Group 9 Prototype

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ABSTRACT
We performed two distinct methods of evaluation of our digital receipts application, *Stored*, to identify and resolve usability issues: an analytical study involving a small group of experts performing a cognitive walkthrough for several of our applications functions, and an empirical study using a sample user attempting to perform basic functions of the application.

Keywords
Usability Engineering; Heuristics; Evaluation; Plan.

1. INTRODUCTION
California is considering banning the distribution of paper receipts. As such, the general public will need an accessible and usable solution for storing, retrieving, and categorizing digital receipts. Our application was expanded to include additional functionality to track and categorize spending to aid users in budgeting and tax preparation based on field interviews conducted with sample users.

2. STORYBOARD

Link: https://i.imgur.com/xpwEChq.jpg

3. PROTOTYPE

Link: https://github.com/alexli77/hello-world/blob/master/UI.pdf

3.1 Design Decisions

3.1.1 Stored Login Screens Justification

Our login screen is used as any other app that requires user to enter in their information for usage. We want our app to be used by many people from all backgrounds, so implementing a language selection ensures many users are able to use this app without worrying about the only option being in English. However, because this is the first version of the application the only option available is English, future updates to this app would include other languages. The login screen also asks first time users to sign up and existing users to sign in. This is standard, many users who sign out are able to log back in when they already created an account. The sign up button takes new users to a screen to enter in their information for verification. All fields are required because the data we are retrieving for our app is personal and sensitive, so we must ensure that the user using our application is the same person who is making the purchases.

3.1.2 Stored Main Page Justification

We collectively decided to design our main screen to showcase the most recent receipts, showing each of then as individual cards. This type of material metaphor is used by many applications now days. It makes organization of the data easy and less cluttered for the user to distinguish what they are looking at or searching for. Additionally, it gives the user a sense of familiarity from real word objects, and applying this on a digital space allows the user to learn the functionalities quicker than having a design foreign to them. The search button is placed on top of the screen since it can traverse throughout the app and find specific information the user is looking for.

3.1.3 Stored Main Page With Menu

The main menu screen is a pop open menu bar that gives the user the choice on where to navigate to within the app. At first, one of our prototypes featured a tab bar menu that resided at the bottom of the screen. There wasn't enough room to put all the options at the bottom, making it looked cluttered and disorganized, we opted to put the menu at the top corner as an icon and to roll out when the user pressed it. We believe our design choice on making the menu not visible throughout made our app have more space on the screen; having the user be able to focus on one screen. The user is able to access the menu throughout the app.

3.1.4 Stored Search Receipt Justification

The search function is one of the key elements that is crucial to our application. From our research, the interviews we conducted with potential users expressed a common function they were keen to have. Majority of the interviewees expressed they would like a search function that would allow them to look for a specific receipt. We made sure to include this as it can make the process of finding specific receipts easier for the user to search for. The search bar parses through the data stored in the application and finds the exact receipt that has the word the user entered in. The results are then displayed in a card like fashion, as it would be organized with the most prominent information in a summary format so the user can see what was bought and the total of their purchase.

3.1.5 Stored Detail Receipt Justification

Many of our interviewees stated one of the main things they use a receipt for is to keep track of purchases, what they bought, and to return items. It was pertinent for us to to put in all the information of a receipt into one screen so the user may be able to view it

individually. In the single view screen, the products are listed and is showing their subtotal and tax as well as the overall total of the purchase. Many receipts display the price of each product as well as their UPC number. The necessary information that is on the receipt has been put onto the app. There is also the share, categorize, star, and archive icons that allows the user to carry out a specific task. The reason for this is because the user can send receipts incase they want another person to return an item, organize their purchase into categories, star it for finding it right away, and archiving it incase they feel they no longer need the receipt. This gives user the freedom to control how they want to manage their receipts rather than being restricted to just viewing it and not being able to organize it on their own.

3.1.6 Stored Categories Screen Justification

Our empirical user evaluation provided us with feedback that the categories screen was confusing on our application. We've addressed this by updating some language on this page and retooling some of the icons to better signify their purpose. For example, the color column now is solid and does not have an edit-like feature to it, prompting users to click "edit" if they want to change the color. We also added UI menus to the edit, and "add new" buttons allowing users to explore the sub-menus and prompt screens pertaining to those actions.

3.1. 7 Homogenize Home/Back Buttons Justification

For every step, you need to start with homepage, and user can search the receipts at home page. At the left top corner, you can click on the menu, and it will leads into different function page. However, from the interviews, it shows that the user expressed when they are in a different screen and want to go back to the home menu. As a result, we found out that it cannot go back to the home page. The button remains the same as before, and let you choose one function to enter. We decided to change this one. It remains the same when it is at home page, but the icon will replace by a back buttons which leads the page to home page.

3.1.8 Create "My Categories" Sub-Menu Justification

One of the functions of our app is to categories the receipts. From the menu on the left top corner, we can choose to manage and view the categories. From the interviews, it shows that the user needs to do many steps to view the categories. We found out that our manage categories include too many functions, and we can set a shortcut to the view functions. Therefore, we decided to make a sub folder/menu called my categories. Then, we can view those different categories from this sub menu. After the change, the main menu becomes cleaner and more organized. This change is not a big change, it does not affect other functions, and we just remodel the menu. Therefore, we do not change any other functions that are related to this one.

3.1.9 Stored Settings Screen Justification

There aren't many settings required for our app but the settings page offers the user to be able to set up automatic archiving and deleting of receipts, including setting how many days for the automatic storing/deleting to happen. Also, since this is a mobile app, there are standard notification settings that allow for more accessible ways for the Stored app to inform the user about their receipts. Although it is not a setting per se, we've decided to include the option for the user to update their information, e.g. phone number and password. The user's current information is displayed so that they may see what name, email address, and phone number is being used for their account. To avoid crowding the setting page with prompts, the user is taken to another update information page. From there the user can update all of their information including changing their password.

3.1.10 Stored Tutorial Justification

Though our application is relatively simple and straightforward to navigate and use, it is important to remember that our user base is extremely diverse and includes individuals who may be less tech-savvy. As such, upon account creation first-time users are directed to a brief three-screen tutorial outlining the features present in the application and prompting the users to be comfortable with the general layout of the app.

Three screens were chosen as a comfortable min/max to keep a users' attention span while also drawing attention to as many key details and functionalities as possible.

3.1.11 Stored Starred Screen Justification

We realized that when user star their receipt there should be a dedicated page that allows them to see that list. Otherwise, the feature would be redundant since the purpose of it is to have the list of starred receipts in a centralized location within the app. We also added the option to go to the starred receipts screen in the menu, so the user's are able to navigate to it easily. From there, a list is shown of the receipts the user starred from the most recent to the oldest, so the user can see the order on when they did so.

3.1.12 Stored Cancel Buttons When Updating Account Information Justification

While it was important to us to make our interface as intuitive as possible we also realize that user mistakes can happen, a user can select a function either due to a misunderstanding or simply by complete accident, along with the need to ensure we provide appropriate feedback for each action the user takes we wanted to make sure they always have a simple option to cancel or escape back from any function they enter. It allows the user the ability to explore options and explore the interface without fear that they might accidentally do something they didn't intend to do or get stuck in any screen.

3.1.13 Stored Color Scheme Justification

In order to keep our interface simple and easier to use we choose to minimize our use of color. Color is limited to specific buttons to help attract the users attention, and make certain functions more easily recognizable. We use color only where we want to attract the users attention and tried to minimize the use of colors where it might cause a distraction, make things more difficult to read, or make things look more cluttered.

4. CHANGES

List of changes made since Design gallery #2 with justifications.

1) Created tutorial page when user logs in

2) Added a starred screen to show users the receipts they starred, as well as adding the option to go to the screen on the menu
3) Added cancel buttons when updating account information such as name, email, and phone number, as well as for resetting password.

5. SUMMARY

As mentioned, our system is designed to create an environment to easily access, store, and share receipts. Most importantly, our application is meant for filling in the void for paperless receipts and to make it easy for users to be able to manage them. Our application is for everybody who are both consumers and business owners since both need receipts to keep track of any type of transaction.

There were some problems that appeared during our empirical evaluation. When the user was on the screen to view receipts the functionality of the categorize button confused her. The issue with this was that there were multiple buttons to categorize on the screen, one being next to the actual receipt and the second being on the bottom labeled "Categorize All." The button that was next to each item wasn't clear whether to categorize an individual item, as there were already options for users to categorize in the edit section next to the name. The edit section provides a list of options on where to categorize the receipt. The user is able to choose a color and based off that the receipt is entered into that category. Because the categorize option was next to the receipt name, it made it feel redundant since there were two other options allowing the user to do the same thing, leading to our test subject to be unsure on which button to use. We plan on removing the button near the name of the receipt and keep the ones that allow users to categorize individually assigning it a color and to categorize all. Furthermore, our edit button to categorize by color needs some improvement as the user stated they assumed it would be used for when the user doesn't need to edit. This means the edit button should first be pressed then the list of options to categorize should appear.

Another issue the user pointed out during the empirical evaluation was that our options for the single view receipts were all over the place. The options in the bottom indicated the user to share, archive, star, and the categorize the receipt. However, the user expressed how it felt redundant and confusing because she took it as a global menu. Our global menu is located on the top left corner of the screen indicated by three lines. But the issue is when the user is on the single view receipt page, that icon turns into a home button and the options on the bottom act as a sub menu, something we were trying to avoid. The user pointed out that the home icon should remain the menu icon with a home (main screen) option to go back. Because of this, the options in the bottom would either move, or indicate to the user that these functions belong to the single receipt view screen. A possibility to display them in the right hand side or the top right corner as options to ensure these functionalities are dedicated to the single receipt. The menu icon will be displayed throughout the app, allowing the user to navigate without any confusion.

5. ACKNOWLEDGMENTS

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6. MEMBER CONTRIBUTIONS

Andrew Huson: Prototype construction, color scheme justification, cancel buttons justification, editing and proofreading

David Okubo: Settings page justification

Hualong Li: Settings page justification,editing and proofreading

Joel Herrick: Prototype construction, tutorial screen justification, storyboard construction, editing and proofreading

Kunal Patadia: Summary, login screen justification, main page justification, main page with menu justification, search receipt justification, detail receipt justification, starred receipt justification, prototype construction

7. REFERENCES

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