

# COMPUTER SCIENCE & ENGINEERING

UNIVERSITY OF WASHINGTON

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## Cooking Companion

Paper Prototype and Usability Testing

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### *Authors*

Aaron J. RONEY (aroney)<sup>1</sup>  
Ananda SARKAR (anandsar)<sup>2</sup>  
Jason CHO (darken1)<sup>3</sup>  
Ryan OLMSTEAD (rolm)<sup>4</sup>

### *Attention*

Alan BORNING, Ph.D.<sup>5</sup>

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<sup>1</sup>M.S. Candidate, CS&E, University of Washington. Email: aroney@microsoft.com.

<sup>2</sup>M.S. Candidate, CS&E, University of Washington. Email: anandsar@uw.edu.

<sup>3</sup>M.S. Candidate, CS&E, University of Washington. Email: darken1@uw.edu.

<sup>4</sup>M.S. Candidate, CS&E, University of Washington. Email: rolm@uw.edu.

<sup>5</sup>Professor of Computer Science & Engineering at the University of Washington. Ph.D., Computer Science, Stanford University, 1979. B.A., Mathematics, Reed College, 1971; M.Sc., 1974. Fulbright Senior Scholar Award (1997); Fellow of the Association Computing Machinery, 2001.

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## Abstract

TODAY THERE EXIST A MULTITUDE OF APPLICATIONS FOR SMARTPHONES AND TABLETS DESIGNED TO AID THE AMATEUR CHEF. MOST OF THESE APPLICATIONS FOCUS ON FINDING AND MANAGING RECIPES, OR PROVIDING GENERAL COOKING ADVICE. PERSONALIZING THESE APPLICATIONS TO ONE'S NEEDS IS CUMBERSOME AT BEST, AND NOT POSSIBLE IN MANY CASES. *Cooking Companion* PROPOSES A NEXT GENERATION COOKING APPLICATION THAT ELEVATES ITSELF FROM A MERE RECIPE-SEARCH APPLICATION TO A MORE MEANINGFUL KITCHEN HELPER. *Cooking Companion* TURNS ANY SMARTPHONE OR TABLET INTO A COMPANION THAT KNOWS YOU AND YOUR FAMILY, UNDERSTANDS YOUR TASTES, AND EVEN ADJUSTS TO YOUR KITCHEN APPLIANCES. ALTHOUGH *Cooking Companion* CAN BE USED BY ANYONE, IT IS TARGETED TOWARD WORKING ADULTS WHO ARE ENTHUSIASTIC, BUT NOT EXPERT, COOKS. THESE PEOPLE ENJOY EXPERIMENTING WITH RECIPES AND TRYING NEW COOKING TECHNIQUES, BUT LACK THE TIME FOR FORMAL TRAINING. *Cooking Companion* HELPS THEM FIND RECIPES THAT THEY—AND THEIR FAMILIES—LOVE, AND PROVIDES THE CULINARY SUPPORT THEY NEED WITHOUT REQUIRING ANY ADDITIONAL TIME.

# 1 Tasks

## 1.1 Easy

Monica lives with her husband and 2 kids (ages 3 and 7). She is cooking dinner for her husband's birthday. Her husband likes pasta dishes. Monica does a quick search of her recipe library in Cooking Companion and selects a baked rigatoni recipe. She goes to the recipe ingredients list and verifies that she has all of the ingredients in her kitchen. Though the original recipe was meant for 8 people, Monica easily adjusts the recipe down to 4 with the help of Cooking Companion and sees that the ingredients are also scaled down as well. Using her phone, she follows the recipe step by step. She uses gestures to move from one step to the next without having to touch the screen.

**DATA TO USE:** Sign up data: Monica Tsang, Family includes: Rob Tsang (husband), Kids: Chloe (7 years) and Stanley (4 years). Use GE Advanced for Microwave and GE 1245 Oven for Oven appliance.

## 1.2 Medium

Joe is a grad student and does not have the budget for a well-stocked pantry. He is taking a dessert to a potluck at a friend's house, and he uses Cooking Companion to find a banana cake recipe that everyone will appreciate. He begins cooking it immediately. Joe is an efficient cook, and does not like to keep walking back to his phone to check the ingredient list. Instead, he tells Cooking Companion to read the recipe step to him. Joe performs some recipe steps in a different order than the recipe lists them, and Cooking Companion is able to accommodate this based upon Joe's voice command by telling the phone to move on to the next step. When Joe gets to a point in the recipe that calls for baking powder, and he realizes that he only has baking soda, Joe asks for an alternate and Cooking Companion suggests baking soda with lemon juice instead. Joe is pleased to see that he is able to continue on with his recipe steps even with the substitution mishap during cooking.

**DATA TO USE:** Start with sign-in page of Joe Johnson. Search for Banana cake under an hour recipe.

## 1.3 Hard

Robin works as a Software Engineer and lives with her family. Given that she typically has a busy schedule throughout the week, she prefers to plan her dinner plans for the week well ahead of time. She picks up a few recipes suggested by Cooking Companion, and she also takes a picture of a Chinese dish from a magazine that she is reading using her smartphone. The picture is imported into Cooking Companion and this new information is now updated in her recipe library. Cooking Companion sends an alert through its calendar reminding her that Josh and his wife would be over for dinner Thursday. Robin has recently resolved to cook healthier meals, and decides to adjust her recipes to reduce sodium. She updates her profile, and her recipes are automatically adjusted. Based on her choices for the dinner all

week, Cooking Companion is able to plan her grocery list. As Robin heads out grocery shopping Sunday evening, she checks Cooking Companion grocery list for the week, and checks them off as she purchases them. She is confident that she got all ingredients covered for the week.

**DATA TO USE:** Sign-up data: Robin Alphin, husband Sam Alphin. Use photo for Chicken in Hot Garlic Sauce for (take picture) for Monday, use Macaroni and Cheese for Tuesday, Chicken Teriyaki Pizza for Wednesday, use Baked Rigatoni for Thursday, use Chicken Thai Curry and Rice for Saturday and Baked Salmon for Sunday. Thursday dinner should be for 4 people (including Josh and Katie).

## 2 Summary

### 2.1 Chelsey

Chelsey lives with her husband in Issaquah, WA. She is a financial analyst that loves using apps (e.g., pinterest) to find recipes. She doesn't use recipe applications very much, but sometimes on an unknown recipe, looks up to find a matching recipe. She enjoys almost all of the pinterest recipes that she finds.

Some of the major takeaways from Chelsey were:

- She never signed in, as she assumed that the app would just save her "guest" selections locally.
- She got really stuck on trying to go back to the home screen...we should address that somehow.
- She commented on wanting more filter options...she was not specific, but she mentioned allergies and specific types of diets (like paleo).
- She was surprised with the grocery list but was really impressed with recipe navigation.

### 2.2 Dayne

Dayne is a small business owner. He does not cook very often, but is frequently constrained for time, so an app to make it easier would be worthwhile. He did not have any problem navigating the cooking screens. For the substitution, he was navigating the recipe verbally, and asked for a substitution for baking powder verbally. I assumed that our application would be sophisticated enough to handle this. He had no problem uploading the recipe, but had difficulty adding a recipe from the library to the calendar. From the calendar view, it took him a while to figure out that he had to click on "edit" to add a recipe to the selected day. Other than that, testing was rather uneventful though.

## 2.3 Margaret

Some of the major takeaways from Margaret were:

- She liked idea of finding pictures and adding to recipe. Wondering if this automatically searches similar recipes based on picture (image) alone - and not with recipe included in picture.
- She liked how grocery list shows all ingredients needed for week. Asked if getting onion for 3 different recipes would combine the quantity into the grocery list or just list it out once.
- She did not understand the purpose of needing to know her appliances in the preferences feature. She doesn't know her microwave brand and wanted to have a link on appliance info or to know more about why this information was needed.

## 2.4 Ruby

Ruby lives with her husband and a 3 year old kid in her Bellevue home. She is a software engineer by profession and is comfortable with smart phone and apps on her phone. She doesn't use recipe applications very much, but sometimes on an unknown recipe, looks up to find a matching recipe. She typically searches and looks for maximum stars and reviews for the recipes (doesn't actually read the reviews though). She has decent success with online recipes so far.

Some of the major takeaways from Ruby were:

- She says she used “Continue as Guest” on task 1 as she thought it would be faster, suggested that there should a prompt around why sign-up is important. Also it should tell how she could sign-up later—like clicking on Guest on the title bar.
- In the cooking steps—in the ingredients page, we should say cooking for 4 people—or whatever that number of people the recipe is adjusted for.
- Expects a finish page on the recipe.
- Expects an easier way (than clicking on title bar) to get to home page.
- Search page should have a link for “upload now”
- Search filter page is nice but she wants a way to avoid some ingredients—like no beef.
- Search result page—along with “cook now”, she thinks there should be a second button for “cook for family”. Cook now should follow the recipe as is and cook for family should adjust the recipe for family. Also if no family members are defined, that button could cook for 1 person.
- Thinks Settings is better called “customize”

- Liked the overall cleanliness of the design, very much likes the grocery list.
- Didn't see much value for adding notes for 11/28 for the invite list.

## 3 Notes

### 3.1 Chelsey

The interviewer typed the notes on a laptop while the operator went through the paper prototype.

#### 3.1.1 Task 1

- Did not log in, just proceeded as a guest.
- Was about to click on search, but clicked on the “baked rigatoni” on the right-hand side.
- Looked at some reviews (she said she normally doesn't, but she wanted to “check functionality”).
- She noticed that the ingredient amount were probably not enough for four people, so she stated, “CC, adjust to four people.”
- She took note of the changes that occurred on the ingredient list, but she commented that a voice reply would be nice.
- She began to cook, and she used voice commands the entire time.
- Halfway through, she said, “CC, show me the help screen.” After this, she tried out the gesture features.
- After completing the recipe, she commanded “CC, add this recipe to my favorites.”
- She was confused that the app went back to the home screen after she completed the recipe (I wasn't sure what to do); however, she checked her favorites to make sure “baked rigatoni” was there.

#### 3.1.2 Task 2

- Did not log in, just proceeded as a guest.
- Clicked on search, types in “banana”.
- She seems to be overwhelmed with the options, so she tries the filter page.
- Commented that the filter page is nice, but she would like other options (did not mention what options).



- She clicked on the correct recipe.
- Clicked on “cook now”.
- She seems to enjoy the fact that she can skip around easily with just a wave or command.
- She didn’t go out of order because she needed to, but she skipped around because she felt comfortable after the first use.
- Surprised that she actually got through the ‘preparation’ steps before the oven was done preheating (she said that this does not happen typically when baking).

### 3.1.3 Task 3

- Did not log in, just proceeded as a guest.
- Clicked on upload.
- Clicked on the camera button, but she was a little confused with all of the options...
- Clicked on the button to add to calendar.
- Commented that she thinks it was added correctly, but she did not feel she got a confirmation.
- Clicked on Thursday 11/28. Clicks on (add).
- She commented that she likes the idea of the planner but didn’t think it was required.
- Searched for “baked rigatoni”.
- She clicked on add.
- Commented that she was not sure how to tell the recipe that it should adjust for two people, but decided to just add them as a note.
- She commented that she knows she has to go to her grocery list, but she is not sure how to get back.
- She asked if there is a hardware back button, she was given a response in the negative.
- Eventually, the operator assisted her by suggesting to click on the title.
- Clicked on grocery list.
- Commented that she would like to retract her previous statement about this feature...she loved the compiled grocery list.

### 3.2 Dayne

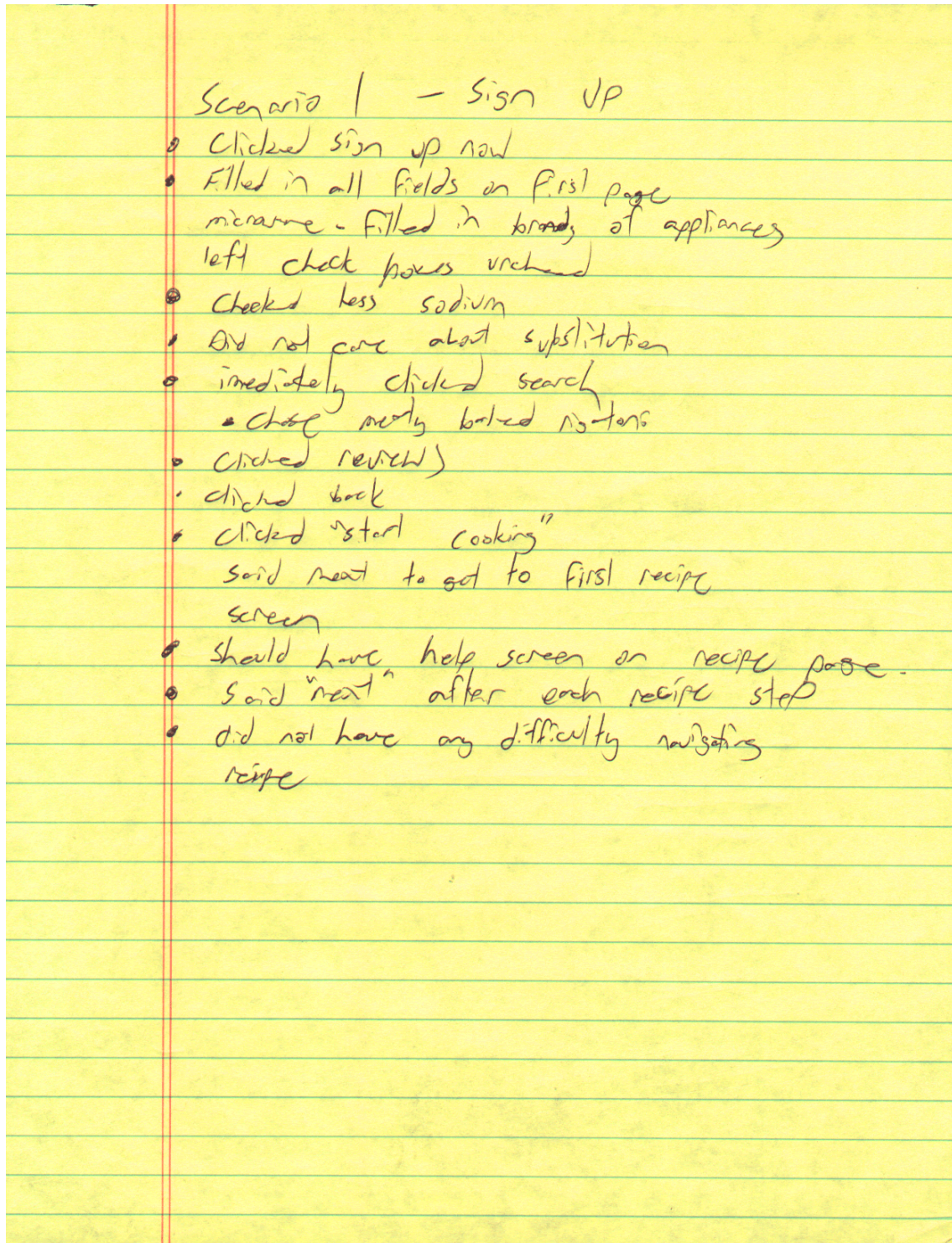


Figure 1. Dayne Notes Task 1

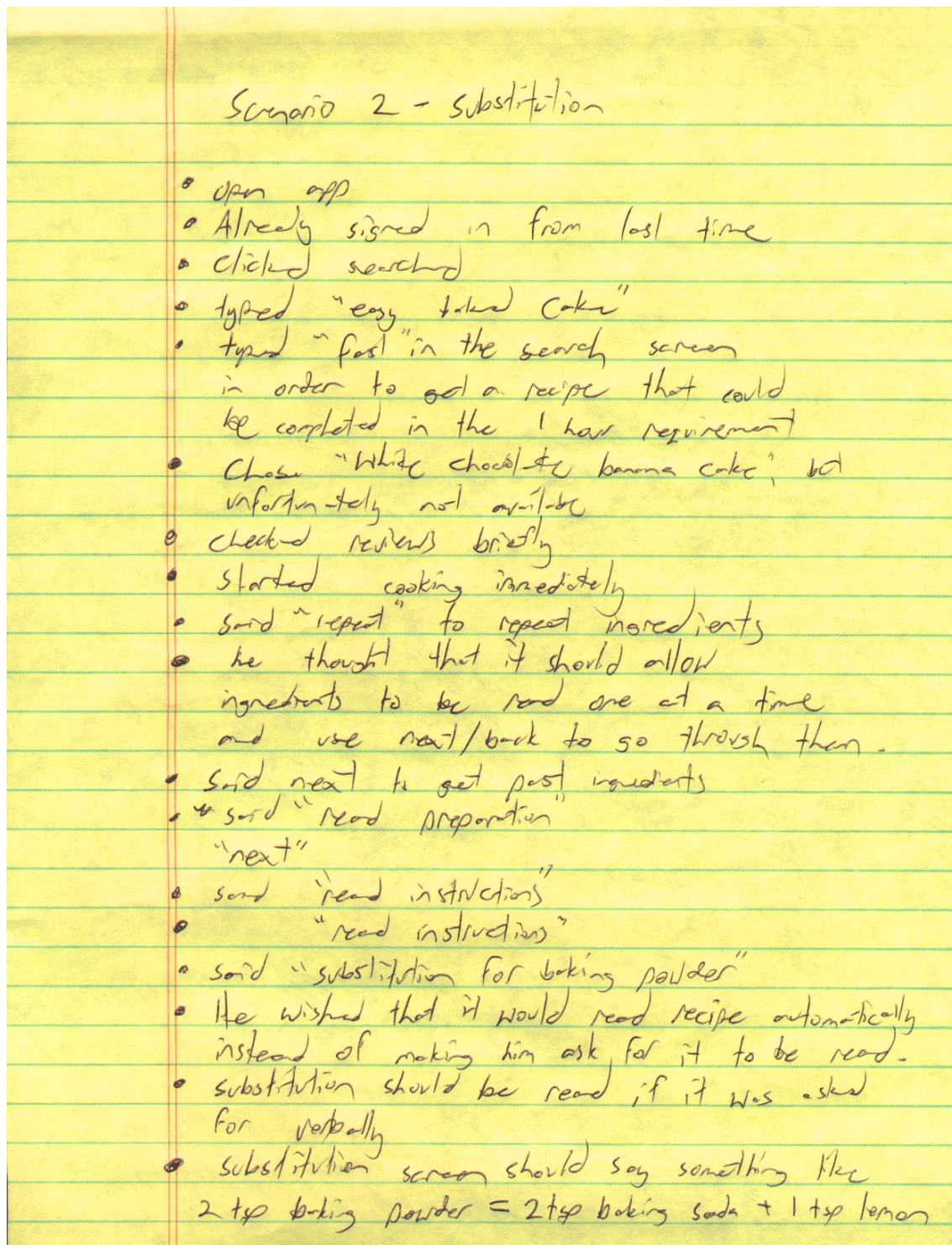
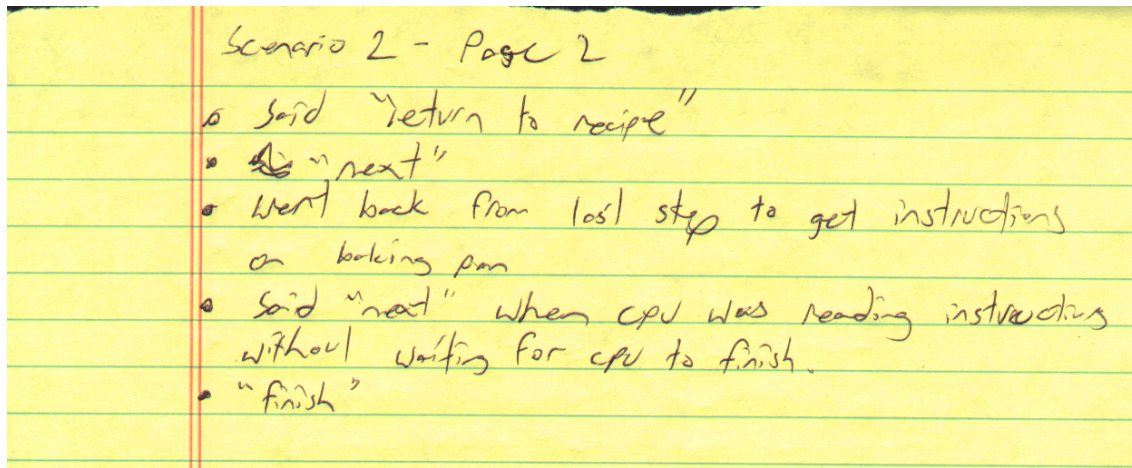


Figure 2. Dayne Notes Task 2 Part 1



**Figure 3.** Dayne Notes Task 2 Part 2

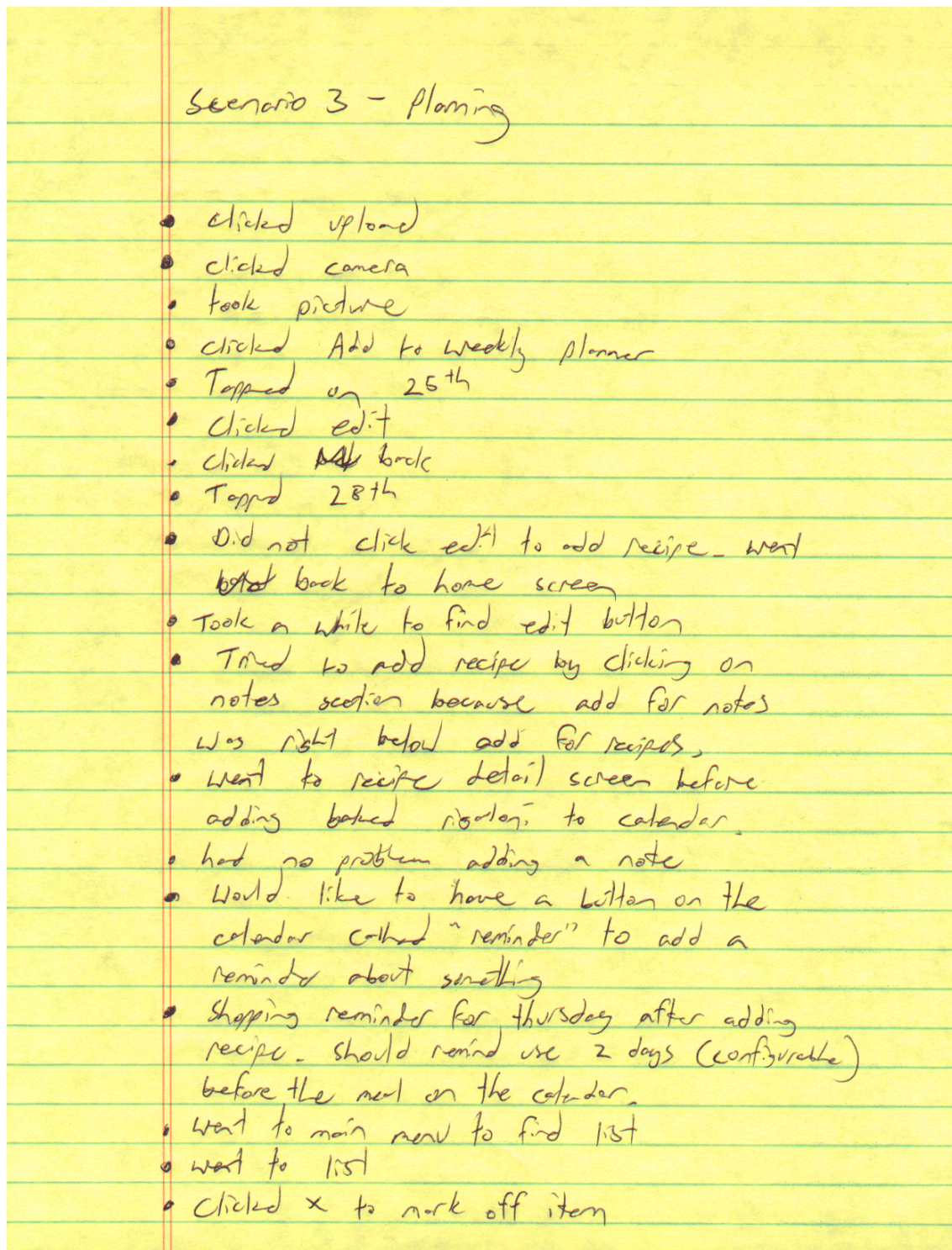


Figure 4. Dayne Notes Task 3

### 3.3 Margaret

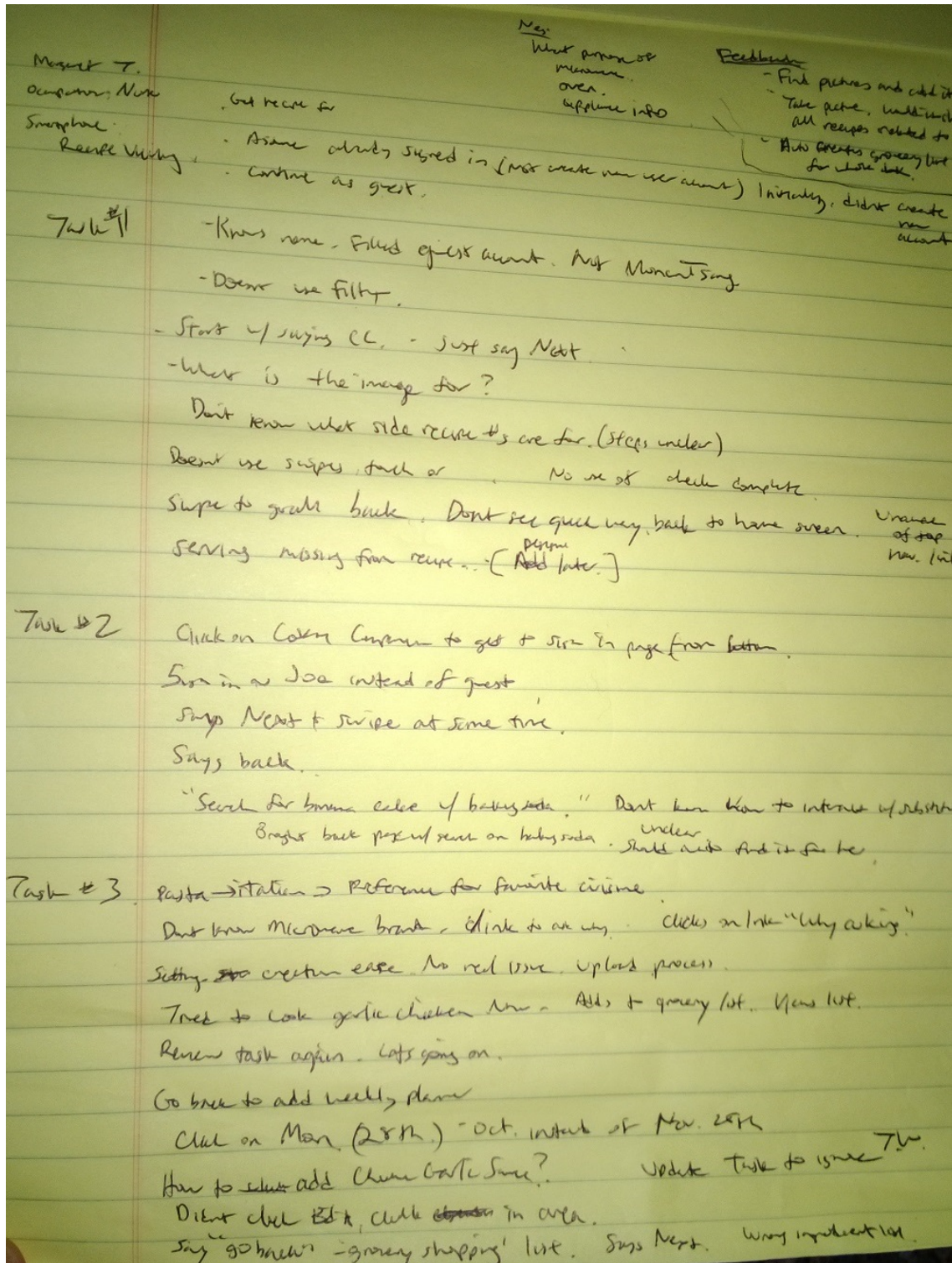


Figure 5. Margaret Notes

### 3.4 Ruby

The interviewer typed the notes on a laptop while the operator went through the paper prototype.

#### 3.4.1 Task 1

- On the first screen, clicked “continue as guest”.
- Found Baked Rigatoni recipe on home screen.
- Clicks on that recipe. Likes that it has so many stars. Doesn’t read reviews.
- Stuck with “cook now” button. Can’t figure out how to customize the meal for 4 people.
- Clicks on “cook now” anyway. Reads the instruction screen, swipes to ingredients screen.
- Confused with 3-1/2 cup of pasta — taps on it to try to change the portion size. Clicks on the “Ingredients” box and nothing happens. Getting frustrated.
- Goes previous and somehow lands on home screen.
- Clicks on details for the recipe. Still can’t find out how to customize for 4 people.
- Clicks on “grocery list” to see if she can adjust the ingredients there. L
- Finally clicked on “Settings” — now happy to enter her family. Enters herself as the 4th member of the family, still continues as guest.
- Goes to Baked Rigatoni recipe. Now assumes “cook now” will actually cook for 4 people. (tells me it’s not intuitive but she thinks it’s the case)
- She expects a Next button on the cooking screens. Uses hand gesture to move to next screen.
- At the last cooking screen, waves next and I’m not exactly sure what screen to show. I showed her the home screen.
- She now tries to add the recipe to my favorites. Clicks on My favorites and is pleasantly surprised to see her recipe there.
- Note: it is very non-intuitive according to her to tap on the title to get back to home page.

### 3.4.2 Task 2

- This time, I started the task with logged in as “Joe”.
- Clicks on “Joe” user name on the home screen. I come up with a new screen saying “logged in as Joe” — switch user, cancel and sign-up as new options. She clicks Cancel.
- Clicks on search, searches for Banana Cake.
- Realizes she had to set filter, goes back and sets filter. Likes the filter screen.
- Picks up the Banana cake recipe.
- Clicks on “cook now”.
- Surprised to see that the details pages call it “Baked Banana Cake”.
- Says CC Next and waves hand at the same time. I deliberately moved forward 2 screens. She doesn’t realize that she is 2 steps ahead. Later realizes something’s wrong as a step seemed missing. Goes previous and gets to the screens. Tells me that she expects some feedback if two screens are forwarded at same time.
- Goes through rest of the steps in order, doesn’t go out of order.
- Again, expects a Finish page at the end of recipe.

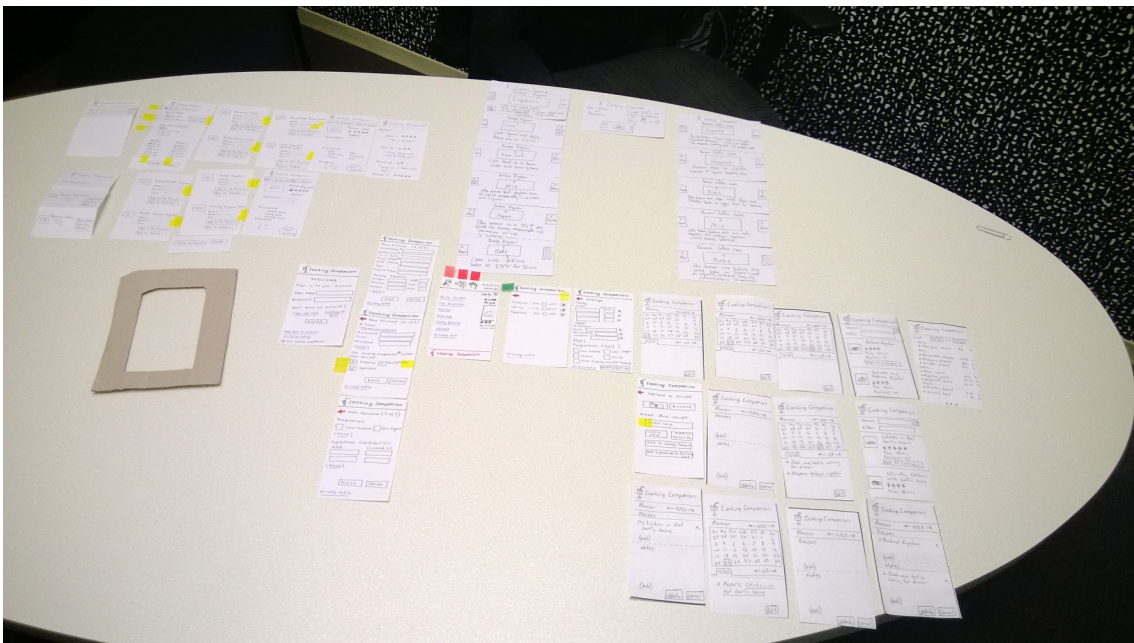
### 3.4.3 Task 3

- This time, we discussed about issues around using Guest for Task 1 and requested her to sign-up to a new account to test the sign-up experience. She went through the sign-up steps. Interestingly, enters herself as a Family member too.
- Doesn’t click on Upload from home page but straight-away clicks on “Weekly Planner”.
- Clicks on Monday — 25th. Slightly confused on the screen, eventually figured out the Edit button. Clicks on it.
- Clicks on Add Recipe.
- I showed the search screen. Expects a link to My favorites.
- Also missing the Upload button. We need to add Upload button on search page. I added one runtime.
- Clicks on Upload. Clicks on browse instead of camera button. I’m thinking that browse button is not required there.



- Goes through the flow and clicks on add to calendar — expects it got added to 11/25.
- Clicks on Thursday 11/28. Clicks on Add Recipe.
- Searches for Baked Rigatoni. Adds it.
- Confused how to add about two guests on Thursday. Stuck for 2-3 minutes. Eventually adds a note.
- Clicks on title bar to get to home page. Now, clicks on grocery list.
- Very happy with the grocery list screen.
- Completes the task.

## 4 Paper Prototype



**Figure 6.** Prototype – Overview

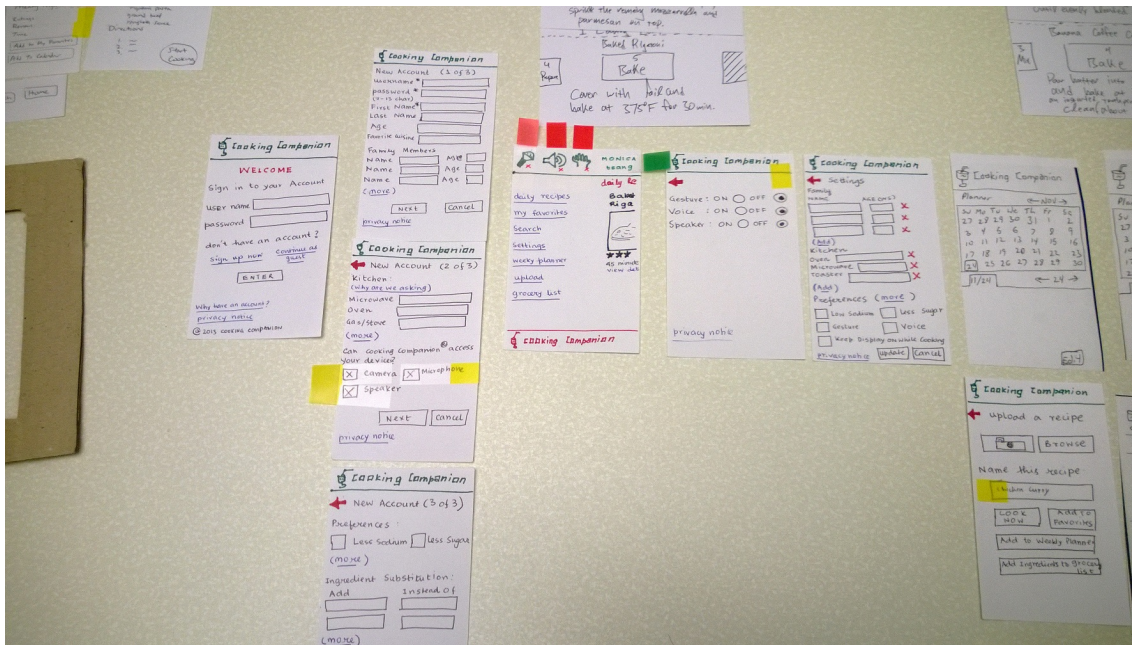


Figure 7. Prototype – Sign In

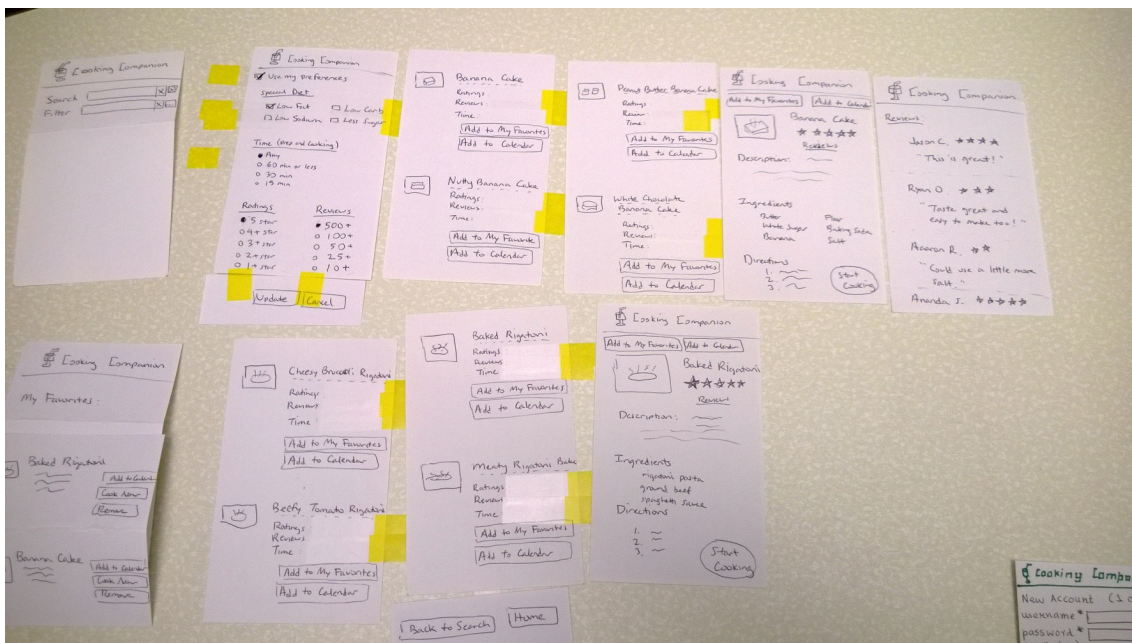


Figure 8. Prototype – Search

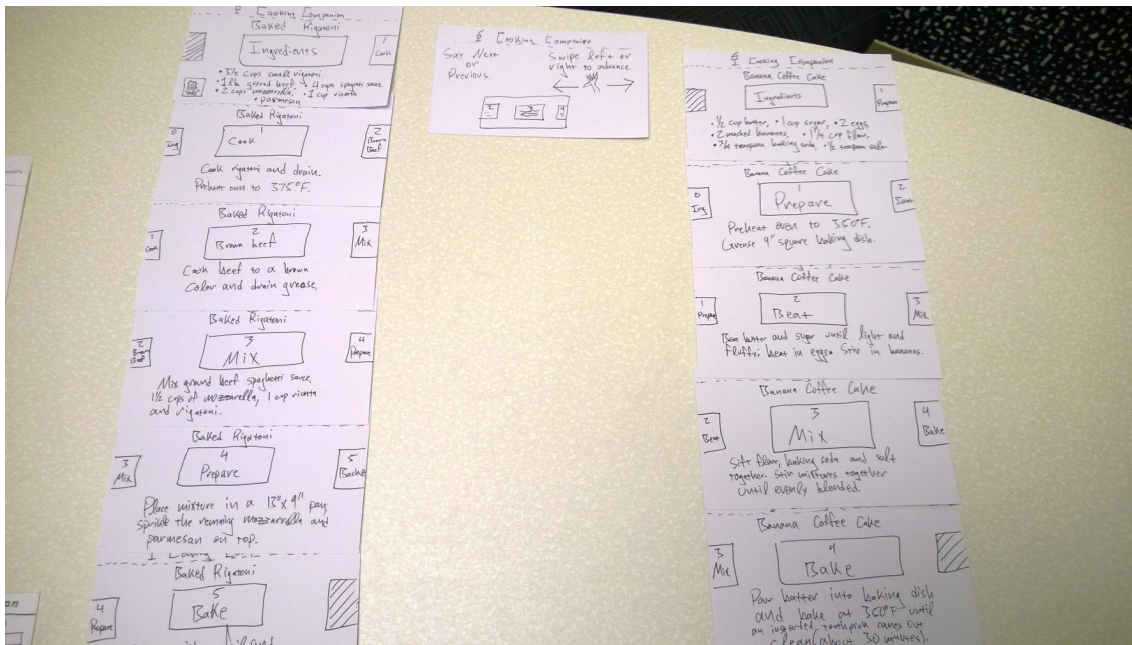


Figure 9. Prototype – Recipe

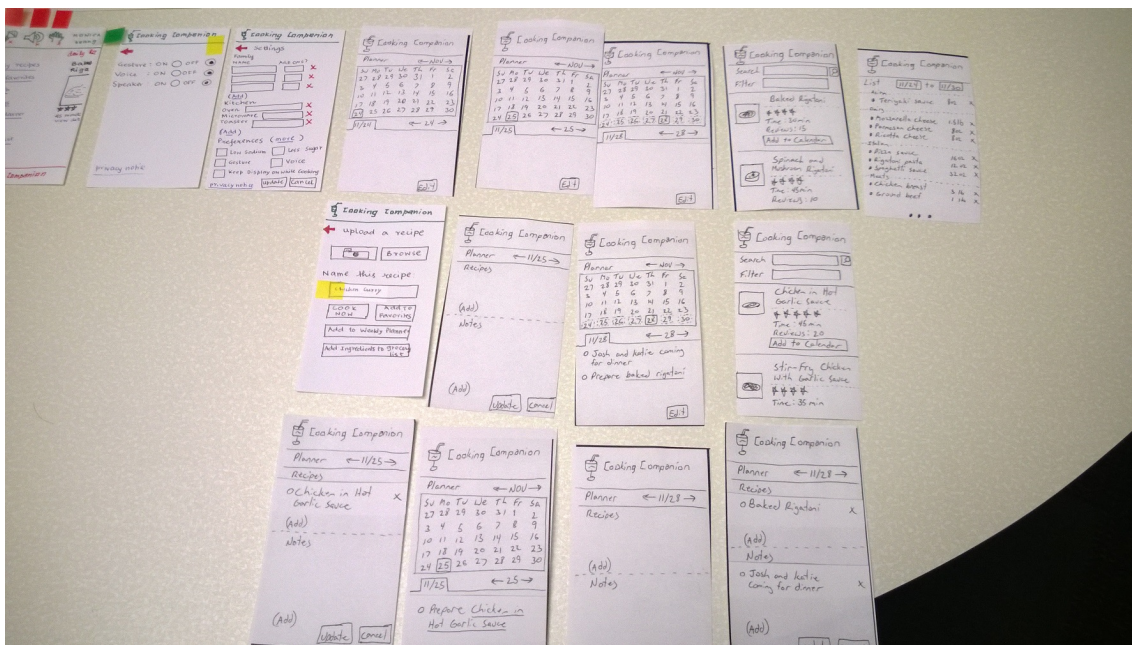


Figure 10. Prototype – Planning