Shoppy

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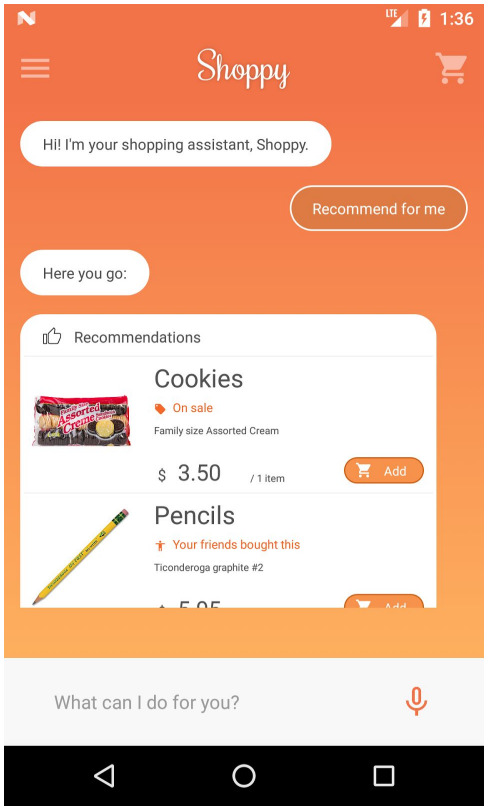
Fewer choices, better products.

1. Problem and Solution Overview

In-store shopping requires transportation, collecting items and waiting for check-out, while online shopping requires comparing products, reading comments and finding extra items for free shipping. It is time-consuming and inconvenient to make purchase decisions.

We designed Shoppy to solve this problem. Shoppy is a chat-based personal shopping assistant that knows you from your purchasing habits and social networks, and only provides limited choices for you. Shoppy can predict items that you always buy, remind you what is going to be used up, and help you explore new products.

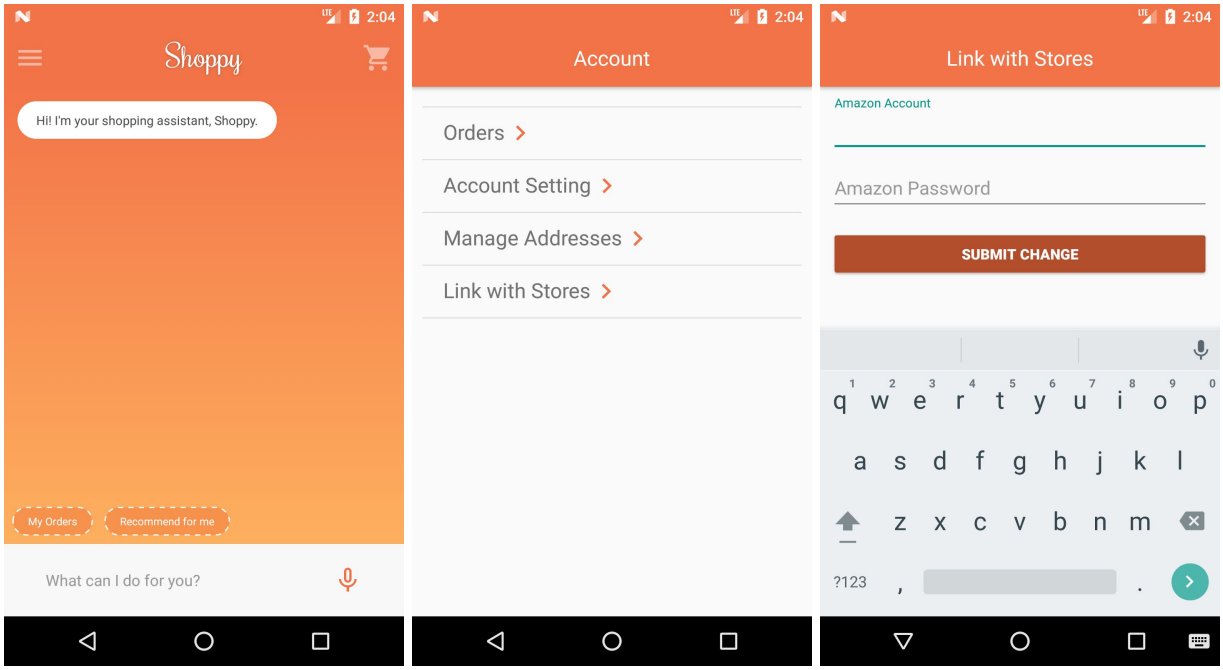


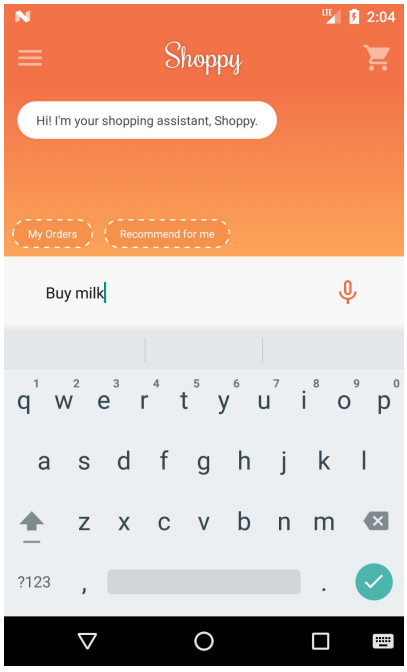
2. Tasks & Final Interface Scenarios

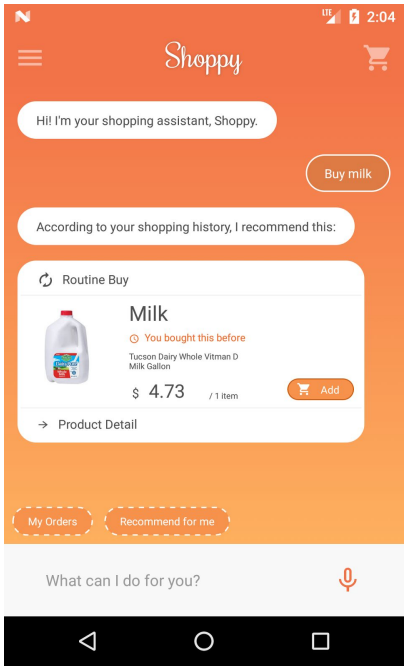
2.1. Complex Task: Routine Buy

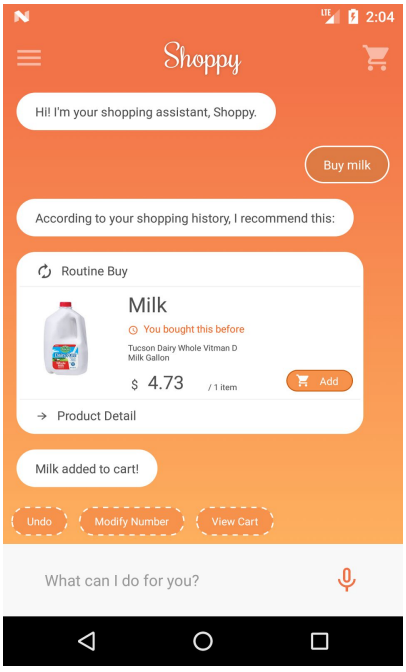
Buy Routine products and choose alternatives.

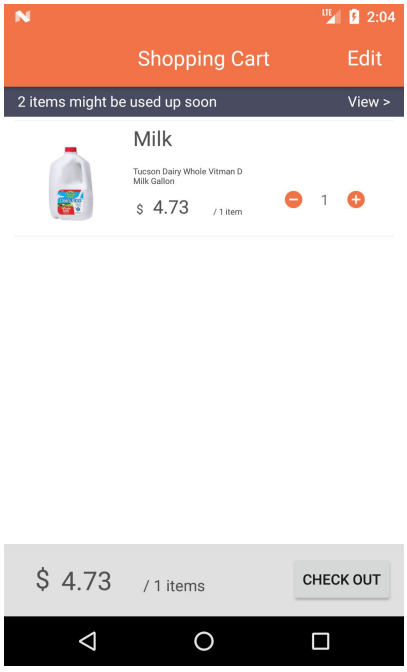
We found that while buying unfamiliar products, our interviewees put more trust in products they can actually see in store rather than online. We also noticed that there's a kind of "routine product" in our homes: we always buy the same product again and again when our old ones run out. Most of them are just standardized commodities: the quality has no difference between offline and online. Shopping in store is time consuming, so we propose a list of "routine products" and when you run out of something, you can buy it with just "one-click". Our assumption is that the customer would think it is convenient to just tell our virtual assistant put one "routine product" in the shopping cart and buy it and prefer this solution to in-store shopping. An extension is, "what if I've got tired of my old yogurt, and want to try a new one". We also provide the user 3 alternative products (good quality, carefully selected by us) that the user can easily place the order and try.

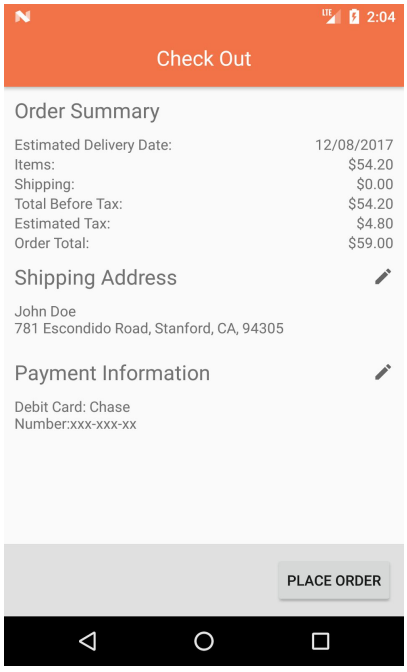



2:04
Shoppy
Hi! I'm your shopping assistant, Shoppy.
My Orders
Recommend for me
Buy milk


2:04
Shoppy
Hi! I'm your shopping assistant, Shoppy.
Buy milk
According to your shopping history, I recommend this:
Routine Buy
Milk
You bought this before
Tucson Dairy Whole Vitman D
Milk Gallon
$ 4.73
/ 1 item
Add
Product Detail
My Orders
Recommend for me
What can I do for you?


2:04
Shoppy
Hi! I'm your shopping assistant, Shoppy.
Buy milk
According to your shopping history, I recommend this:
Routine Buy
Milk
You bought this before
Tucson Dairy Whole Vitman D
Milk Gallon
$ 4.73
/ 1 item
Add
Product Detail
Milk added to cart!
Undo
Modify Number
View Cart
What can I do for you?

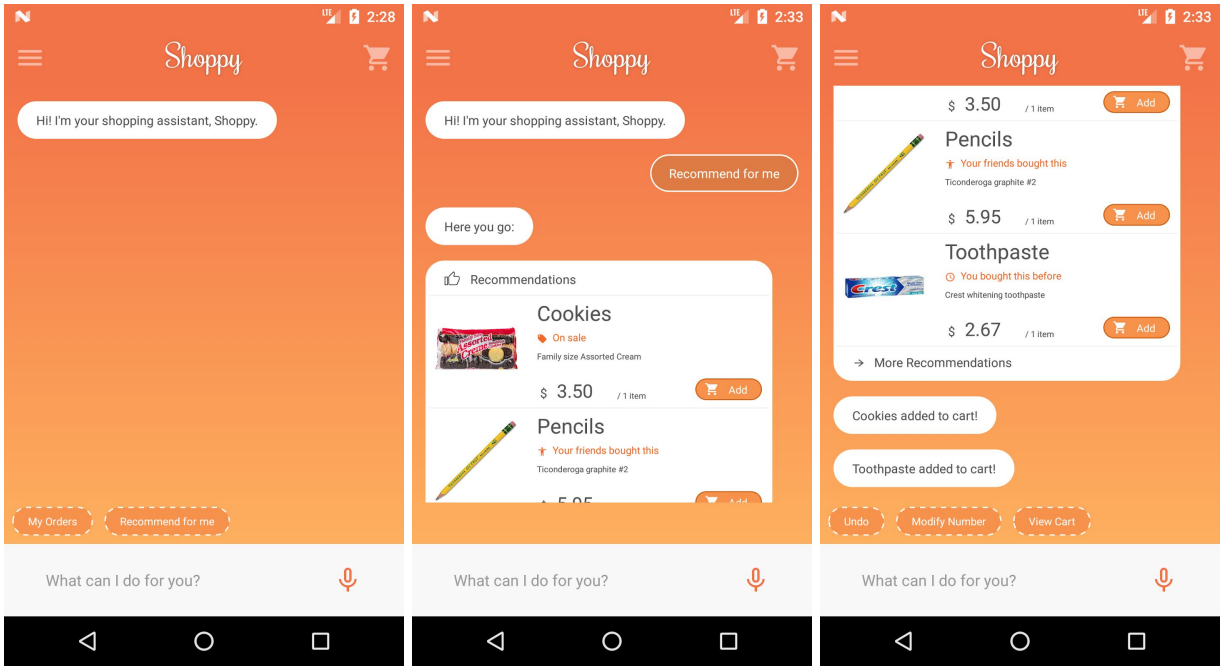

2:04
Shopping Cart
Edit
2 items might be used up soon
View >
Milk
Tucson Dairy Whole Vitman D
Milk Gallon
$ 4.73
/ 1 item
1
$ 4.73
/ 1 items
CHECK OUT

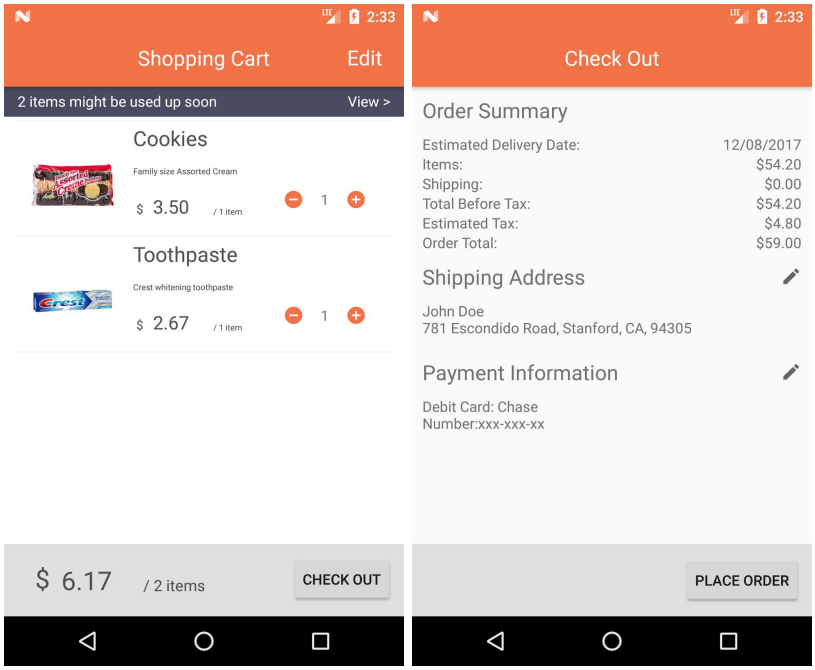

2:04
Check Out
Order Summary
Estimated Delivery Date: 12/08/2017
Items: $54.20
Shipping: $0.00
Total Before Tax: $54.20
Estimated Tax: $4.80
Order Total: $59.00
Shipping Address
John Doe
781 Escondido Road, Stanford, CA, 94305
Payment Information
Debit Card: Chase
Number:xxx-xxx-xx
PLACE ORDER

2.2. Medium Task: Recommend

Explore new products by smart recommendation.

Apart from exploiting existing shopping history, users want to explore new items based on their social network and extend their shopping scope. By provide recommendation, Shoppy can precisely provides items from various reasons. All things user need to do is reviewing Shoppy's personal recommendation and making purchase.

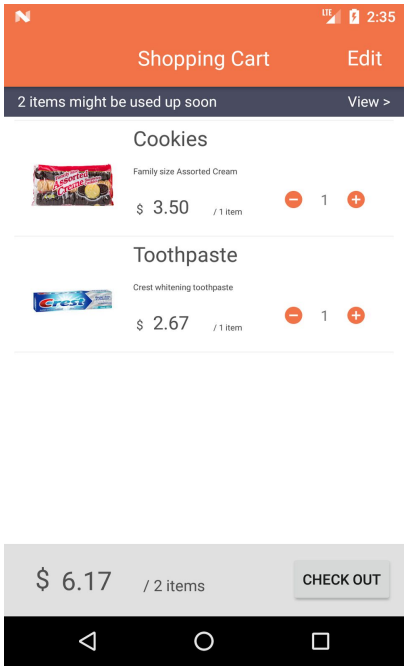


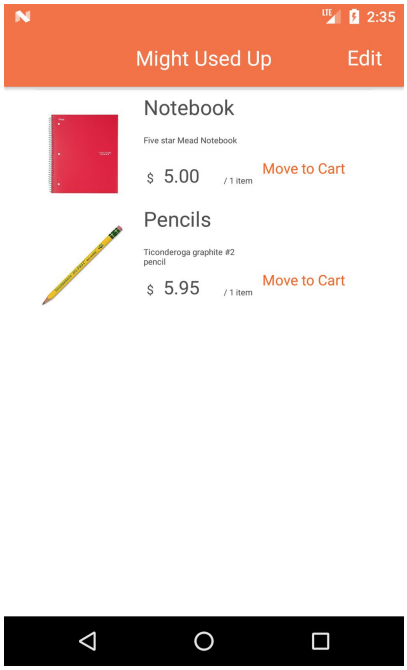


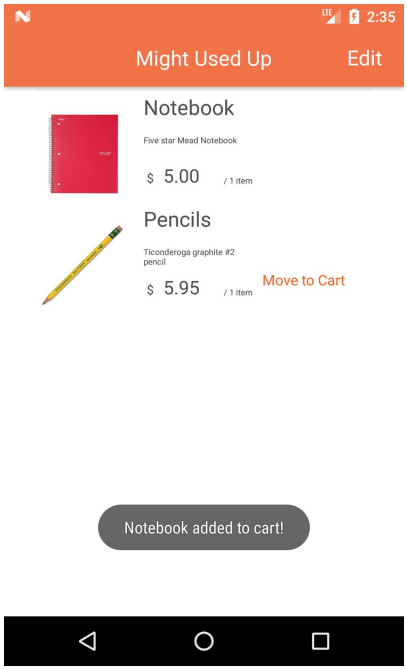
2.3. Simple Task: Remind

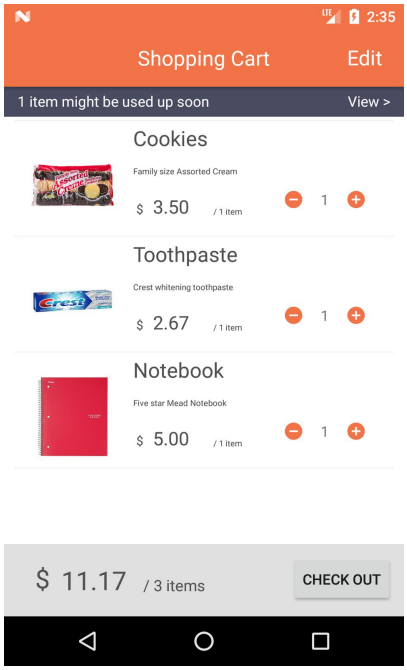
Remind you to buy items that might be used up soon.

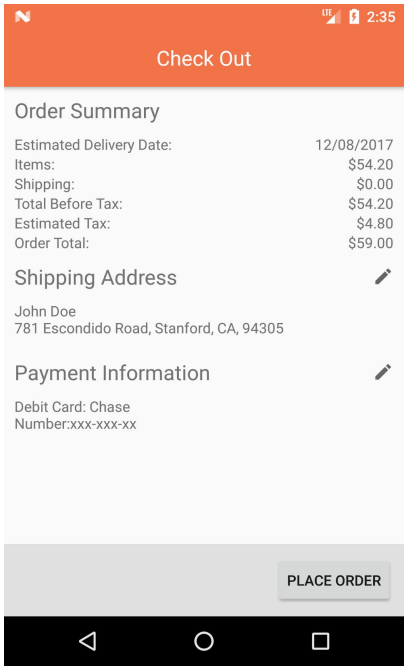
It is really awkward to find that a toothpaste is used up and then remember to buy a new one. Based on smart prediction algorithms, Shoppy can remind you to buy items that might be used up soon when you are going to check out.







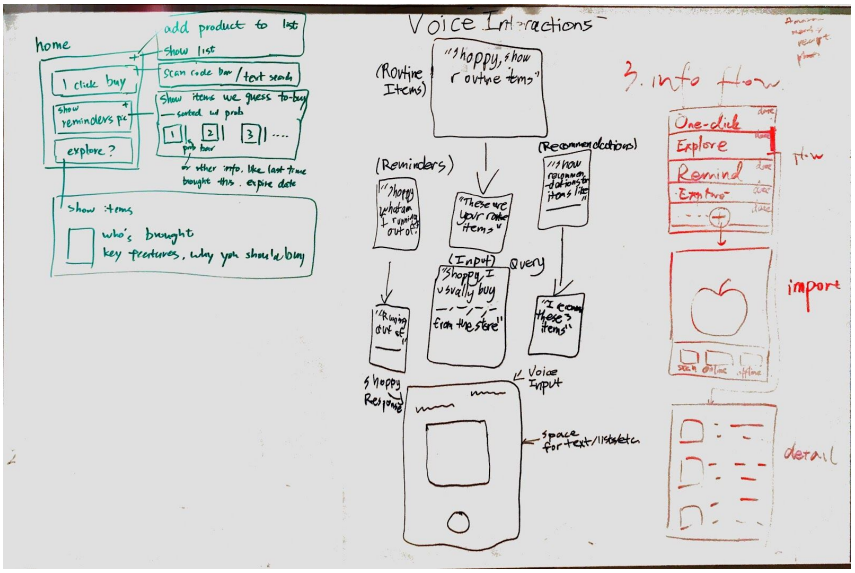




3. Design Evolution

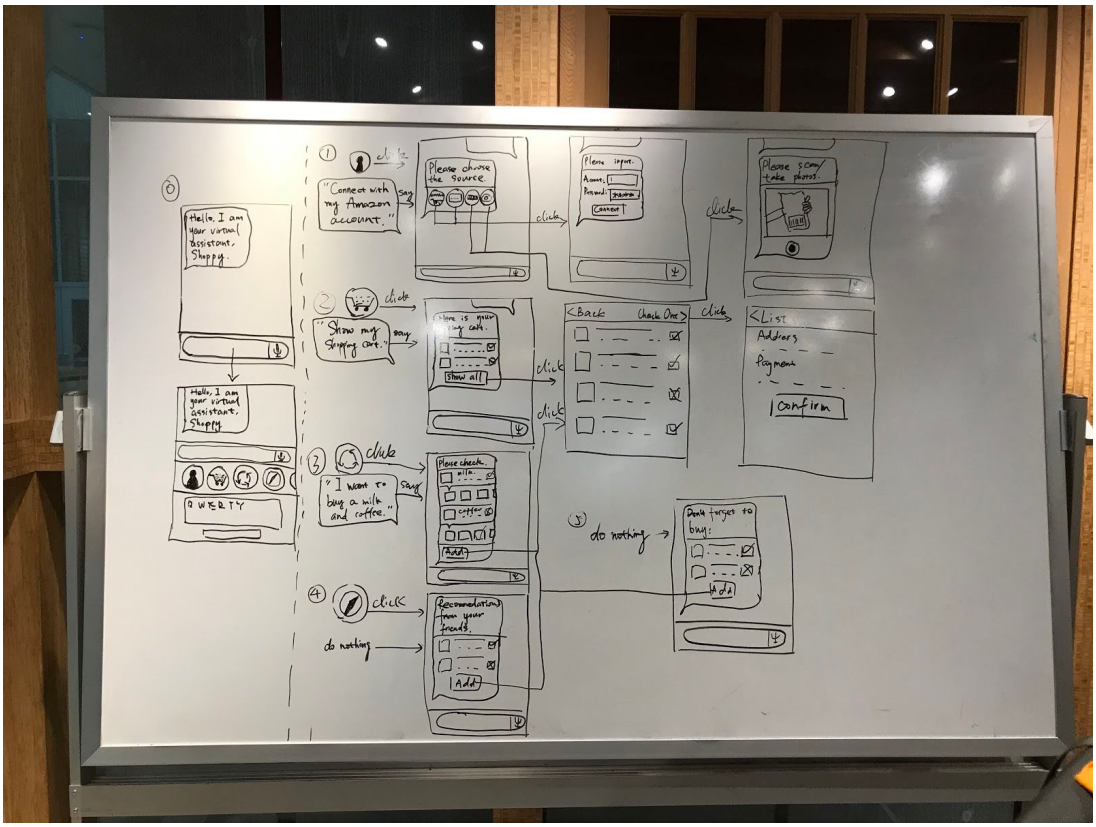
3.1. Concept Sketches

To create our concept sketches, we discussed several possible ideas for how our app should function. One idea was a voice interaction system, one was a passive text system, and one was an active text system. From these three sketches, we discussed which system would work best and used that in our final design.



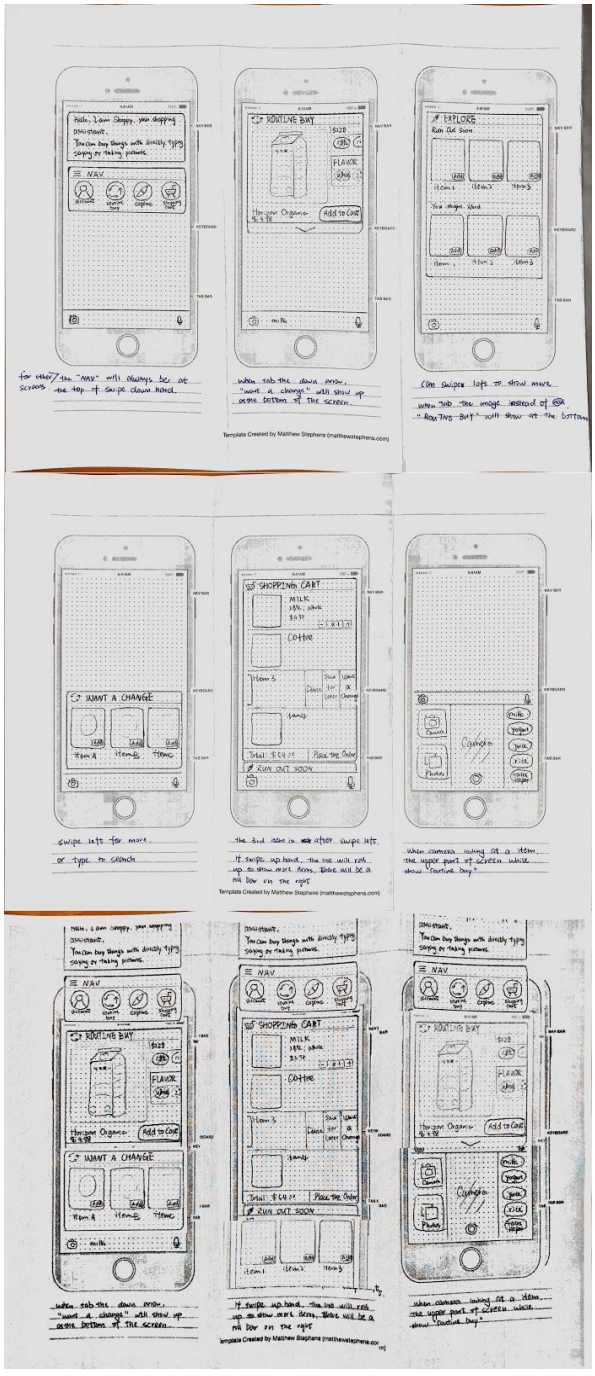
3.2. UI Sketches (Conversational Interface)

We created this interface based on a conversational interactive logic. This is basically a early form of our final prototype.



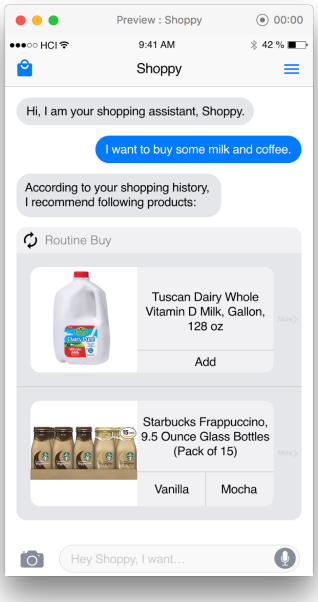
3.3. UI Sketches (Card-based Interface)

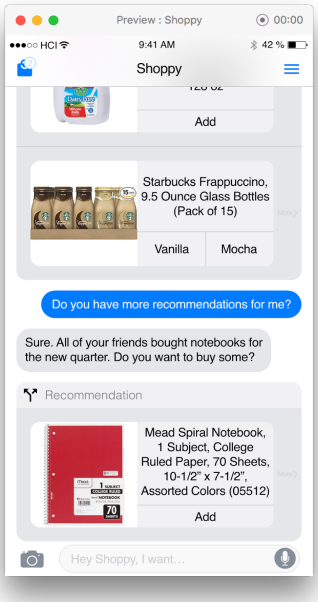
In the test of low-fi prototype, we used this card-based interface because we thought the conversation history was not that necessary. In this design, user input will trigger certain card and let it be bottom of the card stack.

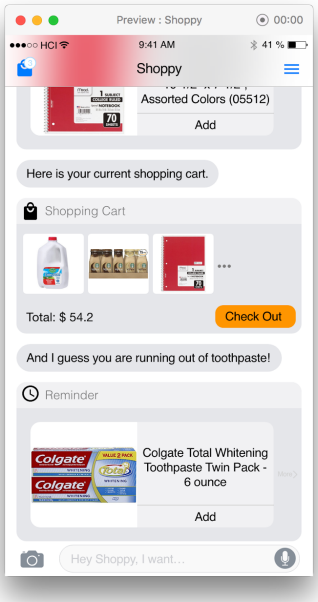


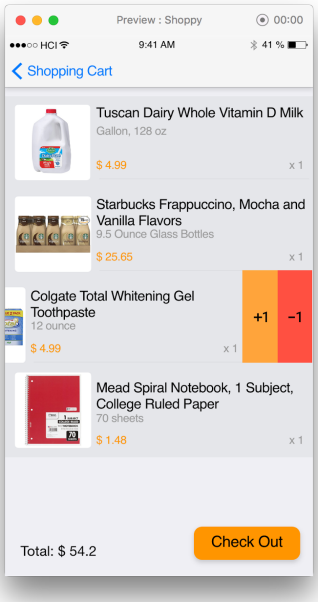
3.4. Medium-Fi Prototype (Conversational Interface)

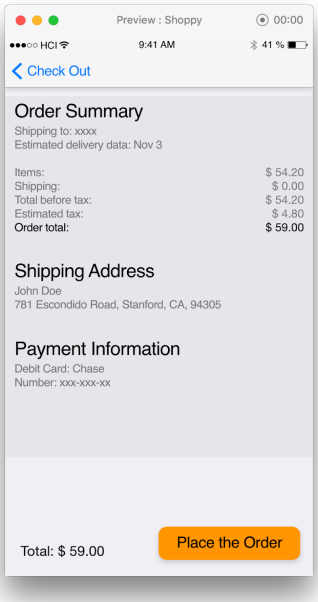
In the medium-fi prototype, we turned back to conversational interface from card-based interface because we realized that the conversation history was still important and could give user a natural interaction experience.

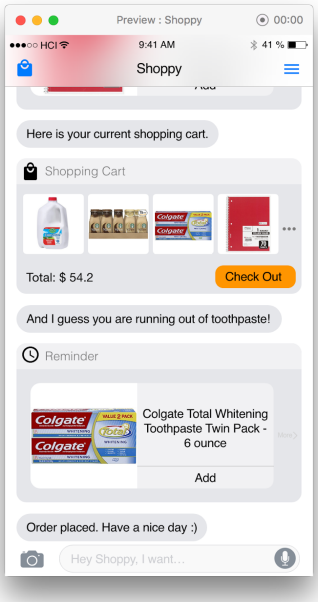


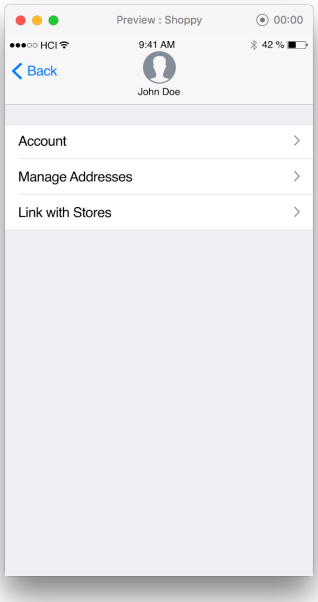


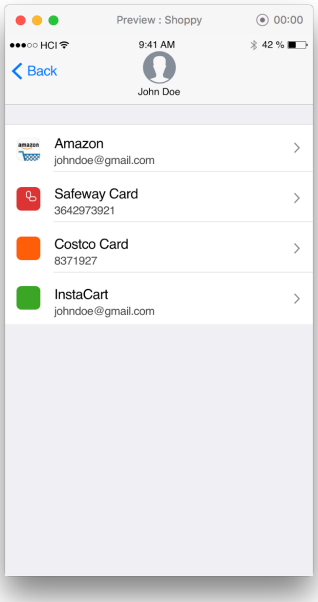






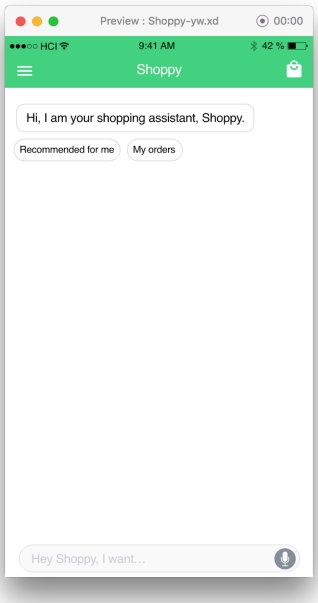

Preview : Shoppy
00:00
HCI
9:41 AM
41 %
Shoppy
Here is your current shopping cart.
Shopping Cart
Total: $ 54.2
Check Out
And I guess you are running out of toothpaste!
Reminder
Colgate Total Whitening Toothpaste Twin Pack - 6 ounce
Add
Order placed. Have a nice day :)
Hey Shoppy, I want…

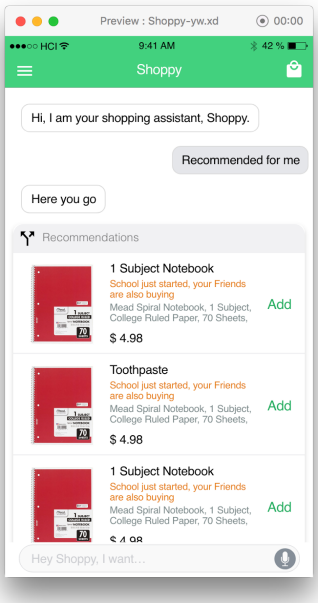

Preview : Shoppy
00:00
HCI
9:41 AM
42 %
Back
John Doe
Account
Manage Addresses
Link with Stores

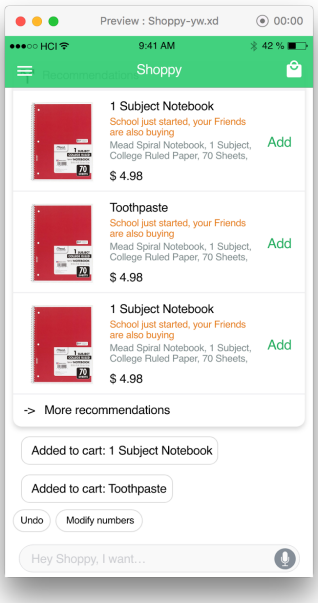

Preview : Shoppy
00:00
HCI
9:41 AM
42 %
Back
John Doe
Amazon
johndoe@gmail.com
Safeway Card
3642973921
Costco Card
8371927
InstaCart
johndoe@gmail.com

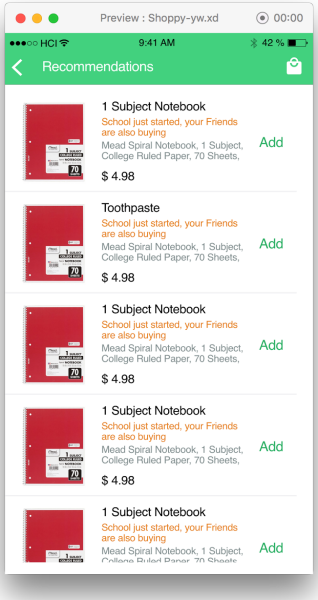
3.5. Redesign 1

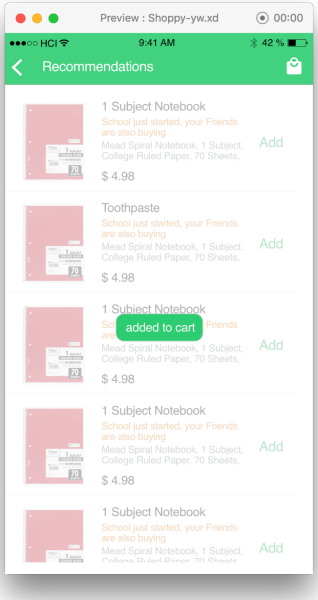
One major problem in the medium-fi prototype was that user might be confused it with iMessage app. In the first version of redesign, we tried to give our app a new style. Furthermore, we provided prompts or shortcuts of user input to remind or facilitate the interaction. We also refined the details of all tasks.

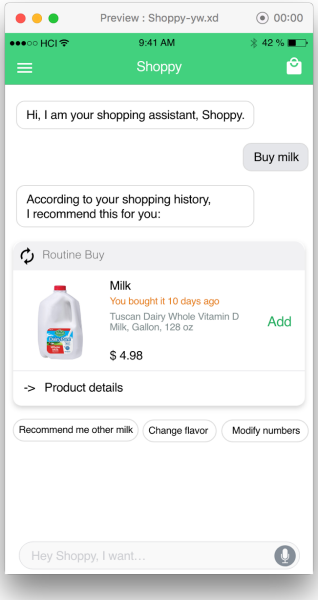


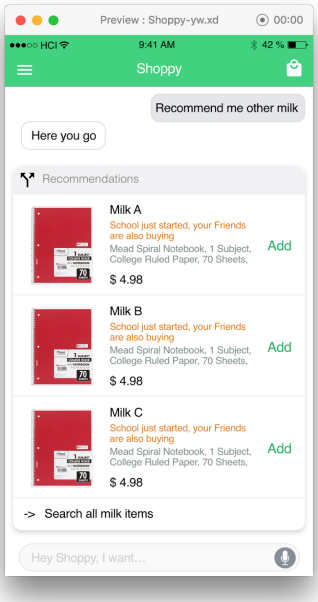


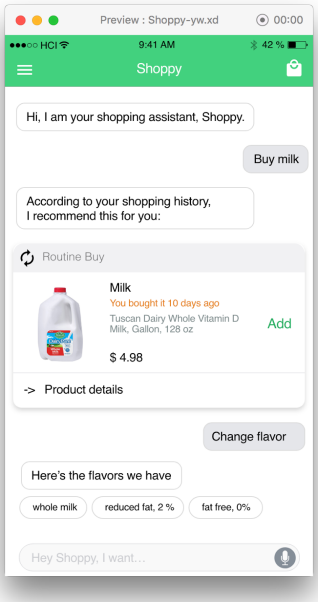


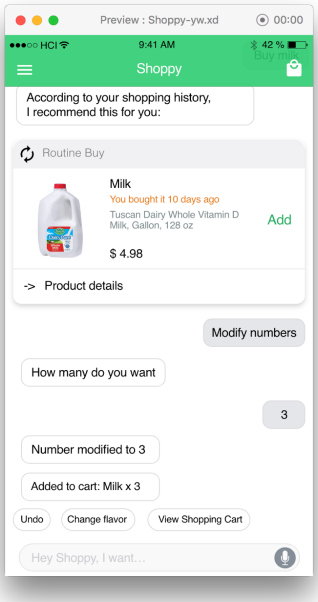






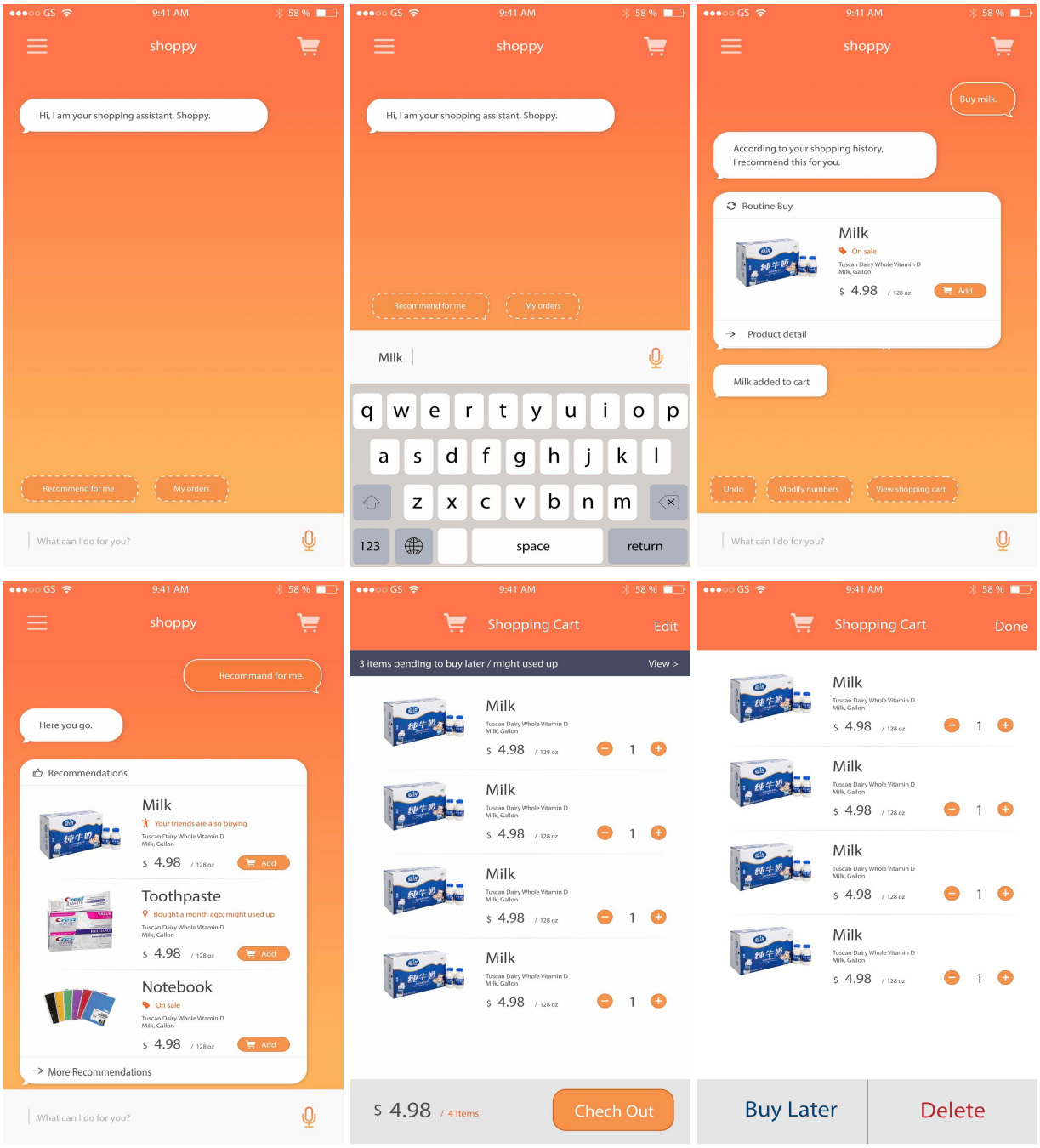

Preview : Shoppy-yw.xd
00:00
HCI
9:41 AM
42 %
Shoppy
Recommend me other milk
Here you go
Recommendations
Milk A
School just started, your Friends are also buying
Mead Spiral Notebook, 1 Subject, College Ruled Paper, 70 Sheets,
$ 4.98
Add
Milk B
School just started, your Friends are also buying
Mead Spiral Notebook, 1 Subject, College Ruled Paper, 70 Sheets,
$ 4.98
Add
Milk C
School just started, your Friends are also buying
Mead Spiral Notebook, 1 Subject, College Ruled Paper, 70 Sheets,
$ 4.98
Add
-> Search all milk items
Hey Shoppy, I want…


Preview : Shoppy-yw.xd
00:00
HCI
9:41 AM
42 %
Shoppy
Hi, I am your shopping assistant, Shoppy.
Buy milk
According to your shopping history, I recommend this for you:
Routine Buy
Milk
You bought it 10 days ago
Tuscan Dairy Whole Vitamin D Milk, Gallon, 128 oz
$ 4.98
Add
-> Product details
Change flavor
Here's the flavors we have
whole milk
reduced fat, 2 %
fat free, 0%
Hey Shoppy, I want…


Preview : Shoppy-yw.xd
00:00
HCI
9:41 AM
42 %
Shoppy
According to your shopping history, I recommend this for you:
Routine Buy
Milk
You bought it 10 days ago
Tuscan Dairy Whole Vitamin D Milk, Gallon, 128 oz
$ 4.98
Add
-> Product details
Modify numbers
How many do you want
3
Number modified to 3
Added to cart: Milk x 3
Undo
Change flavor
View Shopping Cart
Hey Shoppy, I want…

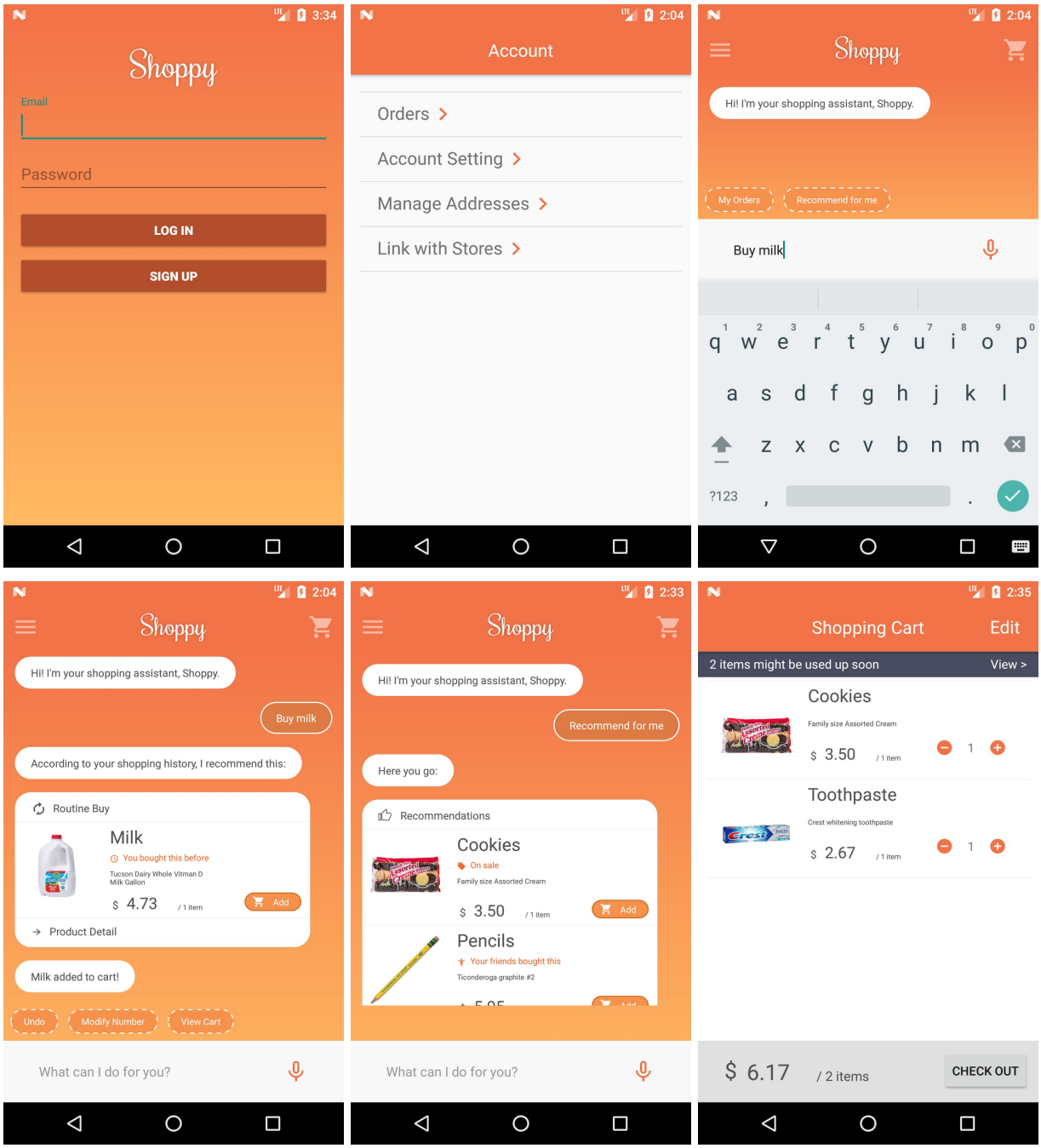
3.6. Redesign 2

In the second version of redesign, we focused on making the app visually appealing.



3.5. Hi-Fi Prototype

Due to some technique constraint, we finally chose Android platform instead of iOS. We basically follow the functionality in Redesign 1 and the style in Redesign 2. We also addressed some usability problems, which will be mentioned in the next section.



2:35

Might Used Up Edit

Notebook

Five star Mead Notebook

$ 5.00 / 1 item

Pencils

Ticonderoga graphite #2 pencil

$ 5.95 / 1 item Move to Cart

Notebook added to cart!

2:35

Shopping Cart Edit

1 item might be used up soon View >

Cookies

Family size Assorted Cream

$ 3.50 / 1 item − 1 +

Toothpaste

Crest whitening toothpaste

$ 2.67 / 1 item − 1 +

Notebook

Five star Mead Notebook

$ 5.00 / 1 item − 1 +

$ 11.17 / 3 items CHECK OUT

2:35

Check Out

Order Summary

Estimated Delivery Date:	12/08/2017
Items:	$54.20
Shipping:	$0.00
Total Before Tax:	$54.20
Estimated Tax:	$4.80
Order Total:	$59.00

Shipping Address

John Doe
781 Escondido Road, Stanford, CA, 94305

Payment Information

Debit Card: Chase
Number:xxx-xxx-xx

PLACE ORDER

4. Major Usability Problems Addressed

1. H4 - Flexibility & efficiency of use, Match between system and real world, Consistency & Standards / Severity 3 / Found by: A, C, B, D

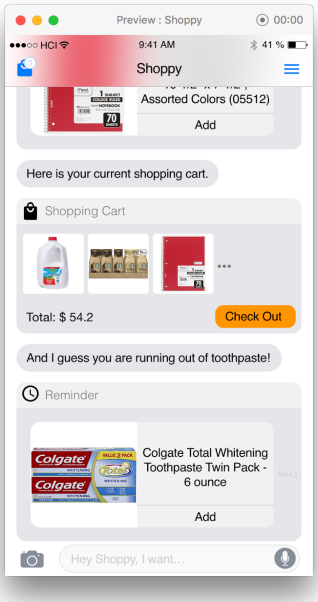
The shopping cart/bag button in the top left corner is confusing. The user expects that clicking this button would give them details about their shopping cart. The button surfaces a new chat card for the user which contains an abbreviated summary of their cart, but they must click the card to navigate to the actual details about their cart.

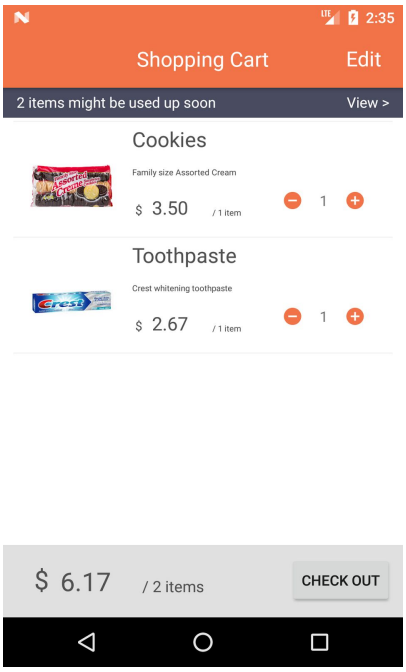
Fix: When users click the shopping bag icon, take them directly to a detailed view of their cart from which they can check out with one click.

Fix: In the hi-fi prototype, we take users directly to a detailed view of their cart, instead of first showing a card of the cart.

Rationale: Meet the expectation of users and improve efficiency.

Compare:



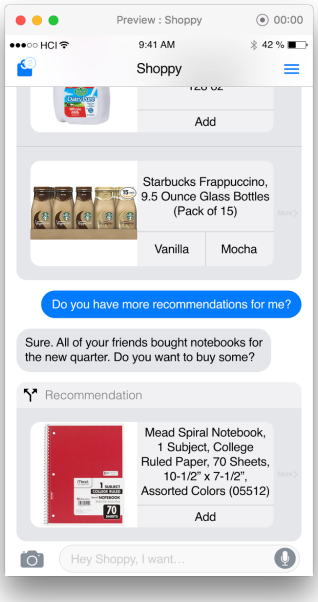


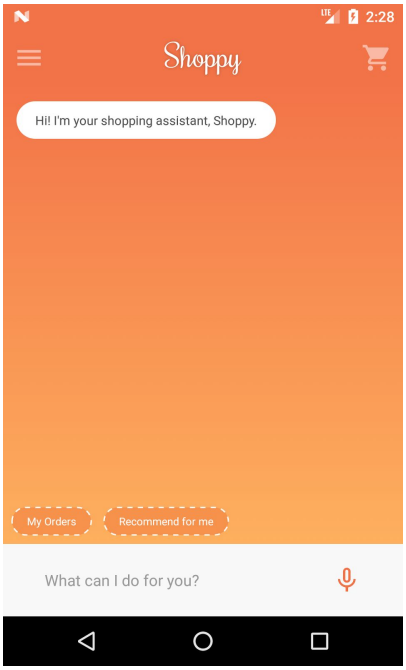
3. H4 - Consistency & Standards / Severity 3 / Found by: A, C

It is not clear what the difference between the Recommend and Remind buttons is, particularly from the user perspective. Knowing what your tasks are, it seems that Recommend suggests items that Shoppy can predict from a wide array of data including your social network, whereas Remind suggests items that Shoppy can predict based solely on past/routine purchases. Although these require different backend functionality on the system side, for the user the result is the same - Shoppy suggests items they may want for one reason or another.

Fix: Collapse the “Recommend” and “Remind” buttons & their respective flows into one experience for the user.

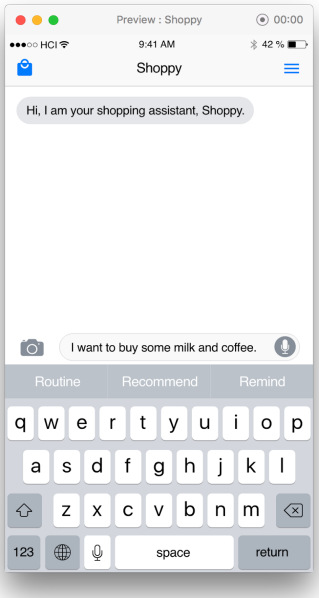
Fix: In the main conversation interface, we merge the “recommend” and “remind” buttons.
Rationale: Users do not need to differentiate the difference of these two buttons.
Compare:

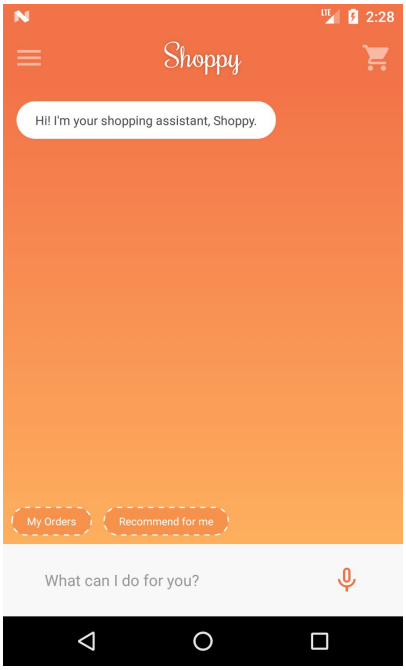




5. H2. Match between system and the real world / Severity 4 / Found by: A, B, C, D
When the user inputs text, there are three action buttons based on what the user might want to do that mimic the format of iMessage's text correction/suggestion keyboard layout. It's confusing for the user because they are likely to be familiar with iMessage, therefore making it difficult to recognize that the choices displayed in the Shoppy app are critical buttons rather than text suggestions.
Fix: Create actual buttons that are different in appearance for action recommendations (either before the user types or when the clicks to type), or potentially change the placement of these buttons also.

Fix: Create input suggestion buttons above the input area.
Rationale: Users may be confused with the difference between keyboard suggestions and suggestions in our app.
Compare:





6. H1 - Visibility of System Status / Severity 3 / Found by: A, B, C, D

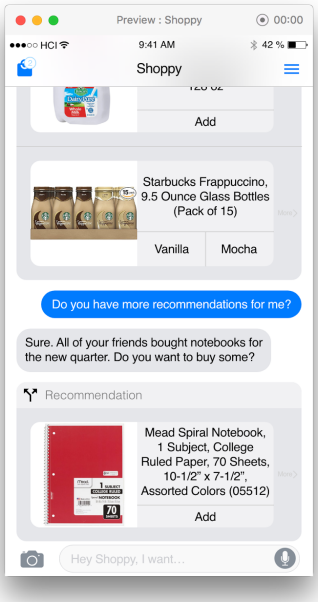
When adding an item to the cart, there should be some indication from the system that the action took place. This could be the item zooming up to the corner where the cart icon is located or some sort of color change in the item card. As it stands, the only notification that an item has been added to the cart is a +1 in the top left corner which is very easy to miss.

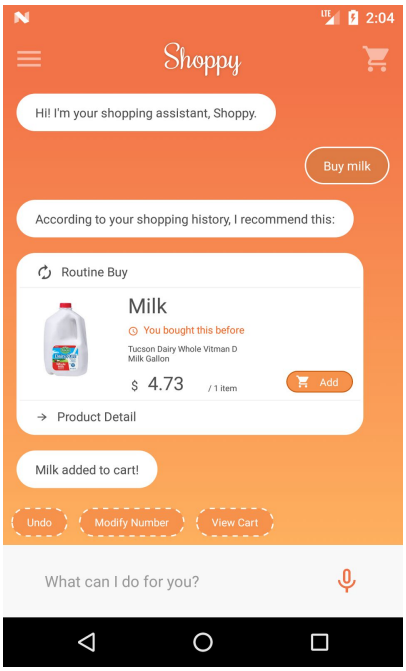
Fix: Add animation or some form of notification that item has been added to cart. Alternatively, have a dropdown in the top left showing the item being added to the bag. The former would be more in line with your chat interface.

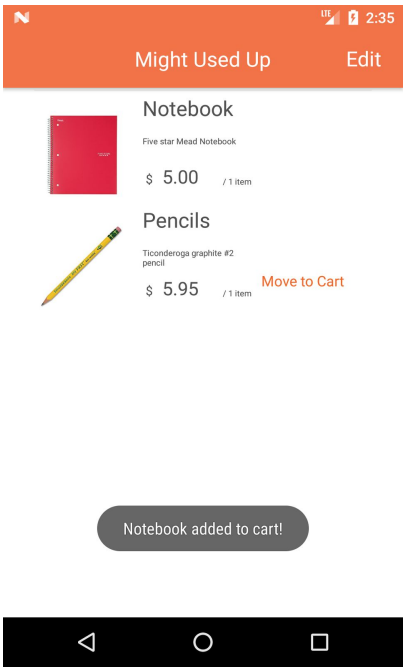
Fix: Add reply and animation after adding an item to the cart.

Rationale: Confirm user's action.

Compare:

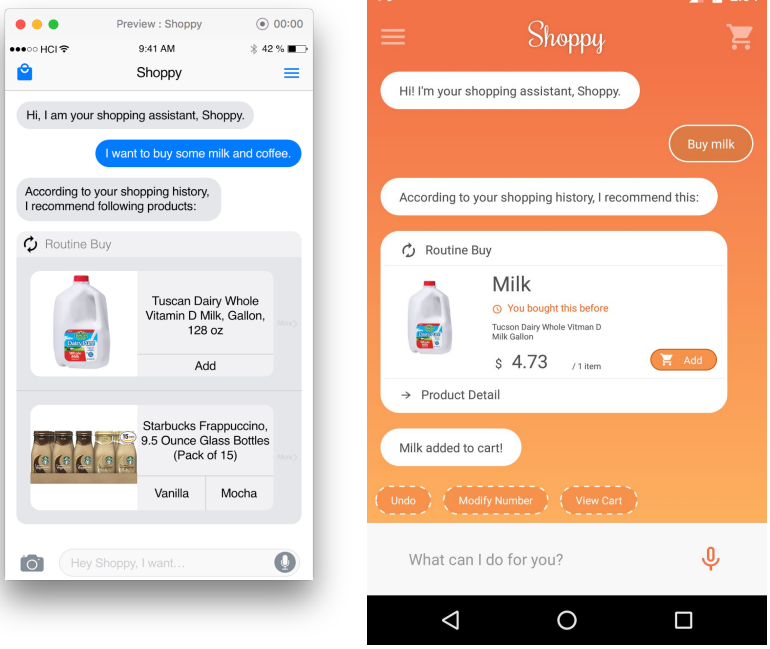






10. H3 - User Control & Freedom, H5 - Error Prevention / Severity 4 / Found by: A, B, C, D
Price of items is not visible when users are evaluating them to add to their carts. The prices associated with items should be clearly visible before they click on them.
Fix: Show the price next to the item description in the existing chat interface.

Fix: Show the price.
Rationale: It is necessary for making purchase decision.
Compare:



11. H2 - Match between system & real world / Severity 4 / Found by: A, C, D

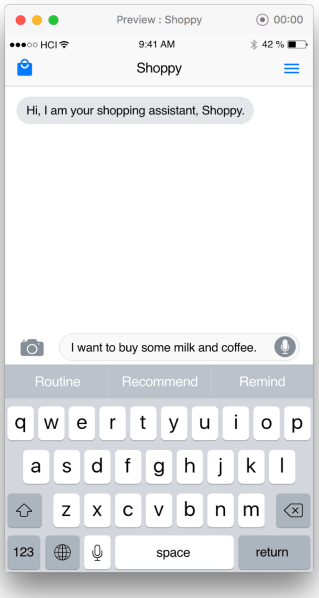
The three main buttons on top of the typing section - “Routine, Recommend, Remind” - describe the three main tasks that users need to carry out on Shoppy. They do not indicate to the user the action that will be immediately performed by clicking that button. From what I can tell, it seems that the “Routine” button is being used the same as the Enter button when the user has taken a picture or stopped typing. Therefore, the labeling of the button doesn’t make sense with the functionality of the button from the user perspective.

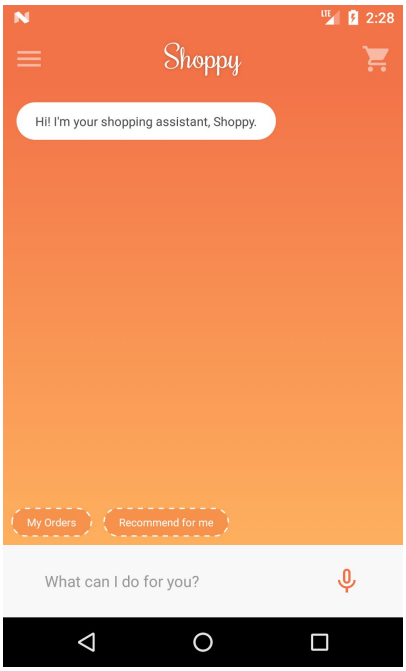
Fix: Rename these three buttons to reflect the actions that they prompt so that it is clearly indicated to the user which actions the buttons will take. Alternatively, you could remove the buttons entirely.

Fix: Rearrange and rename these buttons.

Rationale: It is confusing to users.

Compare:





13. H7 - Flexibility and efficiency of use / Severity 3 / Found by: B, C, D

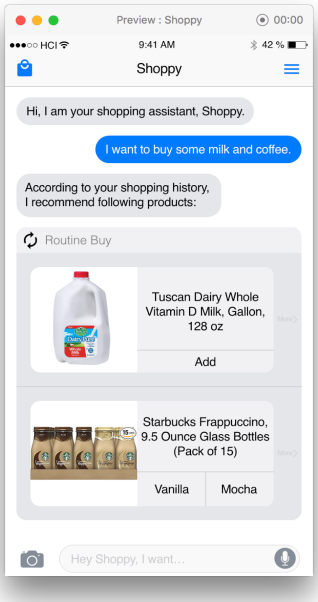
It is hard to add multiple items remove multiple items from the cart. You are forced to increment by one or two only.

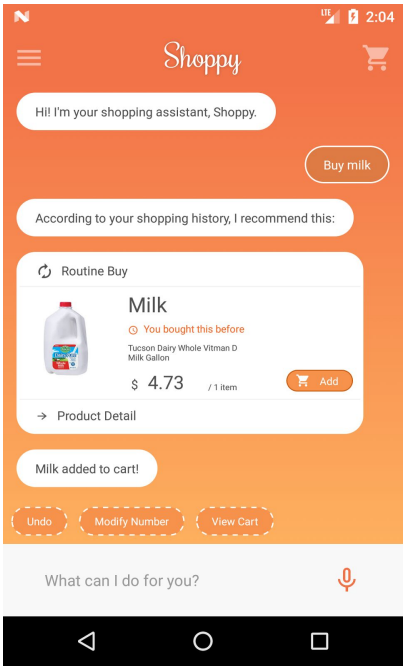
Fix: Make add to cart button have “hard” touch capability so that the user can press down hard to get the quantity and swipe finger to change quantity.

Fix: Add a “modify number” button.

Rationale: To make this action more efficient.

Compare:

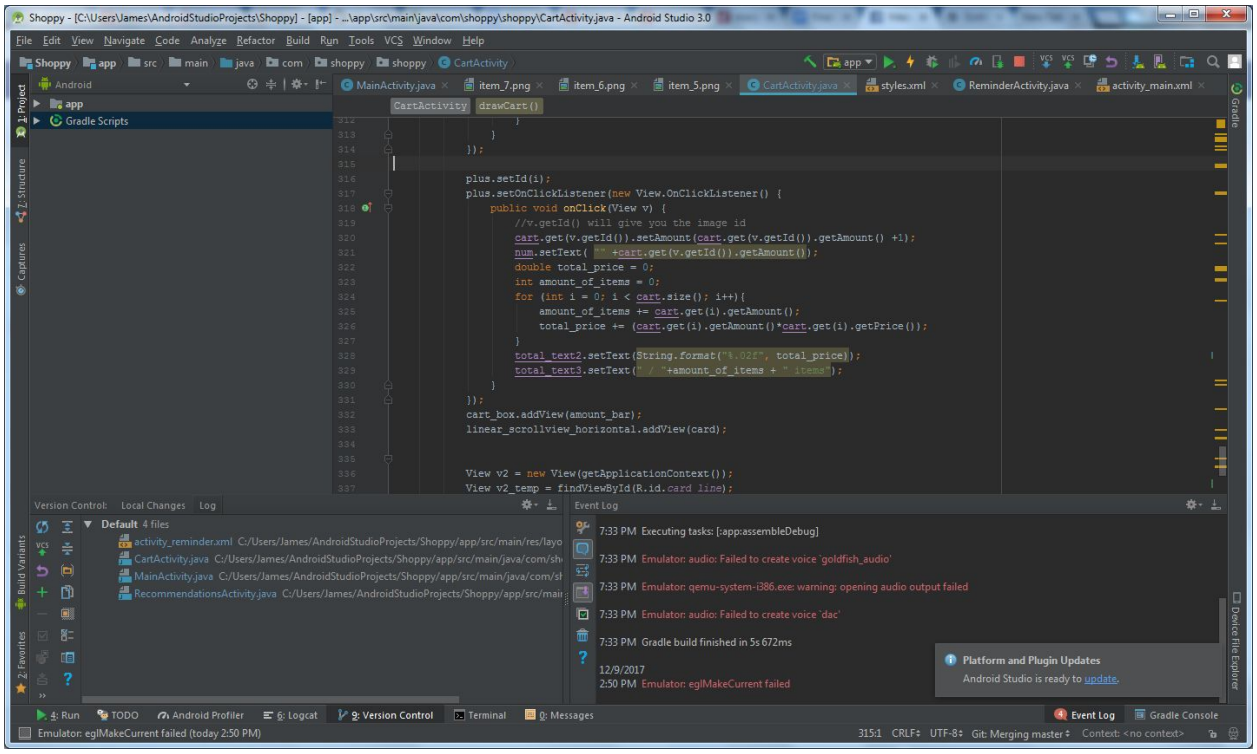




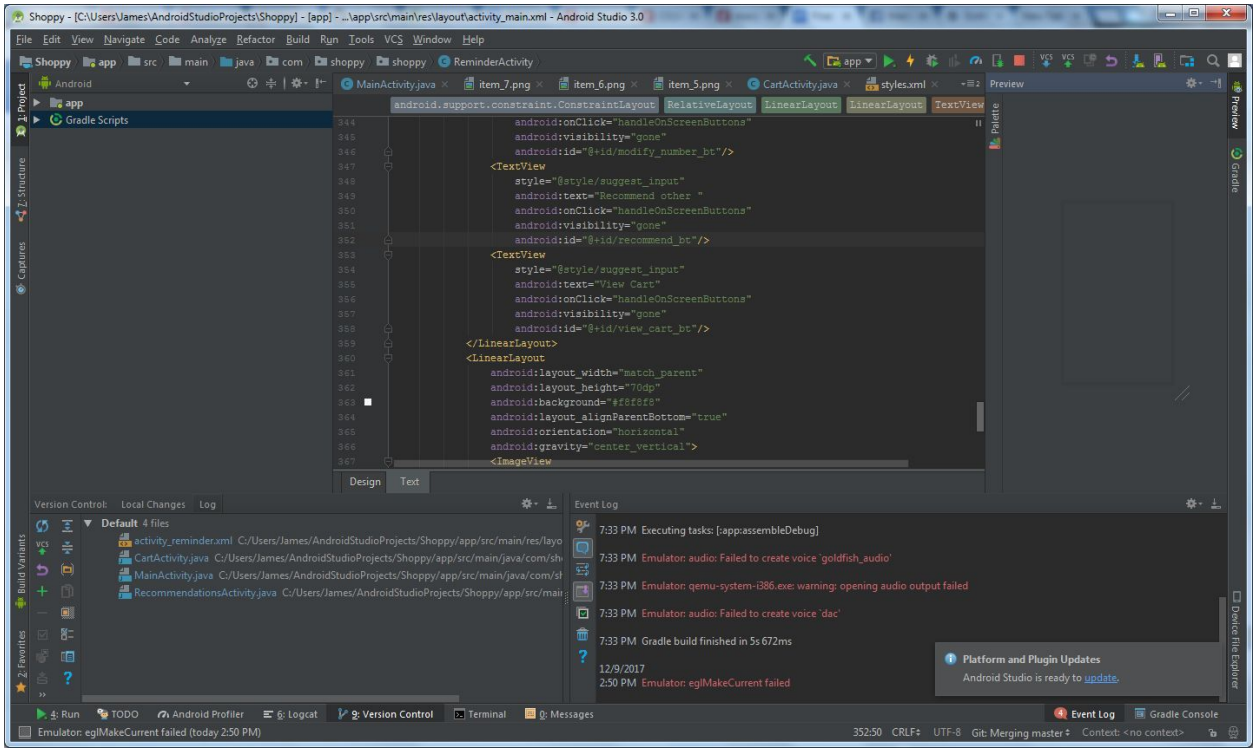
5. Prototype Implementation

5.1. Tools

We used Android Studio for developing our Android app. In Android studio, we used a mix of both XML and Java to create our app. XML was used to design the layout (View) of the app, while Java was used to create the controllers for the view. We used Git and Github for version control. It was an interesting learning experience because of several difficulties we had with our chosen tools. The tools helped us to quickly create an amazing app, but we had several problems with solving Git errors that occurred when merging files. Sometimes, we lost some progress when a merge went wrong.



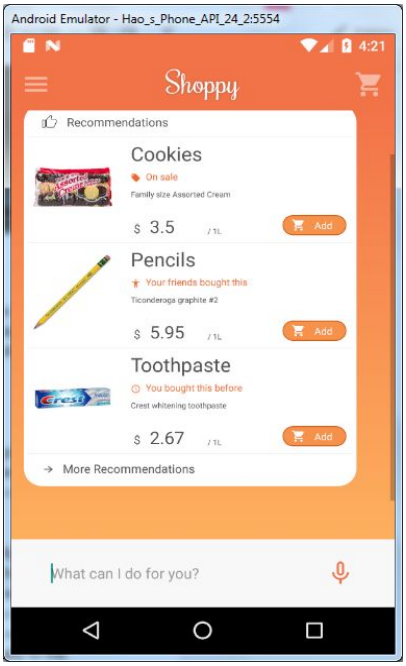
Java



XML

5.2. Wizard of Oz

We had a lot of hand waving in our app. For example, the microphone interaction was assumed to work, even though we had no way of translating speech to text. Additionally, the way Shoppy created lists was simply hand waving as well, since we didn't have a good way to intelligently populate lists without an actual AI.



Microphone is an example of Wizard of Oz

This view comes up when clicking on the microphone

5.3. Hard-coded Data

Each of the list was hard coded. This was because we did not have time to create algorithms which would intelligently populate each list. Also, Shoppy's responses were hard coded. We

didn’t have a good way to quickly create an AI, so the easiest way to fake having one was to hard code responses to certain important phrases.

5.4. Missing/Future Features

In the future, we may want to address several problems in our hi-fi prototype. Currently, the AI component of the chat interaction is fake. We could add an actual AI, that interprets the meaning of complicated statements users might make and responds by giving them exactly what they want. One other important missing feature is the ability to actually create a username and password and save that to our database. Without that, our app would not have a way of knowing who each user was and could not tailor the item information it gives specifically to the user.

6. Summary

In just 10 weeks, we have created an interactive shopping application. We have accomplished all of the goals we had in our needfinding interview and worked together to create an amazing product. Shoppy is a concept that could be used worldwide. Our prototype shows enormous growth, from our initial sketches to our final hi-fi prototype and the skills we learned while creating it will be invaluable.