- 47 year old woman, single
- 19 year old male, college student
- Female, College Graduate, 23
- College student

Discussion of Results

Positive Trends:

-Users found it easy to search for Recipes
-Deleting items whether in grocery or pantry list was easy
-Icons were understandable to most users, showing them where to go for certain food groups, and what each icon stood for

Negative Trends:

-Users had initial trouble understanding how to add items
-Users were confused about if an action had worked or not. Lack of confirmation once actions were completed
-Some bugs when pressing buttons on the app

Summary:
The Retrospective Evaluations allowed us to observe what worked and didn't work as the user went through the app. The biggest issues were the lack of an enter button, issues adding items to the grocery list, confirmation that actions had been completed and a couple of bugs when pressing buttons on the app itself. What worked well was how users found it easy to delete items and where to go/what item they were searching for based on the icons. Going forward we can look at how we implemented the Recipes tab. Implementing more technical options to the Grocery and Pantry tab like in the Recipes tab may help improve user understanding when using the app.

THINK ALOUD EVALUATIONS

Study Protocol

To conduct the think aloud evaluations, we sat down with the participant and allowed them to test our prototype on a phone. We had 5 different participants participate in the think aloud evaluation. First, we introduced the exercise using the following script:

> Today I will be conducting a "think-aloud" evaluation of our prototype for our application "got recipes?". The purpose of this evaluation is to identify any usability flaws in our design and correct any issues found in the user interface. Remember, this is not a test of you, but a test of our design. If you are ever confused by the prototype, that is a reflection on our design of the interface and not of you.
>
> A think aloud evaluation allows us as the experimenters to follow the thought process of someone using our application. This lets us see where the problems exist and why they are the problem. I will give you a set of tasks to complete using the prototype. While you do this, we ask that you continue to talk during the entire time you are testing the prototype. I will be taking notes while you talk.
>
> The purpose of our application is to assist with meal planning. The app includes a grocery list, pantry, and recipes features.
>
> Do you have any questions before we start?

Following the introduction, we gave the participant a phone with the prototype pulled up. We then prompted the participant to complete certain tasks using the prototype. The participant spoke out loud during the testing, talking about their thought process. The information was recorded by the evaluators on their laptops. We (the evaluators) recorded the main steps and issues the users encountered when testing the prototype.

Following the think aloud testing, we sent each participant a follow-up questionnaire. From here, we were able to gain valuable feedback about our prototype. See the “Questionnaire” heading for more information.

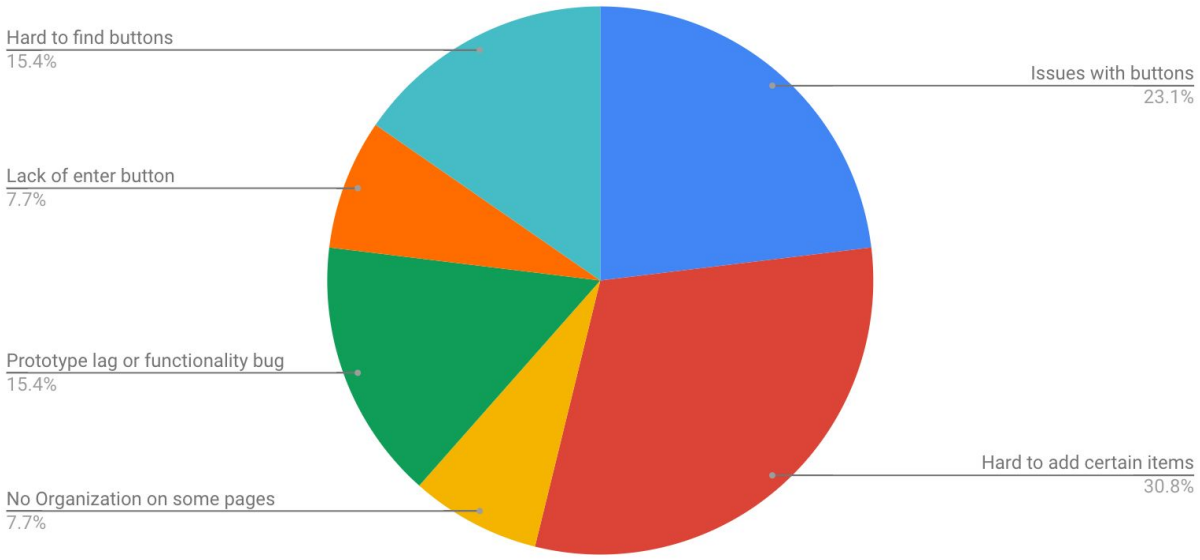
Demographics

- Female, college student, 19
- Mom, 50 married
- Mom, 49 married
- Female, college student, 19
- Male, college student, 21

Discussion of Results

The results from the think aloud evaluation showed us what the user was actually thinking or processing when going through are prototype. It also showed areas we need to work on like button size, clearer control functions, and better feedback. Our design can be improved by fixing the issues mentioned earlier. We need to focus on the main problems like better feedback. Things that worked were the search recipes sections, adding items to grocery, and adding items to pantry. Things that didn't work were changing the amount of items and buttons not having good visibility.

Issues brought up from users in Think Aloud Notes



SUMMARY OF RESULTS

In summary, through all of our evaluation techniques (heuristic evaluation, cognitive walkthrough, predictive evaluation, think aloud study, retrospective testing, and questionnaire) we were able to identify a number of issues within our prototype. Many users ran into the same issues when testing the prototype, which helps us prioritize which issues are the most pressing.

As far as *user understanding* goes, we did pretty well in this area. Most users knew what all icons represented and knew how to navigate the app. Additionally, all of the users ranked our app highly in intuitiveness on the questionnaire.

One thing our app can improve upon is *ease of use.* Our users ran into many minor road bumps when using our app. A few main issues were:

1. There was no enter button or feedback when users updated pantry item data. Users were not sure if their changes had been accepted or not.
2. Users had issues finding and pressing some buttons. It took users longer than expected to find the baking tab. Some users had a hard time finding the “add item” button.

NEXT STEPS

There were a couple of common problems that users had, particularly in the area of confirmation of actions taken. Going forward, we would need to add more of this in order to help users figure out whether they achieved their objectives without leaving the page they're on. One example could be a pop up message for "Groceries Added" when a user adds things from their pantry to their grocery list.

Additionally, we noticed that most users encountered confusion when editing items in the pantry. Since there was no "enter" or "confirm" button when changing pantry data, users were not sure if their actions were complete or not. To fix this issue, we would add an "enter" button. When pressed, users would be taken back to the main pantry view and their changes would be updated on the icons.

Besides this, we would need to run our tests on different kinds of people. In our evaluations, we mostly used college students and middle-aged women, which we predicted would be our demographics. However, it's important to make sure we include all possible stakeholders in the discussion, so it would be good to pull in some other groups and see what they think of the app as possibly more casual users.

After a few iterations of prototyping and evaluating, we would be interested to see the results of a sort of beta test wherein we could have users actually use the full-functionality app for a day or a week and see what actions they take most or least often, since we don't know which features would actually get used and which just take up space.