Disneyland App Redesign

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Introduction

The focus of this study is the Disneyland App. The software is a Disneyland visitor's companion application that allows them access to everything they might want or need while in the park. The overall goal for this project is to redesign the layout of the Disneyland App and streamline the experience for both first time and frequent users. Detailed analysis of user experience and pain points of the app will provide us with an idea of how to structure the most essential and popular functions to be emphasized in the app, and allow easy access at any point or screen.

Executive Summary

Goal

The purpose of our usability investigations is to understand typical user behavior and user experience while gaining an understanding of the Disneyland app's usability. We focused on a variety of key functions of the app from the user's perspective to determine what areas of the app need to be redesigned for improved usability.

User Research and Methods

We first determined our research targets by doing a **competitive analysis** on our system, comparing it to other apps made for Disneyland as well as other amusement park companion apps. After finalizing our targets, we created protocols for use in our **user surveys** and **user interviews**.

Usability Testing

We developed a **usability test** protocol and determined 6 tasks for the user to do which we believed would help reveal the pain points of the app. We also conducted **cognitive walkthroughs** on 3 other tasks to vary our methods and work with other types of data that could aid in our redesign. After collecting all the data, we came together and generalized key findings that we found to be problems with the current app design.

Redesign

We created **high fidelity mockups** based on fives targets for our redesign:
1: Change misleading icons into symbolic and easy to recognize icons
2: Redesign the home page to make high-demand features more accessible.
3: Redesign the filter menu to make it less cluttered and better group filter options.
4: Increase the discoverability and efficiency of using the categories tab.
5: Redesign the map so there is less recalling and more recognition, make it more user friendly, and clean up overlapping displays.

Heuristic Evaluation

Finally, we conducted a full **Heuristic Evaluation** based on Nielsen's Ten Usability Heuristics. We evaluated each redesign of our system and compared it to the original system. Each member conducted their own evaluation, and we compiled and synthesized our notes into this report. We also conducted a separate **Accessibility Evaluation** based on WebAIM's WCAG2 Checklist, which can be found in the Appendix.

Competitive Analysis

Competitors

2 Direct Competitors:

1. Magic Guide for Disneyland
2. MouseWait

2 Indirect Competitors:

1. Universal Studios App
2. SixFlags App

Direct Competitor #1: Magic Guide for Disneyland

- URL: Magic Guide for Disneyland on the App Store
- Brief Description: The Disneyland app is a Disneyland visitor's companion application where everything they would want or need while at Disneyland should be within the app.

Disneyland VS. Magic Guide	
Problem Being Addressed	WaitTimes: Disneyland already fares better because of its higher potential for accuracy, as Magic Guide receives its information in the form of updates from its users.
Functionality/Feature Set	Both share many functionalities and features, including maps, dining, wait times, park hours, and general information about the park. However, Disneyland App allows you to directly manage your passes and tickets via in-app purchasing, as well as providing Disney PhotoPass functionality.

User Base for the Product	The user base for Magic Guide and Disneyland App are largely the same, although Disneyland may have a larger target audience because it includes many features that are only available because it is the official application and has the information of its users available.
Notable Similarities/Differences	Magic Guide receives its wait time information from its users, rather than having the official accurate wait times, as it is not the official Disneyland app, and so there is potential for inaccurate time display.

Direct Competitor #2: MouseWait

- URL: Disneyland iPhone App - Disneyland Wait Times - Disneyland News - and more from MouseWait | MouseWait
- Brief Description: Disneyland app that includes functions such as wait times, Disney dining food guide with menus, restaurant reviews, real-time Food Blog, hours, events, showtimes, California Adventure, Downtown Disney, and Disneyland Resort!

Disneyland App VS MouseWait	
Problem Being Addressed	MouseWait is an unofficial Disney application that provides its users with wait times, attraction information, Fastpass information and update information. It's goal differs from the Disneyland app in that it only deals with wait times, and does not offer other functionalities that Disney does such as dining and photopass.
Functionality/Feature Set	MouseWait's information is crowdsourced from its volunteer users, and so misleading information is one of it's main flaws. Lack of

	updates is also a large contributor to its problems.
User Base for the Product	The user base for MouseWait consists of people within the park looking for information on attraction wait times, which contrasts with Disney's users, who may be seeking information or features such as dining and PhotoPass.
Notable Similarities/Differences	MouseWait offers Fastpass times and times for non-attractions such as restaurants MouseWait depends on crowdsourced information, and so is very inaccurate if it has not been updated in a while. Because users typically only choose one app, MouseWait fails if Disneyland takes a majority of users, as there aren't enough active MouseWait users who want to update the wait times.

Indirect Competitor #1: Universal Studios App

- URL: Universal Studios Hollywood™ on the App Store
- Brief Description: Universal Studios Hollywood app that includes functions such as purchasing theme park tickets, viewing maps, checking ride, show and attraction wait times at home or in the park, customizable itineraries, setting wait and show time alerts, updates about park notifications and upcoming special events, and social media connection with Facebook and Twitter.

Problem Being Addressed	The Universal Studios Hollywood app is an official app used to supplement users at the theme park and is very similar in function to the Disneyland app.
Functionality/Feature Set	Both apps feature the same core functionality. They both allow users to look up attractions, amenities and events as well as buy tickets. The only key difference is that

	they are made for their own respective theme parks.
User Base for the Product	Smartphone users attending or planning on attending Universal Studios will download the companion app to supplement their experience. The user base for both apps are the same kind of demographic, except that each app is for their own respective theme park.
Notable Similarities/Differences	Both apps use location services to load different information based on the user's location. While one companion app is for Disneyland, the other is for Universal Studios. They have essentially the same core functionality for their respective theme parks.

Indirect Competitor #2: SixFlags App

- URL: Six Flags on the App Store
- Brief Description: Six Flags App includes functions such as viewing and sharing photos, interactive park maps, ride wait times, shows and character meet and greet schedules, purchasing tickets, parking, meal deals, restaurant menus, park operating hours, and upcoming special events.

Problem Being Addressed	The Six Flags app is a companion app to Six Flags theme parks across the nation. It's purpose and function is very similar to the Disneyland app, in that it aims to provide a digital way to deliver information about the park conveniently to guest's smartphones.
Functionality/Feature Set	Both apps feature an interactive map of the park, attraction wait times, mobile ordering and dining reservations, show times, and event calendar. There is a great similarity between how both apps are laid out, with the only noticeable difference being the different theme parks
User Base for the Product	Most users would be those visiting any of Six Flags' theme parks across the US. Another

	user might be someone planning a trip to Six Flags, but not necessarily intending to go. There could be some overlap in the user base of the Disneyland app and the Six Flags app, because people who go to one theme park might be visiting another.
Notable Similarities/Differences	One advantage that the Six Flags app has to Disneyland is that there is only one app that works for all of its theme parks. It uses location services to determine which Six Flags park is nearest to the user and will automatically load that park's information onto the app. Disney also has multiple theme parks around the world, but each resort has its own separate app.

User Research

Research Objectives

We want to research and learn about how our user-base spends their time at Disneyland, as well as how mobile amusement park apps (not necessarily just the Disneyland App), may ease or enhance their experiences at a theme park. We decided on a few objectives which we will use to guide our redesign:

- Understand how the app fits into a user's theme park experience
- Learn about the methods users use to get information about the park
    - Understanding user's preferences for traditional ways of getting information (ie physical park map vs. a mobile app)
- Determine user's needs for a theme park app
    - See what features users think are the most important
- Discover pain-points of the Disneyland app

Target Population

- General Population:
    - College Students
- Age Range:
    - 18-24 years old

With Disneyland being located in Anaheim, California, our target population was mainly people located in the Southern California region, as we thought they would be more likely to visit Disneyland and use the Disneyland app, rather than people who have to travel hours to visit Disneyland. In an ideal situation, we would have preferred our target population to include those who do not live near Disneyland to see if they would be more or less likely to use the app and how their visits differ from those who live near the amusement park.

Our age range is the most likely to benefit from our study as it is the generation that grew up with the development of smartphones and their applications. This population may not be equivalent when comparing familiarity with specific park application software, but tend to have a basic understanding of how to use smart devices and the functionalities that come with them. Since this study is based in Irvine, many of the participants in the data are likely to have visited nearby amusement parks such as Disneyland or Six Flags. We do not believe this will be a problem when analyzing data as most people through family or school field trips will have visited amusement parks to some extent and share similar experiences.

Methods

Each member sent out a survey and interviewed two people, in person. Interviews ran from a range of 15 to 30 minutes. We asked questions about interviewees' experiences at amusement parks and their resource of navigation throughout an amusement park. We analyzed the data by using Google Forms' provided survey data information.

Findings

Survey Findings

1. *Features that enable the users to plan are the most important*
   While the Disneyland App contains a multitude of features, it is clear displaying information such as park hours, blackout days, and wait times for attractions is crucial to most users. The common theme is that these are functions users would take advantage of before even reaching the park, promoting early planning and respecting the user's time. Furthering this, maps of the parks are also ranked highly among users as they provide the ability to route the best path that fits their schedule and goals.

2. *Features designed for in park usage while helpful are deemed less important*
   Other functions within the Disneyland app such as being able to view your ticket, mobile order, and photos are not as popular among users. These functions seem to be convenient to users, but their omission from the app may not be looked at as a huge loss when compared to a feature such as park maps being taken away. Many of these features have alternatives such as printing out paper tickets, ordering food in a traditional line, and buying photos at specific locations within Disneyland.

3. *Preference for smartphones over traditional/other various methods of finding information*
   The majority of our population have smartphones and have at least a grasp over its basic functionalities. While some combine the use of traditional maps with the app, the overall transportability and ease of access to the application gives smartphones an edge. It seems that among all the applications, the official Disneyland app is the most popular. Other third party apps have been developed such as Magic Guide and MouseWait, but their usage is much more limited.

Interview/Affinity Diagram Findings

Throughout our interview and affinity diagram findings, we curated top three categories:

- Mobile Food Ordering
- Maps and Wait times

- Planning

These categories were curated based on two criteria, 1) whichever categories had the most Post-It notes within the category, and 2) if the theme could translate into a redesign in the Disneyland app. These two criteria were chosen because 1) the categories with the most Post-It notes were considered the most essential topics brought up by interviewees, and 2) the project prioritizes the redesign of the app rather than an addition of new functions or features to the Disneyland app.

Mobile Food Orders

Mobile ordering on the Disneyland app mainly pertains to food. However, a majority of responses and topics were acknowledged as negative expressions towards mobile ordering. Some responses include the following:

- "I am not aware of mobile ordering because I don't go often"
- "I avoid mobile ordering because the messages and notifications are confusing"
- "I can get my food/order faster when I'm in line"
- "I prefer ordering in line, not through the app"

With these responses, Mobile Ordering can be assumed to be a feature that isn't as prioritized as other features such as Maps, Planning, and Wait times.

Maps & Wait times

Maps are an important tool in all types of navigation, regardless if it be digital or physical. However, from the affinity diagram, responses yielded more positive aspects towards a digital map, especially on the Disneyland App.

- "I mainly use app for map and wait times to decide what to do"
- "I use the app to check wait times"

The importance of the digital map and waitimes in the Disneyland App should be heavily prioritized, however, it's not the first thing users see in the app. Users usually see a homepage, displaying some features that the app offers (ie signing in to purchase FastPass, ticket purchasing options, etc.). Through redesign, Maps and Wait times could be the first thing a user sees.

Planning

Because visitors tend to spend long days at Disneyland, planning is an important aspect regarding the mobile app. Our interviews found that visitors like to plan ahead to increase convenience and efficiency.

Some responses included the following:

- "I like planning my day around not having to walk as much"
- "I like planning my trips beforehand in detail"

Features that greatly increase convenience and efficiency of users should be prioritized in the app. Wait times, park hours, and map routes are all features that would benefit the planning process for users.

Conclusions

From our Survey results, we made some interesting findings. 41.3% of our respondents visit Disneyland frequently, with 5 more visits a year with 34.8% visiting 1-2 times a year. Seeing that our data consists of frequent Disneyland visitors, our data will most reflect this type of demographic. About 70% have also used the Disneyland app before so given our sample size, we see that we'll be able to have a good understanding on how active Disneyland visitors feel about the app and their user experience. We also found that from our survey results, our respondents believe that park maps and ride wait times are of utmost importance in an amusement park app, which is similar to the data we retrieved from our interviews, where the primary usage of the app was for wait times and maps. We also found that our respondents strongly preferred efficiency of an app over the number of features it offers. Keeping the app simple and focusing on features such as wait times and maps would improve the user experience.

From our Interview and Affinity Diagram findings, one area of importance was mobile ordering for food. In one interview, the interviewee had stated that they greatly appreciate the ability to arrange a time to pick up their food and avoid any long lines. However, not all of our interviewees shared the same as some of our interviewees had stated that they find mobile ordering to be cumbersome and not as useful. Some interviewees had mentioned that they "eat food based on what is around (them)." Another aspect, wait times, was also an important aspect of the app that we went over with our interviewees. One interviewee said despite being able to cut down on waiting in line, sometimes the wait times are inaccurate and that a lot of rides have long wait times even with a pass. One of our interviewees stated that they "want to avoid crowds/long lines."

UX Evaluation

User Population

- General Population:
    - College Students
- Age Range:
    - 18-24 years old

With Disneyland being located in Anaheim, California, our target population was mainly people located in the Southern California region, as we thought they would be more likely to visit Disneyland and use the Disneyland app, rather than people who have to travel hours to visit Disneyland. In an ideal situation, we would have preferred our target population to include those who do not live near Disneyland to see if they would be more or less likely to use the app and how their visits differ from those who live near the amusement park.

Our age range is the most likely to benefit from our study as it is the generation that grew up with the development of smartphones and their applications. This population may not be equivalent when comparing familiarity with specific park application software, but tend to have a basic understanding of how to use smart devices and the functionalities that come with them. Since the usability investigations were conducted at UC Irvine, the participants in the usability tests may have a similar experience with Disneyland as the park is nearby but we do not believe this will be a problem with the quality of our analyzed data and is representative of our target demographic.

Methods

Members conducted interviews for usability tests. These interviews ran for about 30 minutes in time. The interviewees were presented with 6 different tasks where they would have to use the Disneyland app and its functionalities in various ways. These tasks had multiple routes in which users would be able to complete them and we were interested in how different people's experiences would dictate their approaches and what problems they may run into.

Our interviewees ranged from both users who have never used the app before and those who are very familiar with the system. We tracked their experience by prefacing the test by asking their familiarity of the app before beginning.

After each task, we also asked a series of scaling and open ended questions about how the user felt in performing them such as if they felt that they completed the task well or if they had anything they would like to change about the process if they could.

Upon completion of all the tasks, we finalized the interview by asking general questions about the user's impression of the overall app as a whole.

In addition to the interviews, we held cognitive walkthroughs about other processes we did not have time to include in our usability tests. These walkthroughs allowed us to also compare our personal data as well as our approaches to our interviewees to help find pain points of the Disneyland application.

Findings

The general information that we acquired from the surveys regarded what areas and features of the app were most used or referred to, what areas were misunderstood or glossed over, and what features had smaller misleading or confusing designs. We also recorded users' experiences with the app, as well as more open-ended information such as their general opinions.

1. *Categories*
   One of the most important features of the app is Categories, a drop-down bar that was intended to function as a way for users to filter the different types of information they wanted to see on the map or in the list view. However, there were several issues detailed.
   - Category Crossover - many of the options for the categories confused users, because they were unsure of the difference between some categories (e.g. Events, Shows, Entertainment, and Attractions).
   - Forgetting Categories - users sometimes forget that there is a category tab selected and active, and become confused when the map only shows filtered options.
2. *Filters*
   Filters are also an equally important feature of the app in terms of searching, as users who are searching for something with specific features, or are searching for multiple options with certain characteristics tend to rely on filters. However, the Disneyland App's filter options were shown to be problematic for a few reasons.
   - Information Overload - users reported feeling overwhelmed by the amount of options given to them from the filters page, resulting in a lack of filter usage.
   - Lack of Organization - lack of classification or grouping of filters in combination with the large amount of filters available created confusion and hesitation.
3. *Map*

The Map feature is primarily the reason that users would want the application as opposed to the official paper map provided at the entrance of the park. It is a feature that is intended to aid users in navigating throughout the park, as well as planning their day with important information such as wait times and fast passes.

- Labelling - The map is able to show different labels depending on how zoomed in the user was, but it wasn't an appropriate amount of information per zoom "level."

4. *Other Notes*
   Some other design flaws we observed in our usability tests involved:
   - Search Function
   - Sorting by Land
   - Ads
   - Plus Icon

Conclusions

While the general overall experience for our users in our usability tests was positive, there were some key issues faced. One outstanding issue was finding rides with fast passes. When our users tried to find rides that had fast passes, they manually clicked on every single ride on the map to check to see if the ride had fast passes. We noticed that our users did not realize that there is a filter button at the top menu bar that allows them to see a list of all the fast pass rides. We believe that this is due to small font sizing and users heavily relying on the map instead of the other features available to help with navigation. Poor font sizing hinders discoverability of certain aspects of the app and will hinder the user experience. In addition, the labeling of fast passes (whether it was available or not, and if there was a fast pass selection available) was confusing for some users. One user thought the 'Unavailable selection' for fastpasses was not clear if fastpasses were offered at that location or if they were allowed, but there weren't any times available to select for fastpasses.

Another outstanding issue we discovered was poor discoverability of less used features of the app such as finding annual pass blockout dates. Two of our usability test participants were not able to finish this task as they could not get the information needed. They believed that navigation was confusing and that such a feature should have been accessible from the bottom right menu button, as based on the icon, users would assume all the important menu options would be accessible from that button. The misleading signifier, the button icon, prevented users from being able to find the location of the blackout dates and thus hindered their experience for app navigation.

Another problematic issue was finding showtimes. One participant from our usability tests couldn't find the showtimes for the Frozen - Live at the Hyperion show on the app because the show didn't seem to be offered that day. The user found showtimes within the Homepage, which led her to the Entertainment list, but the show she was looking for did not show up. The

app doesn’t allow users to know if the show isn’t offered or not. The participant recommended that the app should display all shows and display a label whether it was cancelled or not.

Overall, the Disneyland app does succeed in helping users finding their way around the park in a convenient fashion. However, we believe that these are the most outstanding issues that should be redesigned in order to make it even more convenient for users to use the app at its max capacity.

UX Redesign

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1 - Icon Clarity

Problem

The main issue that popped up among a majority of the usability tasks seemed to be the inability to recognize what many of the icons stood for. This problem strongly indicated that the current arrangement of certain pages' and tabs' icons were misleading or completely off-mark with their intended representation.

Evidence

In many of our usability tests with our interviewees, we found that new users/people who were unfamiliar with the Disneyland app struggled to complete some tasks due to misconceptions or assumptions about icons and the contents those icons portrayed.

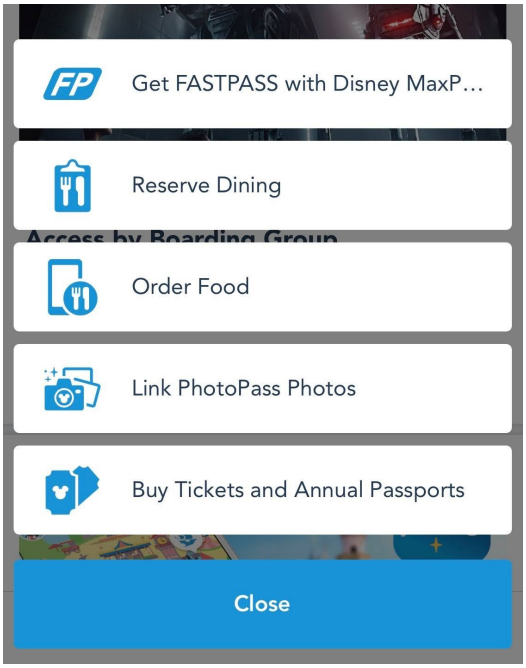
For example:
The home menu is cluttered with ads that mislead users into thinking there are no functions worthy of note in it when users often referred to it as the first icon to rely on for information

There is an icon in the middle of the app that no users (new or experienced) tended to click on as it crossed over in terms of functionality with the hamburger icon page. The symbol did not portray well what its functionalities were as it was simply a + sign inside a circle.

When the map is zoomed out, there are number icons that indicate how many attractions there are in that general area, but interviewees mistook the numbers as wait times because they shared similar aesthetic looks.

Process

In our usability tests, the circle + sign icon was very underused, and we had to determine whether or not its functionality was necessary for the app. The picture below shows the features that pop up when you press the icon, many of which can be found in other parts of the app.



We kept the actual design of the icons the same, and instead chose to change what was "inside" of the icons when pressed. Most of the discussion about icons centered around the ones found in the bottom bar of the app, and we had to decide how many icons we wanted in the bottom bar (decided between 3-5 icons), which icons (should there be a circle + icon? Should we include a calendar icon?), and where pressing each of those icons led to (eg. would mobile ordering be grouped with the home icon or the hamburger icon?)

Results

We decided on four icons for the bottom bar - Home, Map, Search, and Profile. We changed the contents of the Home Page (see Redesign #2 below) and added a new Profile section, which replaced the hamburger icon. We also removed the circle + icon completely, since the functionality that was located inside of it could be found in other places. For example, we moved all the general information to the Home Page--park hours, calendar, "What's New"--and moved all functionality that requires an account to Profile--mobile ordering, purchasing photos, My Plans. We kept most of the functionality and design of the Map icon (see Redesign #5 below) and the Search function is unchanged.

2 - Home Page

Problem

In the Disneyland app, the home page is a page where users can navigate to and find shortcuts to important and high-demand features of the app, such as the Disneyland map, park hours, and purchasing tickets. But the problem we ran into with the home page is that features and information, in high-demand, were hard to access as users had to scroll down the page in order to find the information or features they were looking for. Not only was the information and features difficult to reach, but the home page was filled with ads making it even more difficult for users to find what they were looking for due to an overload of information. These problems combined lead users to rarely use the home page and instead find information and features in less optimal ways.

Evidence

Our team chose this as a redesign target due to our findings from the usability tasks and cognitive walkthrough. In our usability tasks, we observed that our participants rarely used the home page to find any information or features. And instead, were really only on the home page when they first opened up the app or when they could not find what they were looking for and resorted to tapping on all buttons in the task bar. When asked why this was, participants said they could not find what they were looking for on the home page, so they looked elsewhere to find the information.

For example:

Instead of navigating to the map by tapping on the miniature Disneyland map, that is at the very top of the home page, users tapped on the pin button on the taskbar to get to the map.

Even during the cognitive walkthroughs, our group did not realize there that there was a way to navigate to purchasing tickets through the home page, as it was at the very bottom, and instead found an alternative way to buy tickets.

This showed that the home page was not very intuitive and was littered with ads that made navigating through the page much more difficult.

Process

We wanted the features that were hidden near the middle or the bottom of the home page such as park information and annual passholders to be moved to the top where users would be able to clearly see them as they were deemed important functionalities to the system. We knew it would be unlikely to remove the ads as the app's purpose is to market and profit in addition to it being a guide to users visiting Disneyland so keeping them relevant on the page would be essential to keep the essence of the current page.

Results

The park information functionalities were brought up to the top while the map shortcut was removed as we believe there is easy access to it already from the bottom bar in the system. We added the calendar underneath so finding information about which passes work with which dates would be easier to find along with park hours for future dates. Underneath the calendar, but still able to be seen upon first entering the home page is a section dedicated to the ads that Disney may want to push and advertise. Overall, we wanted the home page to be a place where users would be able to use more broad and general features. This page contains functionalities that do not require someone to have a Disney account and are typically features everyone would find useful inside and outside of Disneyland.

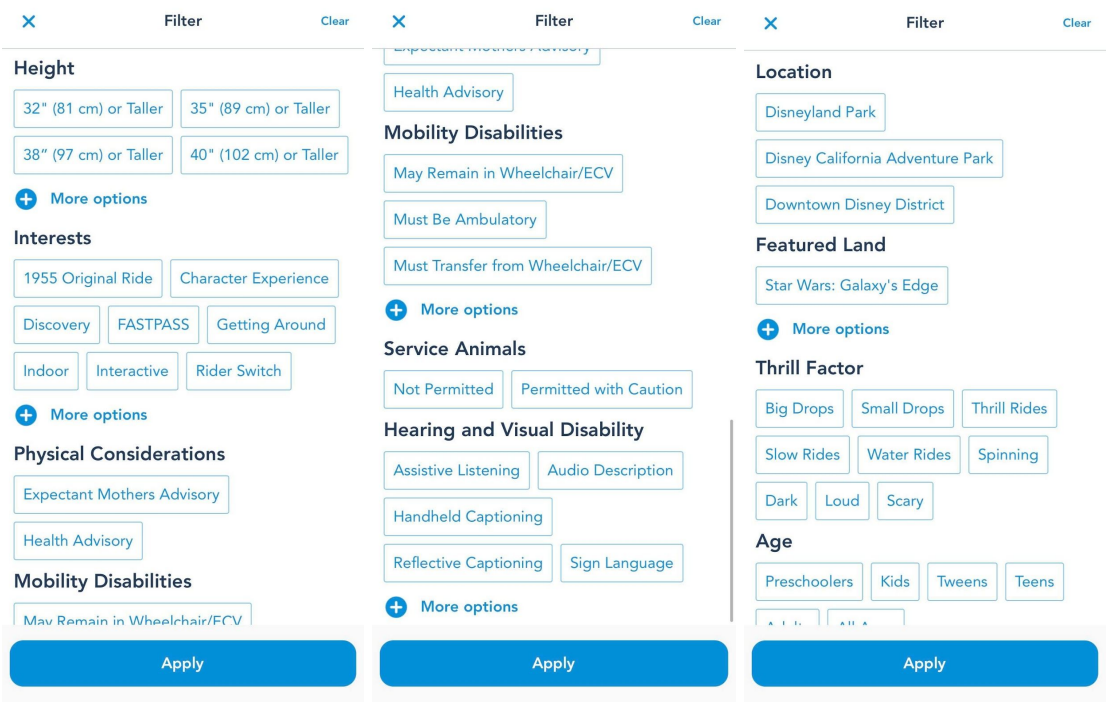
3 - Filter and Sorting

Problem

Our team found that the filter and sorting features of the app was not very easy to use nor was it easy to navigate through. Instead, the filter menu felt too cluttered and filter options were poorly grouped together. This made it difficult for users to navigate through the filter menu and find what they were looking for. The filter menu also had too many options with little clarification to what each option was implying, leaving users, especially newer ones, confused as to what some filters options were filtering.

Evidence

Through our findings from the usability tasks, we found that participants had an especially difficult time when asked to complete a task that involved using the filter feature of the app. We found that participants of our usability tasks would open up the filter menu and scroll through it, but not be able to find what they were looking for. Since the participant was not able to find what they were looking for, they would close the filter menu and look elsewhere to complete the task at hand. Only to come back and realize that the filter menu had what they were looking for and then completed the task. This showed to our group that the current filter menu was very inefficient and difficult to navigate through as participants were having a hard time finding the filter options they were looking for, even when they were on the right page, as they scrolled through the filter menu. When asked what they struggled with, participants said that the filter menu was too cluttered, making it difficult for them to find the filters they wanted. Participants also said that they were even confused about some of the options such as rider switch and discovery, and that some of the filters could have been better groups such as thrill factor and height requirement filters.



Process

Since the filters were cluttered and poorly grouped, our priority was to improve the navigation so that users can search through all the filter options in a more convenient way. We also wanted to minimize clutter by changing the grouping but not removing any options as to keep functionality the same but improve the experience.

Results

We implemented a search bar into the filters page so that users can quickly find their desired search filter. Since there are an abundance of filters to choose from, in order to reduce clutter, we arranged all the filters into drop down lists such that filter groups that aren't being used can be minimized and take up less space on the screen and reduce clutter. Active filters that are currently selected are shown under the Active Filters section so that users can quickly see what filters are currently being used for search purposes while all the other drop down lists are kept minimized and reduce clutter.

4 - Categories Tab

Problem

On the map page of the Disneyland app, there is a categories tab in the middle top of the screen that acts as a general broad filter for the map. The categories range from topics such as ride attractions, shows/entertainment, food, and bathrooms. The issues however are that the tab does not look clickable and its topics are unclear what they filter and may have cross overs that further confuse the user. By default the categories tab selects “Attractions”, but this does not include shows. One would have to change the tab to select “Entertainment” to accomplish that. In addition there are tabs that say “Event Activities” and “Events and Tours” that demonstrate the cross over and for new users it is confusing what they entail within themselves. The tab also has poor discoverability as people can forget they have selected a certain category and be searching for something that only shows on the map in a different category.

Evidence

Many users in our usability tests either did not realize the categories tab was clickable and found other various ways to complete tasks that were made simpler through the categories tab. We do not believe this is a coincidence as the tab is quite large and commands a relatively good amount of the screen. Since the system remembers the previous category users selected, when navigating through all our tasks, users would forget the category they were on and search through the map as if it had been reset for them automatically. There were also cases where users may have searched for a performance within the “Attractions” category believing it would fit in when in actuality performances are restricted to the “Entertainment” category.

Process

Our first priority was to make the categories tab appear more clickable. Once accomplished, we aimed to redefine the categories so there was no room for cross overs or confusion and created section dividers for categories that may share common traits or interests. Everything is also alphabetized so new users would more easily navigate through the many options available to them.

Results

We added small lines between “Filter”, the categories tab, and “Show List” to better define their individual spots on the screen. We moved the drop down menu arrow from the right of the categories tab to the beneath it. By moving it there and also increasing the lettering size of the current category word selected, we hope it will bring more awareness and attention to its existence. Once clicked on, the category tab expands to show all the possible selections which are seperated into the 3 dividers of “Attractions”, “Food”, and “Other”. We decided “Attractions” better fit any point of interest and turned it into a section divider title rather than its own category. “Rides” replaced the previous “Attractions” category and we better clarified the other categories such as shows and events. The “Other” section divider allowed us to group categories together that were too niche to be in an already existing section and did not share similarities with others so new sections could also not be created, but they were still important enough to not be cut out from the tab altogether.

5 - Map

Problem

The map functions well to display all the points of interests to visitors of Disneyland, but it requires a lot of memorization from the user to use it well. The map’s underwhelming filters and lack of proper or misleading signifiers make the system hard to learn. The map displays points of interest based on the category selected from the categories tab in the top middle of the screen, but sometimes those categories are not clear about what they represent so users may be searching in the wrong place to begin with. The zoom feature is also flawed as parts of the map can be blocked by information being displayed when zoomed in. In addition, when zoomed out, a number is displayed to show how many attractions are in the general area, but it is not clear to the user what it is displaying and some confuse it with wait time. New users find the map hard to navigate to find different lands and areas without prior knowledge of where they are relative to the map. It does not help that users must zoom in to make the lands easier to define, but then they are too far in to navigate around the map easily to browse.

Evidence

The map is the most important part of the Disneyland app we concluded through our user research surveys, usability tests, and interviews. Usage of the map varied a lot with both some overusing it and some underusing it. How often the user would use the map depended on their familiarity with the map. If someone was already familiar with the system, they would be able to navigate to the area through memorization or use a method they already knew would be more efficient.

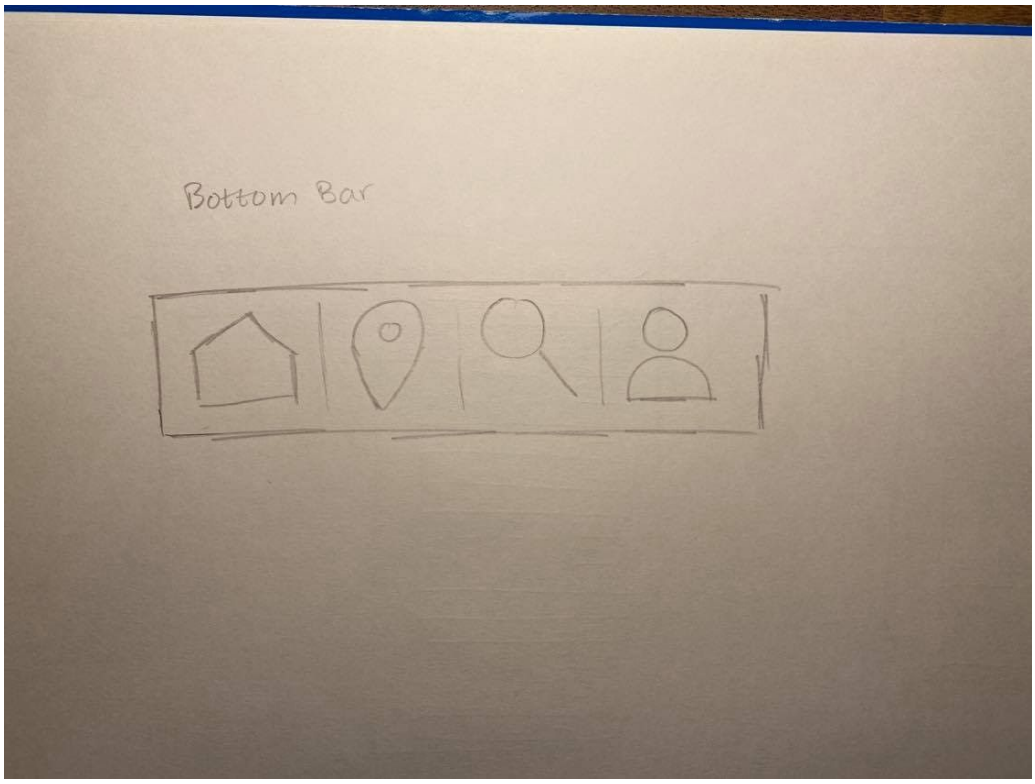
Process

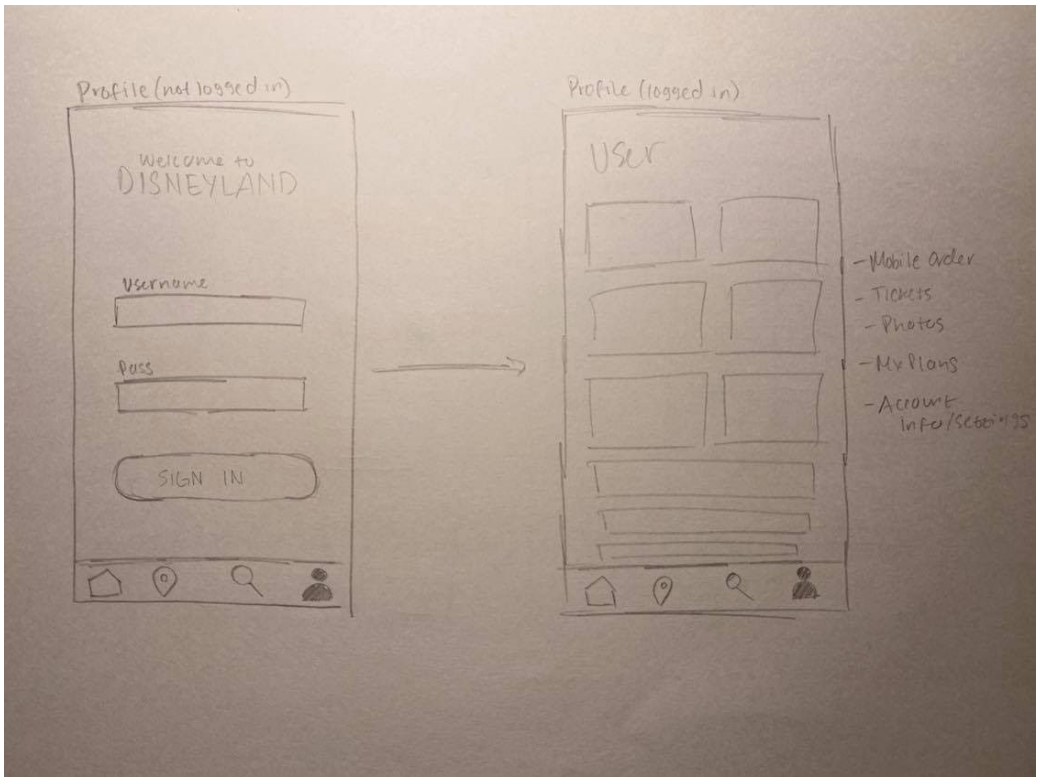
Because we found that the map was a highly essential feature of this app, we had an idea to make the map the home page of the app, centering its functionality around the map and treating the other features like mobile ordering and purchasing tickets as an extension of the map. We also thought that the map should show an appropriate amount of information depending on how zoomed in or out the user is, in order to prevent cognitive overload from having too much information on the screen at once. We also wanted to highlight wait times to make it easier to glance over the map and get the information, so we thought of color coding the ride wait time icons to reflect how long a ride's wait is.

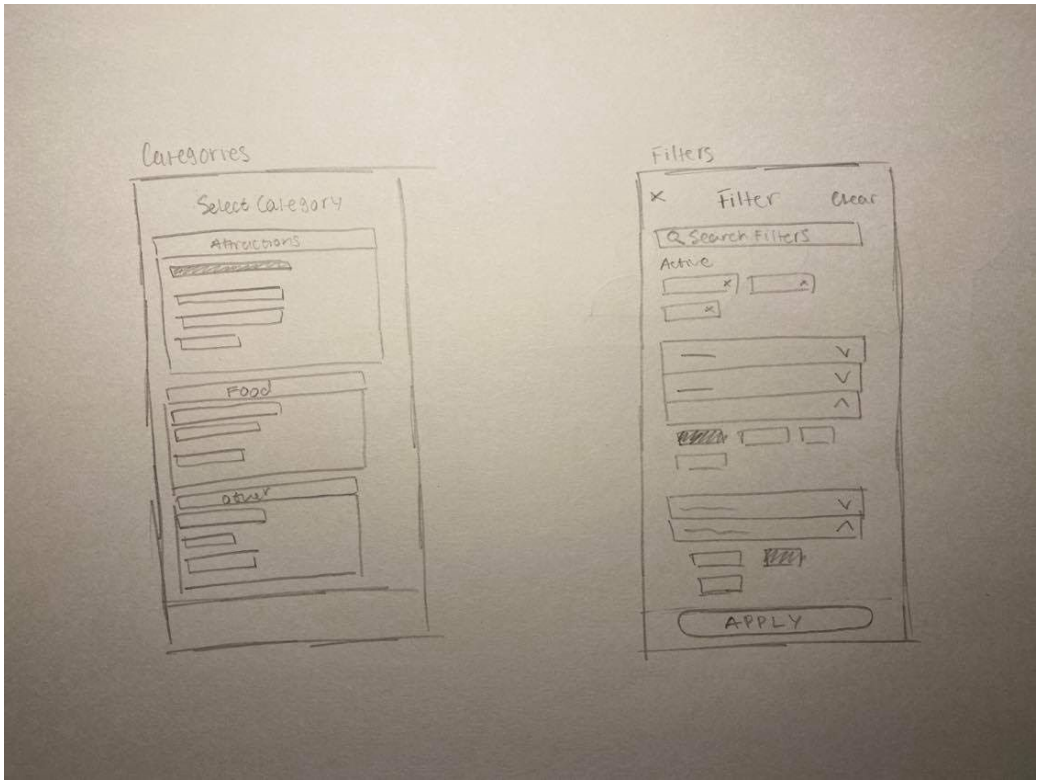
Results

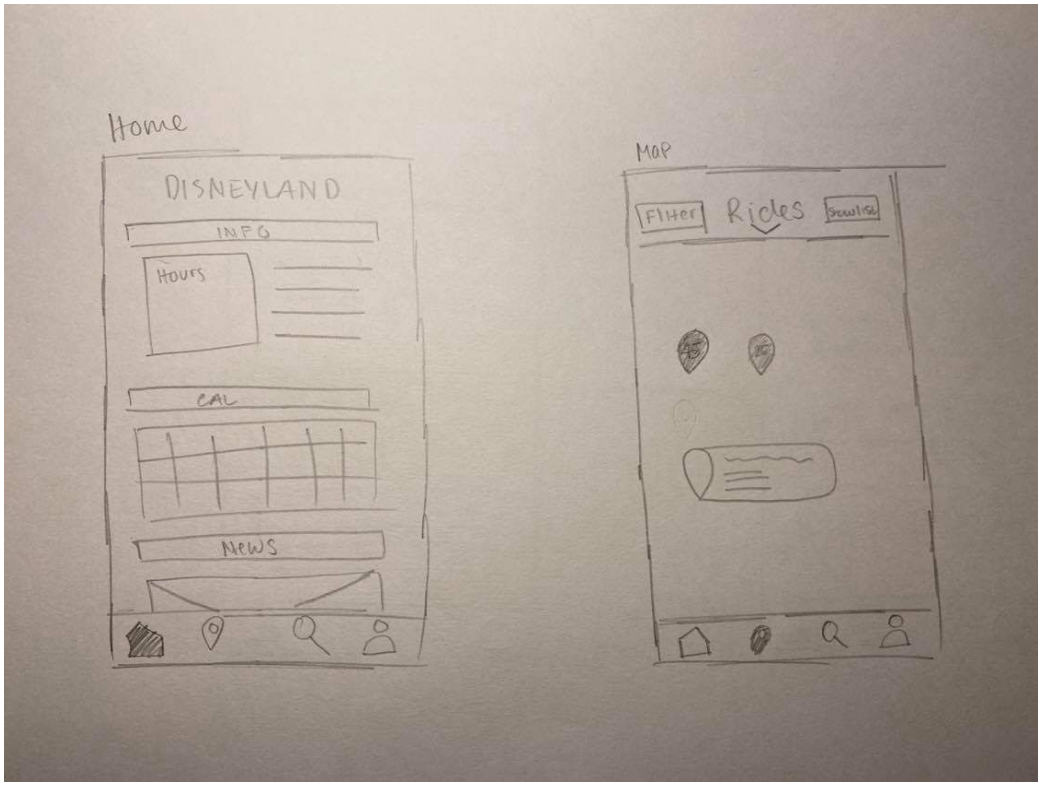
We implemented our color coded wait times on the map using a range of green to yellow to orange to red--green being a short wait time and red being a long wait time. We also condensed information of a certain area into an information box which details other attractions in that area, creating a more refined look when zoomed out, rather than an icon for each individual attraction with can crowd that map. We kept the overall structure of the app, having a bottom bar with different sections and redesigning the home to better reflect a traditional home page instead of reconfiguring the entire app around having the map as the "home."

Sketches

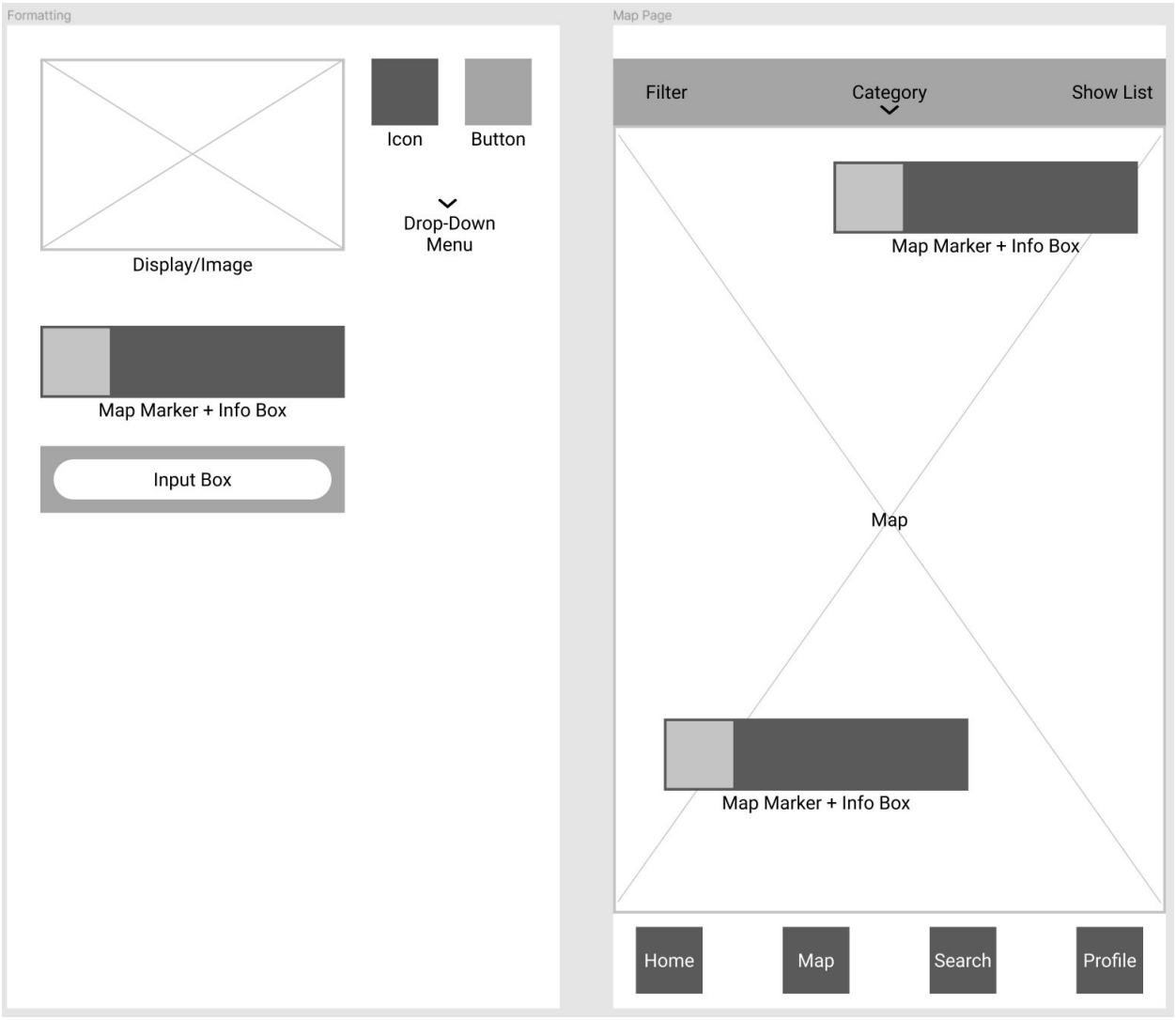

Bottom Bar

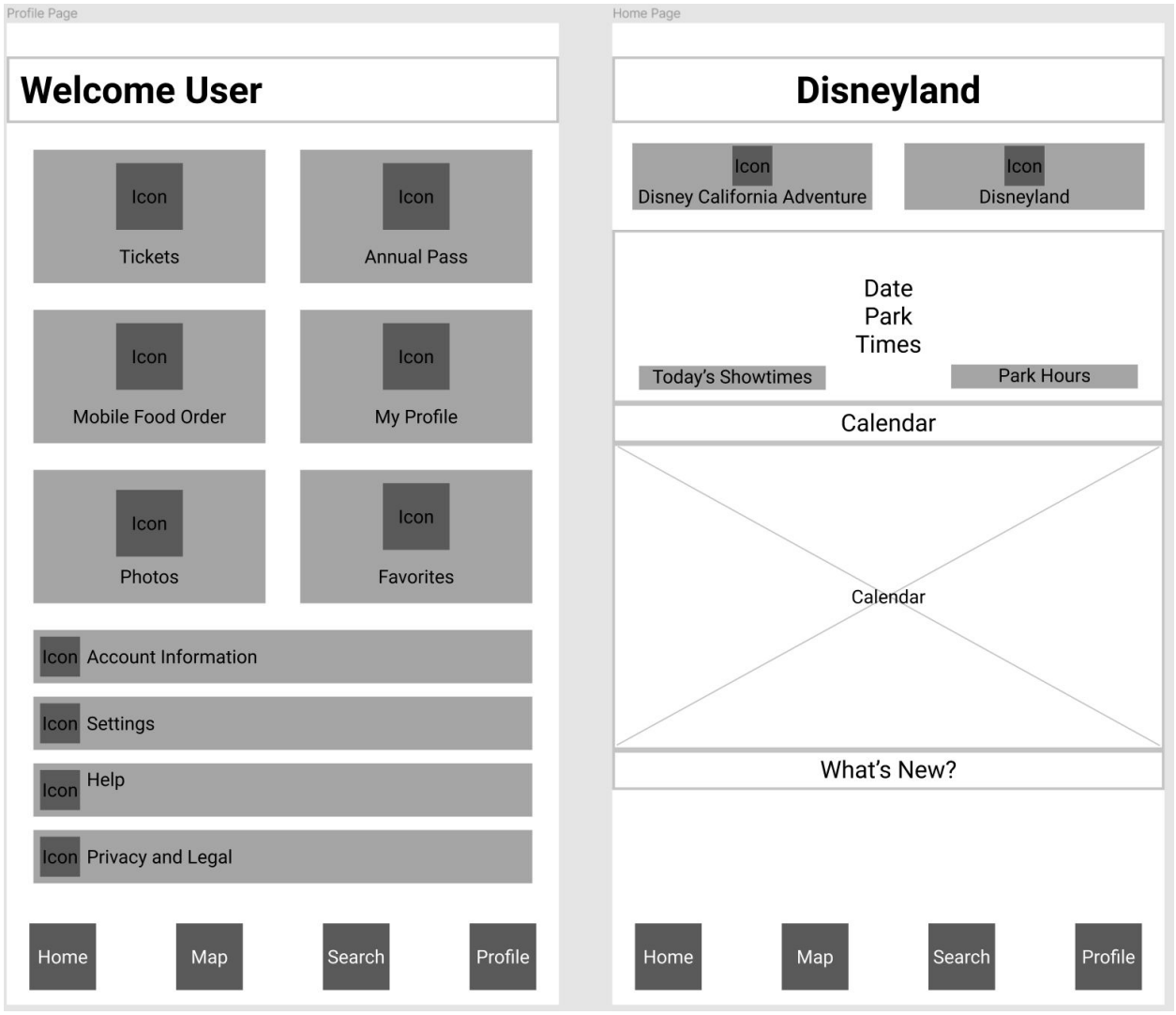

Profile (not logged in)
Welcome to
DISNEYLAND
Username
Pass
SIGN IN
Profile (logged in)
USER
- Mobile order
- Tickets
- Photos
- My Plans
- Account Info/Settings

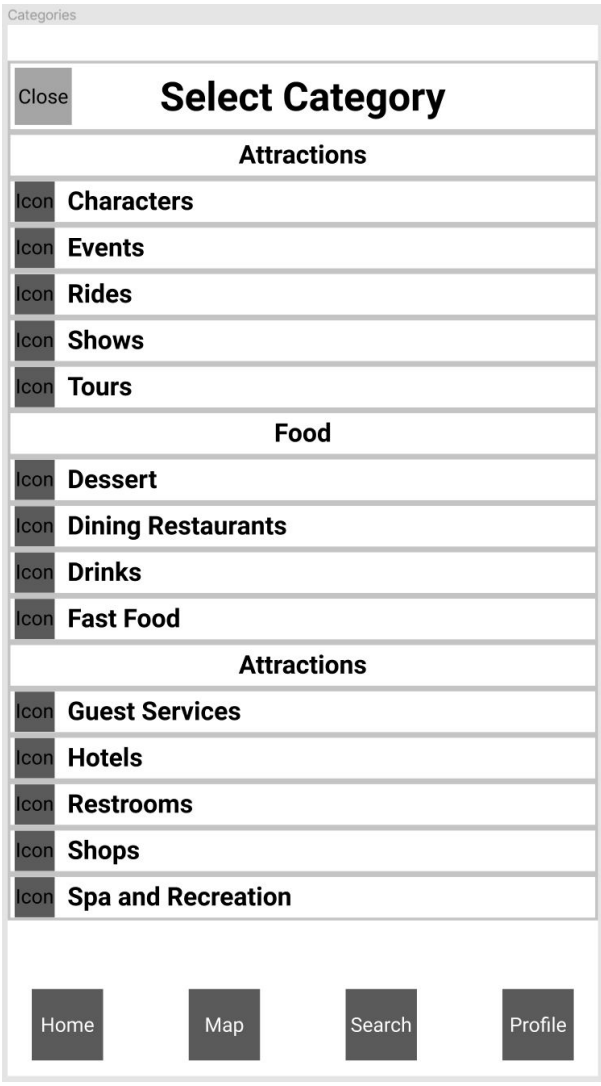

Categories
Select Category
Attractions
Food
Other
Filters
Filter
Clear
Search Filters
Active
APPLY

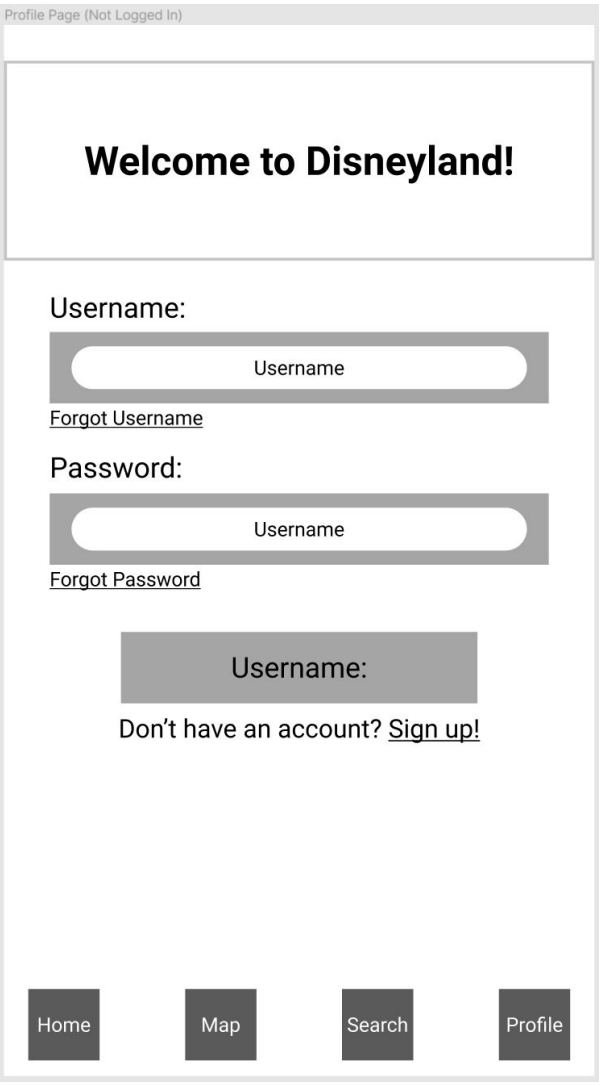

Home
DISNEYLAND
INFO
Hours
CAL
NEWS
Map
Filter
Rides
Search

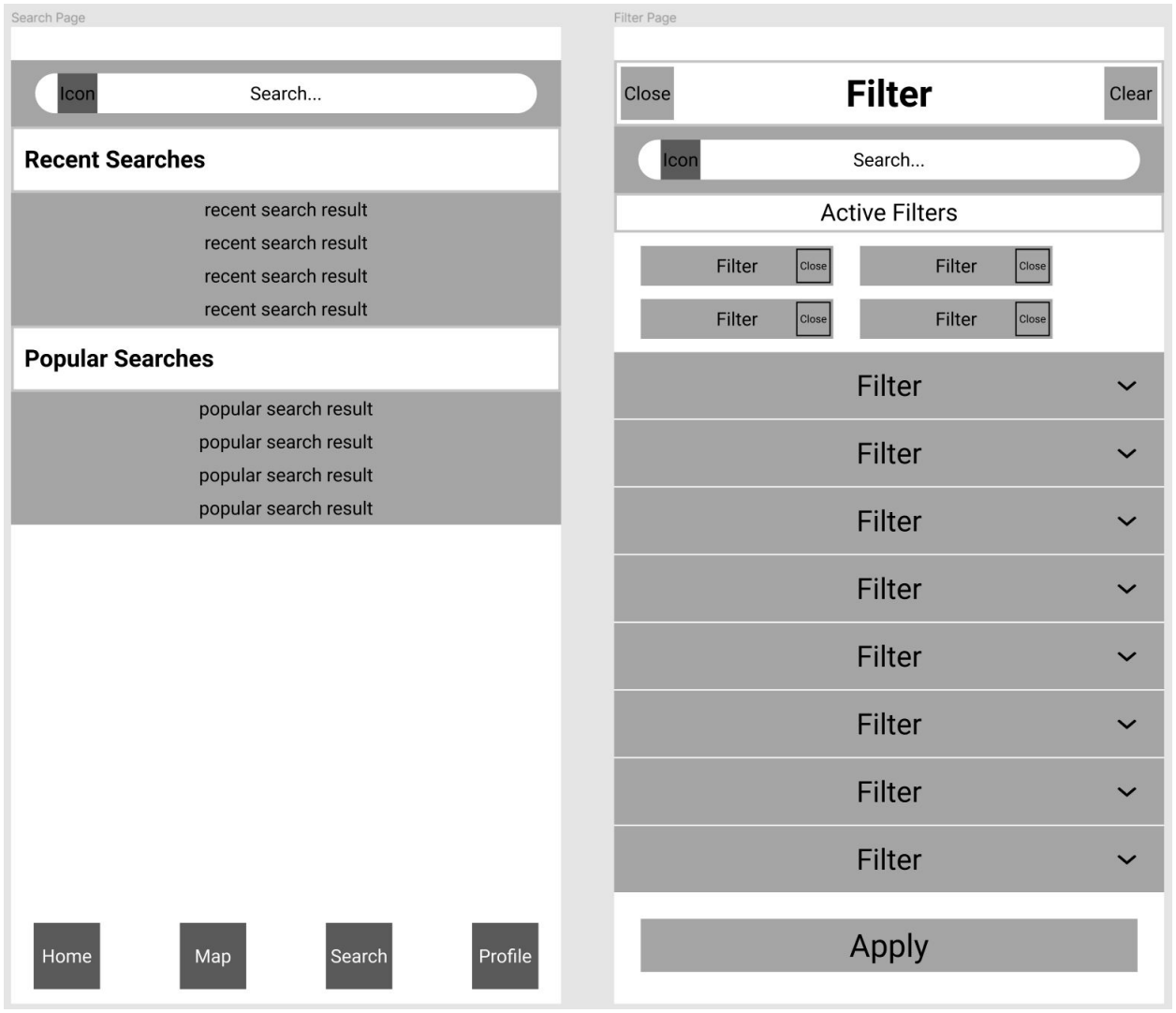
Wireframes


Formatting
Icon
Button
Drop-Down Menu
Display/Image
Map Marker + Info Box
Input Box
Map Page
Filter
Category
Show List
Map Marker + Info Box
Map
Map Marker + Info Box
Home
Map
Search
Profile

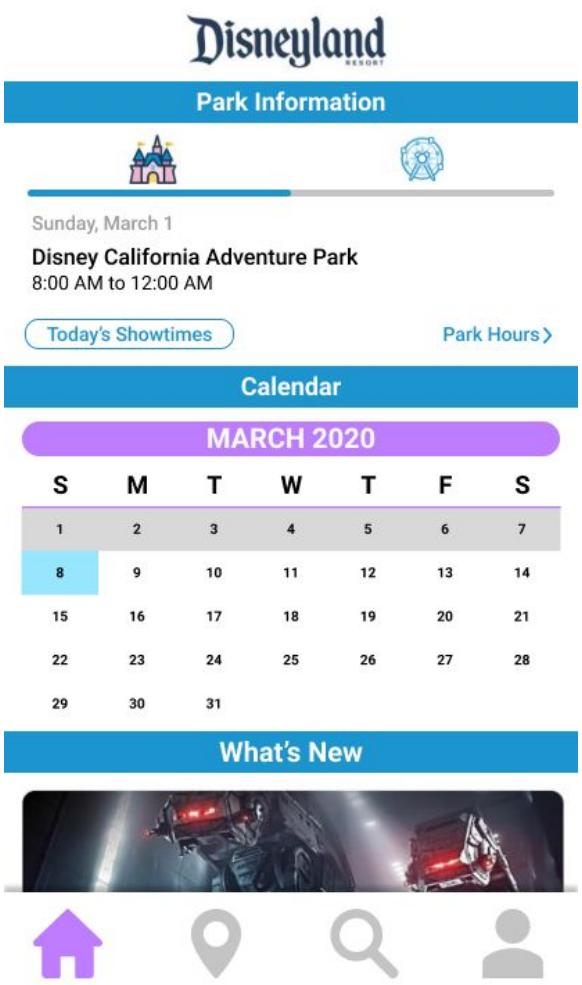

Profile Page
Welcome User
Icon
Tickets
Icon
Annual Pass
Icon
Mobile Food Order
Icon
My Profile
Icon
Photos
Icon
Favorites
Icon Account Information
Icon Settings
Icon Help
Icon Privacy and Legal
Home
Map
Search
Profile
Home Page
Disneyland
Icon
Disney California Adventure
Icon
Disneyland
Date
Park
Times
Today's Showtimes
Park Hours
Calendar
Calendar
What's New?
Home
Map
Search
Profile

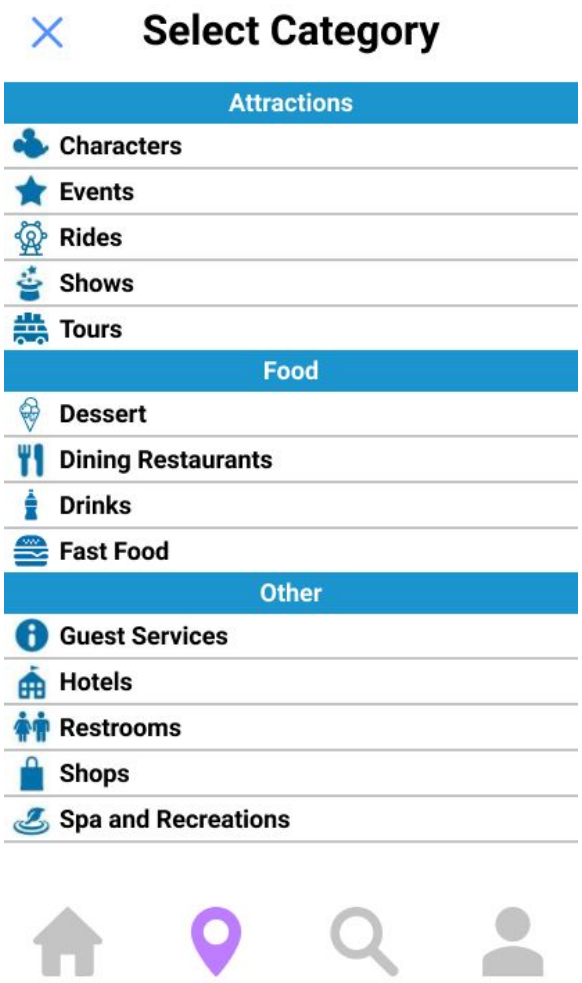

Categories
Close
Select Category
Attractions
Icon Characters
Icon Events
Icon Rides
Icon Shows
Icon Tours
Food
Icon Dessert
Icon Dining Restaurants
Icon Drinks
Icon Fast Food
Attractions
Icon Guest Services
Icon Hotels
Icon Restrooms
Icon Shops
Icon Spa and Recreation
Home
Map
Search
Profile

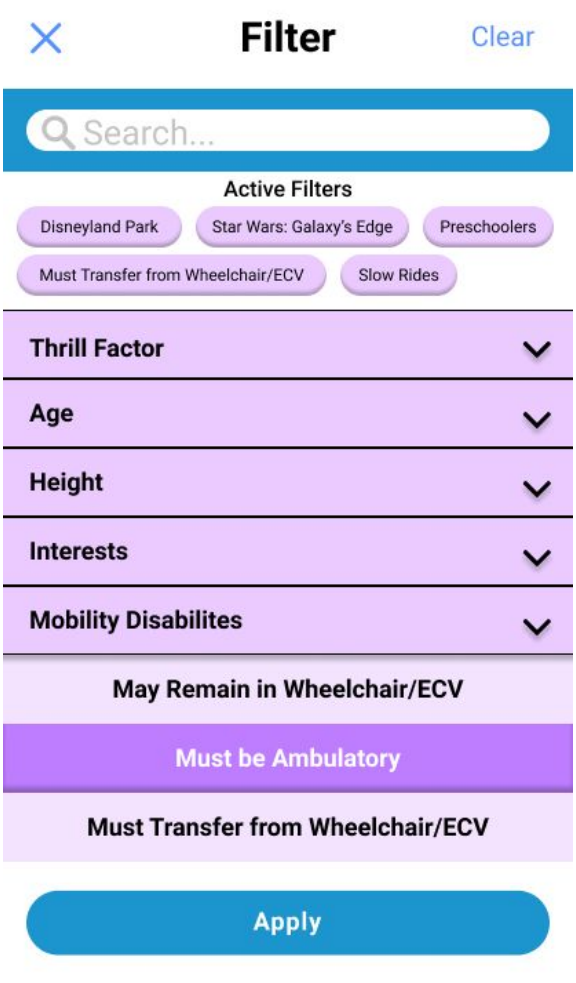

Profile Page (Not Logged In)
Welcome to Disneyland!
Username:
Username
Forgot Username
Password:
Username
Forgot Password
Username:
Don't have an account? Sign up!
Home
Map
Search
Profile

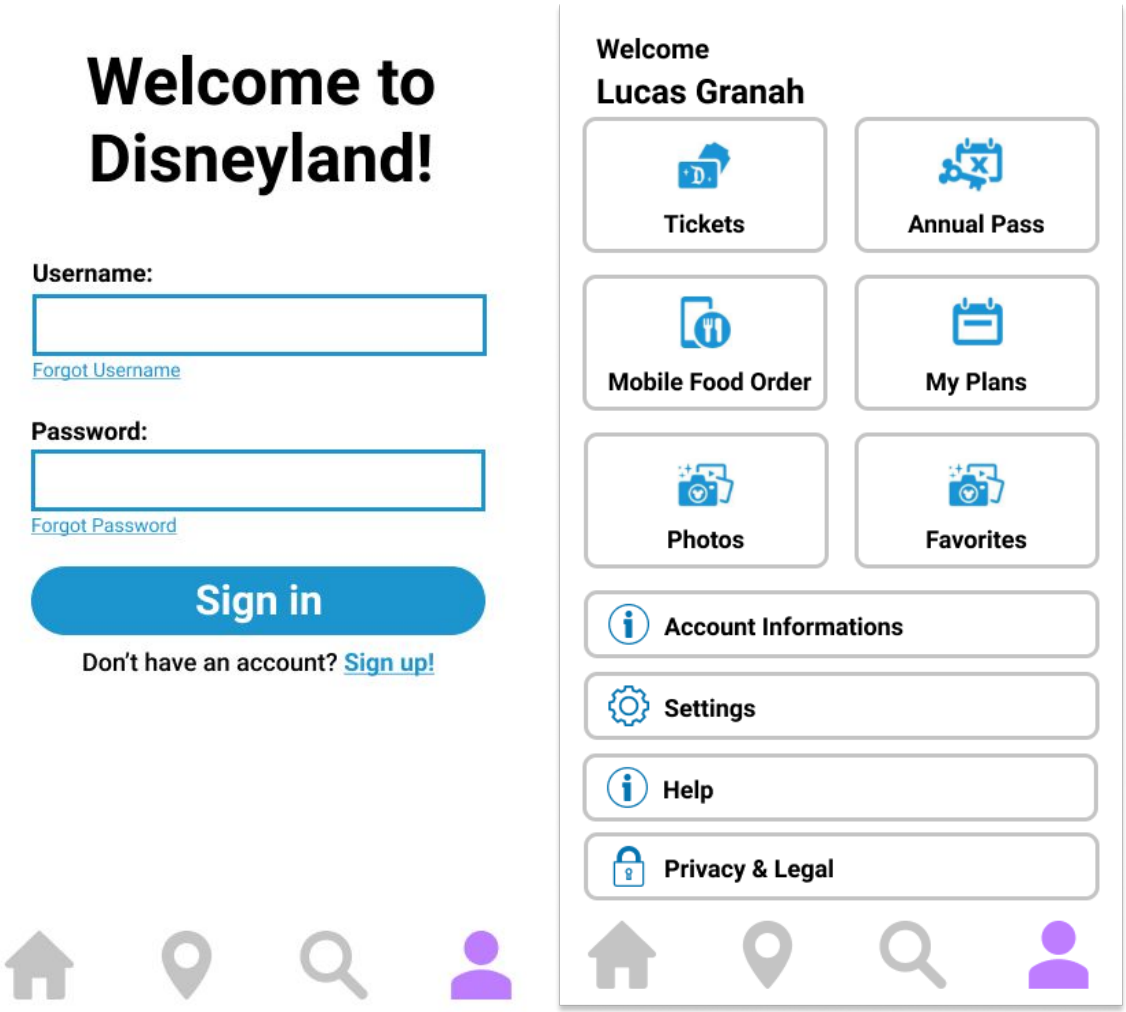

Search Page
Icon
Search...
Recent Searches
recent search result
recent search result
recent search result
recent search result
Popular Searches
popular search result
popular search result
popular search result
popular search result
Home
Map
Search
Profile
Filter Page
Close
Filter
Clear
Icon
Search...
Active Filters
Filter
Close
Filter
Close
Filter
Close
Filter
Close
Filter
Filter
Filter
Filter
Filter
Filter
Filter
Apply

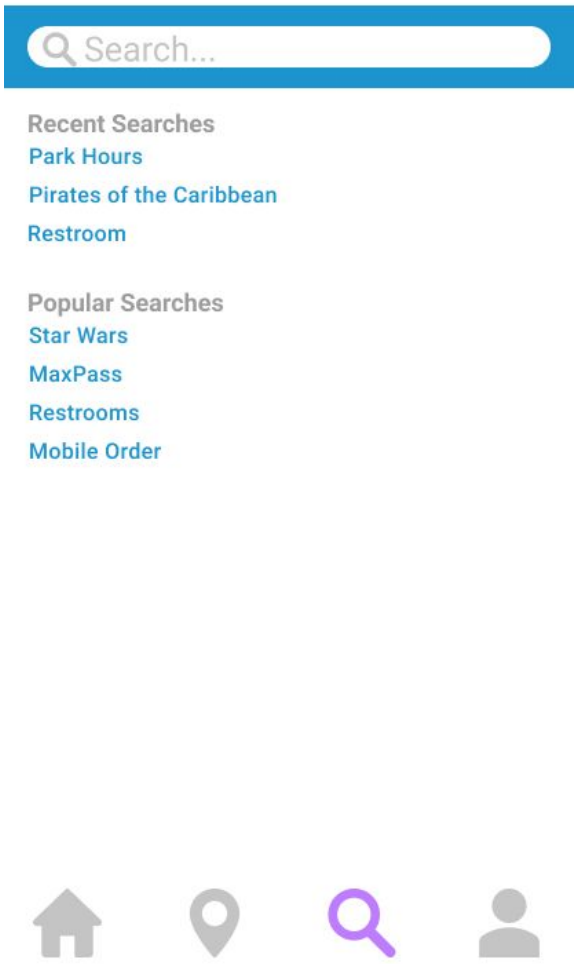
High-Fidelity Mockups




Select Category
Attractions
Characters
Events
Rides
Shows
Tours
Food
Dessert
Dining Restaurants
Drinks
Fast Food
Other
Guest Services
Hotels
Restrooms
Shops
Spa and Recreations


Filter
Clear
Search...
Active Filters
Disneyland Park
Star Wars: Galaxy's Edge
Preschoolers
Must Transfer from Wheelchair/ECV
Slow Rides
Thrill Factor
Age
Height
Interests
Mobility Disabilites
May Remain in Wheelchair/ECV
Must be Ambulatory
Must Transfer from Wheelchair/ECV
Apply


Welcome to Disneyland!
Username:
Forgot Username
Password:
Forgot Password
Sign in
Don't have an account? Sign up!
Welcome
Lucas Granah
Tickets
Annual Pass
Mobile Food Order
My Plans
Photos
Favorites
Account Informations
Settings
Help
Privacy & Legal


Search...
Recent Searches
Park Hours
Pirates of the Caribbean
Restroom
Popular Searches
Star Wars
MaxPass
Restrooms
Mobile Order

Heuristic Evaluation

In our heuristic evaluation, each member individually evaluated Disneyland's and combined our findings to better analyze our redesign. We based our heuristic evaluation using Jakob Nielsen's 10 Usability Heuristics to determine whether our redesigns met Nielsen's usability expectations. With the combining of our evaluations, our group had made the following conclusions.

1. Visibility of System Status

> *"The system should always keep users informed about what is going on, through appropriate feedback within reasonable time."*

Our group deduced that "visibility of system status" means users can see a change in the system. We've repurposed some icons to allow users to understand an icon's meaning and function. For instance, users can be updated as to what page they are currently on because of the navigation bar at the bottom of the application. It has four icons that allow "visibility of system status" (Figure 1). When a user taps on one of the icons, they are led to the desired page, and the icon turns a different color.

As for improvement, our redesign did not include appropriate feedback for users such as a loading wheel which was in the original design. In the original design, users would be able to understand that a page was loading because of a displayed loading wheel.

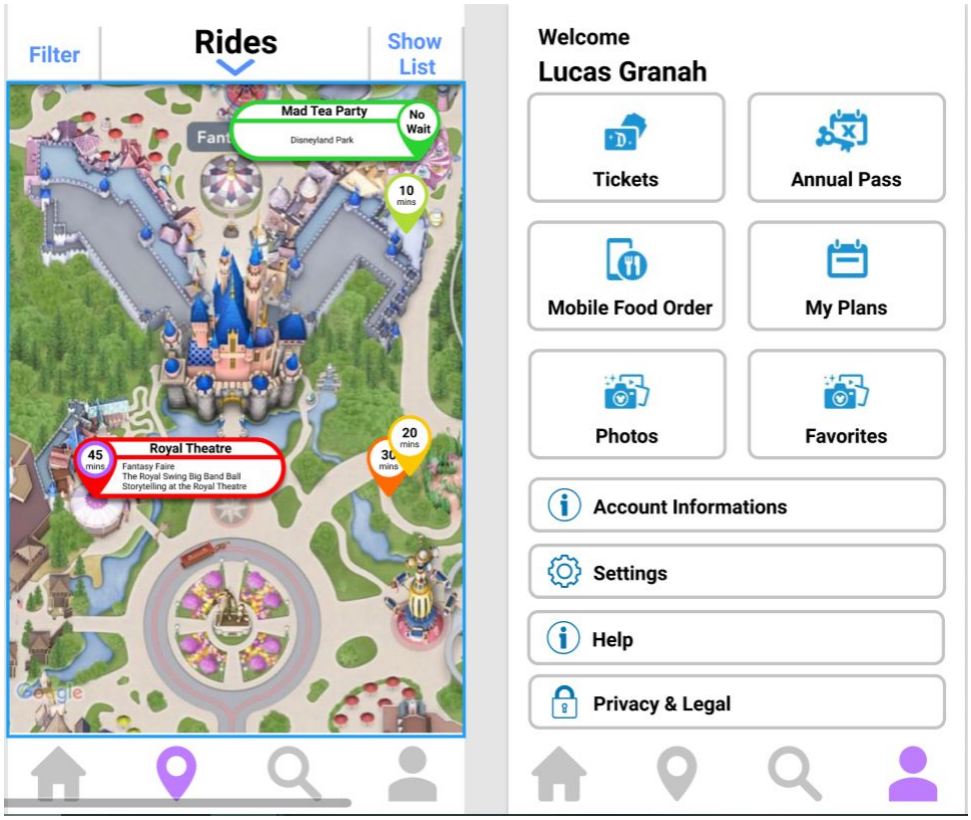


Figure 1a: The bottom navigation bar allows users to understand where they are in the system. The purple Navigation icon allows users to know that they have selected and are currently on the Map page.

2. Match Between System and Real World

> *"The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order."*

Our group deduced that "match between system and real world" means how familiar/conventional is our redesign. Our redesign includes all familiar conventions to most users who use mobile applications (ie. navigation bar, filter/category menu, map, home page, etc.). For instance, the best example of this heuristic would be the map page. The map matches its real world equivalents in location, not scale. Therefore, users would be able to recognize locations because of these real world equivalents (Figure 2).

Figure 2: The map system is designed to match the real word. Small details such as the trees, tables, and details of the rides and landmarks match the real world for easy navigation and recognition.

3. User Control and Freedom

> *"Users often choose system functions by mistake and will need a clearly marked 'emergency exit' to leave the unwanted state without having to go through an extended dialogue. Support undo and redo."*

Users are able to freely roam the application without suffering long error messages. All functions are accessible and controllable by the use.However users are restricted from customizing any part of the application.

4. Consistency and Standards

> *"Users should not have to wonder whether different words, situations, or actions mean the same thing."*

Our group made sure to keep all aspects of the app consistent and standard with modern application expectations so that users are not confused. For instance, our team kept the navigation bar since it is a pretty conventional tool within other applications such as Facebook and Instagram.

5. Error Prevention

> *"Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action."*

Our redesign did not include any error prevention messages since our redesign was more focused on design layout rather than function.

6. Recognition Rather Than Recall

> *"Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate."*

Our group redesigned the app with the mindset of prioritizing recognition in order to reduce the user's memory load. We accomplish this by keeping titles short, while also accompanying them with a symbolic icon making it much easier for the user to recognize. This can be seen in figures 6.1 and 6.2.

Although our group prioritized recognition, we were unable to accomplish this regarding our filter menu redesign (figure 6.3) as our main goal was to unclutter it and make the page easier to navigate. What this means is that users will have to recall what each filter category is referring to and what is inside its drop down menu. Given more time and resources, our group would definitely prioritize making this menu much more recognizable for users.

Figure 6.1 (Above): Our group's redesigned categories tab that uses short and easy to understand phrases, accompanied by a small, recognizable icon.

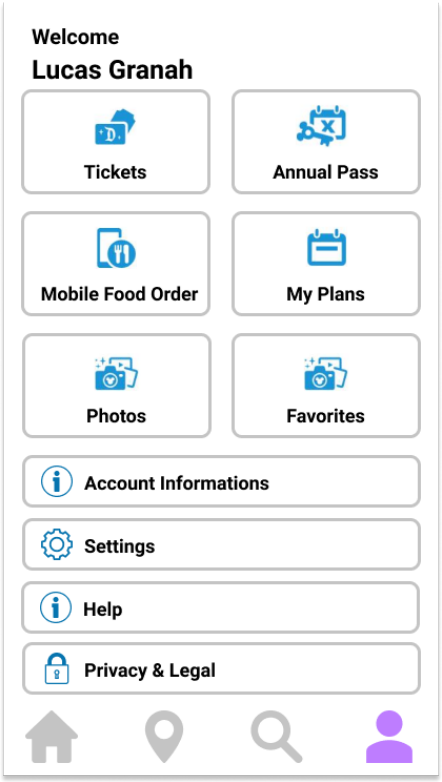


Figure 6.2 (Above): Here is our group's redesigned home page(logged in) and again we can see the use of short and easy to understand phrases that are accompanied with symbolic icons. For example, the cog wheel icon for settings and a lock icon denoting privacy.

Figure 6.3 (Above): Our group's redesign for the filter menu. Here we mainly focused on uncluttering in hopes of making the page easier to navigate, so recognizability was not our main goal. This can be seen through the lack of symbolic icons as well as the use of possibly confusing terms, such as thrill factor and interest, making the user recall more information than necessary.

7. Flexibility and Efficiency of Use

> *"Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions."*

In our redesigns, our group tries to improve flexibility and efficiency of use wherever we can. And one such place happened to be the search menu. (Figure 7.1) In our redesign of the search menu we decided to add a recent search history making searches more efficient for users. For example, if a user was planning to go to Disneyland for the whole day, then it is very likely that they need to use the restrooms more than once. So rather than having to search for restrooms everytime, they can just tap on their recent search for restrooms to save a lot of time.

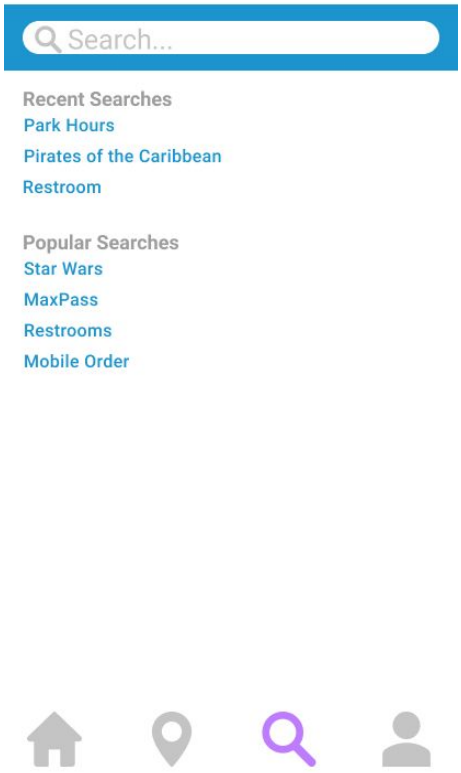


Figure 7.1 (Above): Taking inspiration from popular websites and apps, such as Youtube and Instagram, our team decided to add a 'recent searches' feature in our redesign of the search menu. Although it may not seem like a big change, this addition makes the app much more efficient to use for new and experienced users as they no longer have to search for any of their recent searches and can instead just tap on it in the history.

8. Aesthetic and Minimalist Design

> *"Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility."*

We mostly kept the overall aesthetic and visual design of the original app, because it was already minimal and simplistic to begin with. In this aspect, most of our redesign centered around only offering the most salient and important information. We found that in the original app, there was a lot of unnecessary information at many stages of a particular task, for example, there were too many filters for the map and too many advertisements on the home page. We took out the extra filters and kept only what we deemed was necessary based on our user research and testing.

9. Help Users Recognize, Diagnose, and Recover from Errors

> *"Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution."*

Most of our redesign did not include any error messages, as most of our tasks would most often be misclicks. However, in the filters tab in particular, we redesigned the interface so that the selected filters would be displayed at the top of the page, and the user can deselect the filter if they accidentally select it. In this way, our redesign offered the user an easy way to undo their mistake.

10. Help and Documentation

> *"Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large."*

Our redesign did not include a Help page or Documentation to provide novice and experienced users to refer to.

Appendix

Appendix 1: Personas

Persona 1 - “Fan” Sabrina

- Aged 18, Female
- Location: Orange, CA
- Tech skill level: 5/5
- Annual Passholder: Yes
- Goal for a visit: To have a relaxed, easy going day
- Reason for going: Do all the things they know they like
- What they value in their visit: The things they like are available
- Frustrations
    - Work and School
    - Transportation
- Bio/Scenario: No car, part time job, some, but not a lot of disposable income
    - Sabrina is currently a freshman at a University in Orange County, majoring in a technology-related field. She is very tech-savvy, and understands the concepts of good design and efficiency. Sabrina has a part-time job, meaning that she has some disposable income. With this money and during her free time, Sabrina makes trips to Disneyland by Uber. While Disneyland is the only theme park she really goes to, she goes quite often. When Sabrina arrives at Disneyland, her primary goal is to just unwind and relax, and so she plans to only do the things she enjoys and at an easy-going pace. She knows that there’s no pressure since she has an Annual Pass and could come back any other time.

Persona 2 - “Not a Fan” Dennis

- Age 24, Male
- Location: Riverside, CA
- Tech skill level: 3/5
- Annual Passholder: No
- Goal for a visit: Want to spend time with friends
- Reason for going: Friends suggested
- What they value: Everyone having a good time
- Frustrations
    - When friends don’t include him
    - Not really being a fan of Disney
- Bio/Scenario: Car, full time job, some disposable income
    - Dennis is a recently graduated college student with a full-time job, residing in Riverside. He has some disposable income, and a car with which he tends to drive himself and his friends. Dennis doesn’t really go to amusement parks at all, but very rarely, if his friends suggest they plan a trip to Disneyland, he will go along to spend time with them. Dennis’ main goal is just to enjoy the time he has with friends, whether it’s at an amusement park or at home. He has no real interest in Disneyland, but is open if that’s what his friends want.

Persona 3 - “Casual” Emily

- Age 20, Female
- Location: Costa Mesa
- Tech skill level: 4/5
- Annual Passholder: No
- Goal for a visit: Make the most out of their visit, since they don’t go often
- Reason for going: Explore and experience new parts of the park
- What they value: Having new things (rides, merch, food) to experience, short wait times
- Frustrations:
    - Financial Issues
    - Planning an optimal schedule
- Bio/Scenario: Car, part time job, no disposable income

Emily is a Sophomore at a University in Costa Mesa, majoring in Business. She’s always interested in new places, and values the experience and atmosphere of unexplored locations. Emily has a part-time job and a car, but no disposable income, making it hard for her to go on those adventures she wishes for. For this reason combined with the fact that she isn’t a dedicated fan of Disney, it makes sense that she doesn’t own an Annual Pass. However, Emily can appreciate the excitement of Disneyland, so when she does go on occasion, she tries to make the most out of the visit. She wants to maximize her time spent there by planning her activities around wait-times and showtimes, and also enjoys window-shopping at the various merch stores within the park.

Appendix 2: Interview Protocol

Structure

- Note date, location, and time
- Name and Age
- Given Consent to Interview
- Ask Questions
- Probe when necessary
- Don't cut off interviewee
- Leave silences for more information
- Ensure conversation ends on a good note
- Thank interviewee

Main Topics:

- What methods the interviewee uses to navigate through amusement parks when they go
- What do you expect when you visit Disneyland?
- Favorite thing to do at Disneyland?
- Frequency of Disneyland visits, as well as whether they own an Annual Pass
- Do you know of/have you used the official Disneyland App?
- How many people do you normally visit the park with?
    - How many of you use the Disney app?
- What's the first thing you do when you get in the park?
    - Food? Rides? Entertainment? Bathroom?
    - How do you decide what to do?
    - Do you decide what to do BEFORE you get in or AFTER?
        - Where do you get information about what to do?
- Do you know how to check wait times for rides/shows/etc.?
    - How do you do that? (App or wait time board in park)
    - What's the experience of checking times?
        - Is it easy? Difficult? Fast? Slow?
- What do you do when you're in line?
    - Are you on your phone?
    - Play games?
        - What apps do you use?
        - Are you ever hungry in line?
        - Find out what to do next?
            - How do you figure that out?
            - App?
- Do you ever buy food at Disneyland?
    - Why/Why not?
        - Cost, long lines, quality?

- How does Disneyland compare to apps such as MouseWait, Magic Guide, Universal Studios, or Six Flags

Potential Example Interview Structure

- Have you gone to an amusement park before?
    - Yes - what methods did you use to navigate throughout the park and why would you use one method over another?
        - Have you been to Disneyland?
            - Yes - do you have an annual pass?
                - How often do you go to Disneyland annually?
            - No - why
        - Do you know of/have you used the official Disneyland App?
            - Yes - What features of the app do you use the most?
                - What challenges or problems did you encounter?
            - No - explain what the disneyland app is briefly
    - No - why

Appendix 3: Survey Protocol

Disneyland App User Survey

This survey is for the purpose of redesigning the Disneyland App for the UCI class Informatics 132. Your responses are anonymous and no personal data will be recorded. The answers you provide will be analyzed by our team in order to better understand user's experiences with the Disneyland App. We are not associated with Disney and our project will not reflect in any future changes Disney may make in their app. By submitting this form, you consent for your anonymous responses to be used in our research and redesign project.

General Questions

Please answer the questions below honestly and to the best of your abilities.

1. **What gender are you?**
    a. Male
    b. Female
    c. Prefer not to say
2. **How old are you?**
    a. Under 12 years old
    b. 12-17 years old
    c. 18-24 years old
    d. 25-34 years old
    e. 35-44 years old

f. 45-54 years old
g. 55 years or older
h. Prefer not to say

3. **What kind of smartphone do you have?**
    a. iPhone
    b. Samsung
    c. Android
    d. I do not own a smartphone
4. **What methods do you prefer to use to navigate through amusement parks? (Check all that apply)**
    a. Paper Maps
    b. Mobile Websites
    c. Smartphone Apps
    d. None (You prefer to roam around freely)
5. **Do you have a Disney Account?**
    a. Yes
    b. No
6. **Do you have a Disneyland Annual Pass?**
    a. Yes
    b. No
7. **How often do you usually go to Disneyland in a year?**
    a. 0
    b. 1-2
    c. 3-4
    d. 5+
8. **Have you heard of the Disneyland app before this survey?**
    a. Yes
    b. No
9. **Have you used the Disneyland app before?**
    a. Yes
    b. No
10. **Have you heard of the Magic Guide for Disneyland App?**
    a. Yes
    b. No
11. **Have you used the Magic Guide for Disneyland App before?**
    a. Yes
    b. No
12. **Have you heard of the MouseWait App?**
    a. Yes
    b. No

13. **Have you used the MouseWait App before?**
    a. Yes
    b. No
14. **Which app do you prefer the MOST?**
    a. Disneyland
    b. Magic Guide for Disneyland
    c. Mousewait
    d. I have no preference
    e. I have not used any of these apps
15. **Which app do you prefer the LEAST?**
    a. Disneyland
    b. Magic Guide for Disneyland
    c. Mousewait
    d. I have no preference
    e. I have not used any of these apps

Disneyland App Survey: Feature Importance

This section is to gauge your personal skills and measure what you may value in an application. There is no right or wrong answer, please answer honestly and to the best of your abilities.

16. **I am technologically savvy:**
    a. 1 - Strongly Disagree
    b. 2 - Somewhat Disagree
    c. 3 - Neutral
    d. 4 - Somewhat Agree
    e. 5 - Strongly Agree
17. **I value efficiency of an app over the number of features it offers**
    a. 1 - Strongly Disagree
    b. 2 - Somewhat Disagree
    c. 3 - Neutral
    d. 4 - Somewhat Agree
    e. 5 - Strongly Agree
18. **I would prefer if the app was always easy to use even if it might be tedious**
    a. 1 - Strongly Disagree
    b. 2 - Somewhat Disagree
    c. 3 - Neutral
    d. 4 - Somewhat Agree
    e. 5 - Strongly Agree
19. **I am not good at using technology**
    a. 1 - Strongly Disagree

b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

20. I value the quantity of the features offered in an app over the efficiency of the app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

21. I would prefer if the app had shortcuts to navigate through quicker, even at the cost of being more difficult to learn

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

22. "Park Maps" are an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

23. "Ride Wait Times" are an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

24. "Purchasing Tickets" are an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

25. "Viewing Tickets" are an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral

d. 4 - Somewhat Agree
e. 5 - Strongly Agree

26. "Mobile Food Order" is an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

27. "Park Hours" are an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

28. "Park Blackout Days" are an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

29. "Linking Social Media Accounts" (Ex: Facebook, Twitter, Instagram) are an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

30. "Itinerary" is an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

31. "Merchandise Shopping" is an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

32. "Photos" is an important feature in an amusement park app

a. 1 - Strongly Disagree
b. 2 - Somewhat Disagree
c. 3 - Neutral
d. 4 - Somewhat Agree
e. 5 - Strongly Agree

33. **"Favoriting" is an important feature in an amusement park app**
    a. 1 - Strongly Disagree
    b. 2 - Somewhat Disagree
    c. 3 - Neutral
    d. 4 - Somewhat Agree
    e. 5 - Strongly Agree
34. **Is there anything else you would like us to know that you think would be important?**
    a. (Open Text Box)

Appendix 4: Usability Test Protocol

General Protocol

- Consent form
- Note date, location, time, name, and age (Collect demographic information)
- Have you used the Disney app before? If so, how frequently?
- Detail goal of usability test (Repeat for each task)
    - "Specify Think Aloud Protocol"
    - Take notes
    - Ask scaling and open ended questions (look below the tasks)
- Ask scale questions about overall interface (look below tasks and specific task questions)
- Ask open-ended questions about overall interface (look below tasks and specific task questions)
- Ask if they had any other comments.
- Thank interviewee
- Other notes
    - They should never have to stop and ask you what to do
    - Ensure that they will tell you they are finished with the task when they think they are done

Tasks

Task 1:

Goal / Output:	Check wait time for rides in Tomorrowland
Inputs:	Land name: Tomorrowland
Assumptions:	Rides are open and operating
Scenario:	You and your group have Fastpasses for Space Mountain in 1 hour. You want to see if you can ride any other rides before your Fastpass time, so you want to check wait times for other rides in the area and see which one to go on. Use the Disneyland app to find at least three other rides in Tomorrowland that your group could potentially ride. As you work, please 'think aloud' and explain what you are doing as you do it. Please indicate to the interviewer when you believe you have completed the task.

Steps:	- Press "map" icon (should default to showing Attractions)
	- (A) Browse map to find ride in Tomorrowland
	  - Click on or just glance at displayed time
	- OR (B) Press "Show List"
	  - Scroll to find ride, press on it

Success criteria:	Number of rides identified in Tomorrowland found (total of 5 - Star Tours, Buzz Lightyear, Space Mountain, Autopia, Finding Nemo)
Notes:	Purpose is to see how users find rides based on land, since there is currently no filter to sort rides by land.

Task 2:

Goal / Output:	Find the nearest restroom to the Pirates of the Carribean attraction
Inputs:	Location of Pirates of the Carribean
Assumptions:	"New Orleans Square" restroom is open and functioning
Scenarios:	You and your group have just waited 45 minutes to ride Pirates of the Carribean. After disembarking the ride, one of your group members really has to use the restroom after waiting for so long, so you need to find the nearest restroom. Use the Disneyland app to locate the nearest restroom to the Pirates of the Carribean attraction. As you work, please 'think aloud' and explain what you are doing as you do it. Please indicate to the interviewer when you believe you have completed the task.
Steps:	- Press "map" tab - Select "Restrooms" from drop down menu at the top of screen

	- Press “Show List” - Scroll to find name of restroom, press on restroom - Click “Find on Map”
Success criteria:	Correct bathroom is found
Notes:	Time this task, since users need to find restrooms quickly, otherwise they could just turn to a cast member.

Task 3:

Goal / Output:	Find the height requirement of Millennium Falcon: Smuggler’s Run
Inputs:	Ride name: Millennium Falcon: Smuggler’s Run Location: Star Wars: Galaxy’s Edge
Assumptions:	Ride is open and operating
Scenario:	You and your family are Star Wars fans and want to ride the new rides at the new Star Wars land. Your family is with a toddler and you want to see if they can go on the Millennium Falcon ride with the rest of your group. Use the Disneyland app to find the minimum height requirement for Millennium Falcon Smuggler’s Run. As you work, please ‘think aloud’ and explain what you are doing as you do it. Please indicate to the interviewer when you believe you have completed the task.

Steps:	- Press “map” tab
	- (A) Move around to find Galaxy’s Edge
	  - Select a correct ride within Galaxy’s Edge
	  - Click the pop-up section to navigate to the ride’s information page
	  - Scroll down to see height requirement under, “Guests Must Be [height in inches] or Taller”
	- OR (B) click on Show List
	  - Scroll down to find ride name
	  - Click on ride
	  - Scroll down to find height requirement

Success criteria:	Correct height requirement is found
Notes:	Since there are multiple ways to complete this task (map, show list, search) take note of how the user does this task and how it differs.

Task 4:

Goal / Output:	Find all the rides in Disney California Adventure with Fastpass

Inputs:	Theme Park: Disney California Adventure
Assumptions:	Understands fastpass may be abbreviated to FP
Scenario:	You are a frequent Disneyland goer who is relatively familiar with the how Fastpasses and wait times work at the park. You and your group are planning to visit California Adventure, and you want to plan out your day and experience as many rides as possible by making the most out of the availability of Fastpasses. Your group needs to decide what to get a Fastpass for first. Use the Disneyland app to view all the rides in California Adventure that have Fastpass. As you work, please 'think aloud' and explain what you are doing as you do it. Please Indicate to the interviewer when you believe you have completed the task.
Steps:	- Press "map" icon - Press "Filter" option - Press "Disney California Adventure Park" under Location - Press "FASTPASS" under Interests - Press "Apply" - Press "Show List"
Success criteria:	Number of rides (max 8)
Notes:	Users do not have to press show list, it is also possible they scroll around the map to find the rides.

Task 5:

Goal / Output:	View Southern California Select annual pass blockout dates
Inputs:	Theme Park: Both Disneyland and Disney California Adventure Date: June - August 2020 Type of annual pass: Southern California Select
Assumptions:	Park hours are up to date
Scenario:	You and your friends are organizing a date in the summer of 2020 to go to both Disneyland and Disney California Adventure. Everyone has a Southern California Select annual passport, but no one can remember which days off the top of their head are blockout days. You are tasked by your friends to find out all the days between the months of June and August that you are allowed to go. Please use the Disneyland App and 'think aloud' explaining what you are doing as you do it. Please Indicate to the interviewer when you believe you have completed the task.

Steps:	- Click on the “Home” tab - Scroll down to find the section that says “Annual Passholders - Press “Southern California Select” - Press “Both Parks” - Use right arrow to change month to June - August
Success criteria:	Hours for desired park and date are found
Notes:	Ask if it’s clear which dates are blocked out and which aren’t

Task 6:

Goal / Output:	Find all showtimes for “Frozen - Live at the Hyperion”
Inputs:	Show name: Frozen - Live at the Hyperion
Assumptions:	Show is running on that day, there are still shows playing later on
Scenario:	You are visiting Disneyland for the first time with your family. You aren’t too interested in amusement park rides, but you enjoy live entertainment. Your family is planning out their day and you want to watch the stage show Frozen - Live at the Hyperion. Find all the showtimes for that day using the Disneyland app. As you work, please ‘think aloud’ and explain what you are doing as you do it. Please indicate to the interviewer when you believe you have completed the task.
Steps:	- Press “map” tab - Select “Entertainment” from drop down menu at the top of screen - Press “Show List” - Scroll to find show, click on show
Success criteria:	Show time is found
Notes:	It is possible an experienced user already knows where the show is and navigates to it.

<u>Questions to ask after each task:</u>

1. Ask if they agree or disagree if they felt like they accomplished the task well (Scale question)
    a. 1-5, Strongly Disagree, Slightly Disagree, Neutral, Slightly Agree, Strongly Agree
2. Ask if they agree or disagree if they feel satisfied(Scale question)
    a. 1-5, Strongly Disagree, Slightly Disagree, Neutral, Slightly Agree, Strongly Agree
3. Ask if they found the task hard or easy (Scale question)

    a. 1-5, Very hard, Slightly hard, Neutral, Slightly easy, Very easy
4. Ask if they were confused at any point and if so about what (Open ended question)
5. Ask if they would change anything (Open ended question)

Questions to ask after entire test: (All Open Ended)

1. What did you think about the overall app
2. Did you find it easy to use
3. Which task did you find the hardest to do
4. Which task did you find the easiest to do
5. Did anything stick out to you good or bad
6. What would you change if anything

Appendix 5: Cognitive Walkthroughs

Appendix 5.1: Find Fastpass Rides in DCA

Description of Task

Users are tasked to find all the Fastpass compatible rides in Disney California Adventure Park. Users will more easily achieve this by utilizing the filter option within the Disneyland app.

Walkthrough Session Details

Date: 2/17/20
Time: 6:00 - 7:00
Location: Student Center

List of Steps

1. Press map icon
2. Press “Filter” option
3. Press “Disney California Adventure Park” under Location
4. Press “FASTPASS” under Interests
5. Press “Apply”
6. Press “Show List”If the user performs the correct action, will they get good feedback?

Appendix 5.2: Mobile Ordering

Users are tasked to mobile order a pizza at a Disneyland restaurant using the Disneyland app. They are expected to be able to locate the option, navigate through the choices presented, and pay for their order.

Walkthrough Session Details

Date: 2/17/20
Time: 5:00 - 6:00 pm
Location: Student Center

List of Steps

1. Tap the center menu button
2. Tap Order Food button
3. Find a restaurant and tap and select an arrival window
4. Select restaurant menu item
5. Click + Add
6. Click View My Order or the Shopping Cart icon
7. Click Review Order Summary
8. Add Payment Method
9. Enter Promo Code if applicable
10. Click Purchase

Appendix 5.3: Purchase Tickets

Description of Task

Users are tasked to purchase a one day pass for any day in February. They are expected to be able to locate the option, navigate through the choices presented, and pay for an admission ticket to a park.

Walkthrough Session Details

Date: 2/17/20
Time: 4:00 - 5:00 pm
Location: Student Center

List of Steps

1. (from home screen) tap on bottom right hamburger icon
2. Tap on tickets and passes
3. Sign into your account
4. Tap on buy tickets
5. Tap on Theme Park Tickets
6. When choosing ticket, select prices and products for all guests
7. Select 1 day option
8. Tap on Pick a Date
9. Select any available date in February
10. Select number of tickets for ages 10+ and Ages 3-9
11. Select ticket for Admission to one Park
12. Input first and last name
13. Tap on add card manually
14. Input credit card information and billing address
15. Agree to terms and conditions
16. Tap on purchase

Appendix 6: Heuristic Evaluations

Chenyuan

Icon Clarity

Heuristic	Detail
Visibility of System Status	The **bar at the bottom** of our design highlights which general page the user is on. Beyond this level however, it could be difficult for users to understand where they are in the system. In particular the home and profile pages that contain many features within themselves.
Match between System and Real World	Icons are created to match real life equivalents. Examples are the bottom bar uses a home, magnifying glass, and person outline as icons. The categories tab also contains icons for matching their word

	counterparts. Language is kept short and straightforward for users to understand.
User Control and Freedom	Users may easily navigate through the application through the bottom bar to any of the four main sections of the app. Back icons are displayed on each level of page to support backwards page travel. Users are never locked to any page or restricted from moving away from a page.
Consistency and Standards	Icons used are consistent overall with previous iterations of the Disneyland app although some have been repurposed for similar features such as the categories tab. The bottom bar consists of standard icon usages such as the map icon.
Error Prevention	Relatively poor error prevention as there is nothing to ensure users understand the meaning of each icon. There is room for misinterpretation which will lead to possible struggles for users to find a certain feature if they make a wrong assumption about an icon.
Recognition rather than Recall	Usage of icons overall promotes recognition over recall. Highlighted icon at the bottom of the page reminds users which section they are in. Icons contribute to recognition, but do not solve entire problem of recall.
Flexibility and Efficiency of Use	Icons are not flexible and do not add to any efficiency of the system.
Aesthetic and Minimalist Design	Icons are made relatively large to aid users in a different way to see the content within the application. Icons are simple and easy to look at adding to the overall aesthetic of the software.
Help Users Recognize, Diagnose, and Recover from Errors	Icons do relatively little to help users deal with errors. At most they help users recognize they may be on the wrong page.
Help and Documentation	There is no formal documentation in the system to explain the icons. Icons were designed in a simplistic way so that the

	system may be used without any need for documentation for its features.

Home Page

Heuristic	Detail
Visibility of System Status	There are many objects on the home page, but the page is sectioned with headers to help and readability. Users can also see the home icon being highlighted in the bottom bar to remind them where they are. Certain aspects are highlighted to help show things such as the current date on the calendar or which park info is being viewed easily.
Match between System and Real World	The page is built to be scrollable to allow intuitive readability. The calendar feature is built in a way to try and reflect standard calendars. Overall page is still somewhat abstract which may impact the learnability of the system.
User Control and Freedom	Users are free to use any feature, but is restricted in customization. There is no way to reorganize how the page is layed out or in what order information is being presented.
Consistency and Standards	The scrolling feature is fairly standard in modern application softwares. The page is not too consistent with each section of the home page somewhat switching its format.
Error Prevention	The home page does not do much to prevent errors. It takes some basic ideas in mind as giving the user access to information of the current day by default.
Recognition rather than Recall	Section headers help users remember the vass amount of information displayed and where it can be found. Generally, the page is poor and requires a lot of recall for users to remember what each feature in specific does what once clicked on.
Flexibility and Efficiency of Use	The home page is not flexible as there is way

	to reorganize the displayed information. For experienced users, the page is not too cluttered and they will understand how to plan for the future by going more in depth. New users will appreciate the default views of information about the current date.
Aesthetic and Minimalist Design	The page is not overwhelming with too much information on the screen at one time. We tried to limit screens to about 2-3 sections and make important aspects highlighted for readability.
Help Users Recognize, Diagnose, and Recover from Errors	The home page does not do much to help users recognize or solve errors.
Help and Documentation	There are some features for the park information that help users see more detailed notes, but there is relatively no documentation.

Filter and Sorting

Heuristic	Detail
Visibility of System Status	The filter page is made very clear that the user is on it and all the active selected filters that the user chose are represented at the top of the screen.
Match between System and Real World	There is not much of a match between anything in the real world, but the filters are grouped together to help users find the right filter they are looking for.
User Control and Freedom	There is slightly better user control and freedom in the filters page. Users are able to utilize the drop down menus to reduce overall clutter of what they are shown. Users may also use the “clear” option to reset all the filters selected.
Consistency and Standards	The filter options are all consistent with each other and the overall page is standard with most other filter pages.

Error Prevention	Filters are not applied instantly. Users must select the large “Apply” button near the bottom of the screen in order for the filters to take effect. The active filters section also reminds users of which ones they have selected to help show they did not make a mistake in selecting a filter.
Recognition rather than Recall	Making groupings of the filters reduces some of the demand for recall on the filter list. However, there are still a lot of groupings and the consistent formatting of them all may force users to recall more than they would prefer. The active filters section helps reduce recall by constantly showing the user what they have selected thus far.
Flexibility and Efficiency of Use	While the mockups don’t show it, the filter groupings actually change order based on the filters the user recently selected. Groupings previously used move up to the top so that users may have easier access to their preferred filter options. There is no manual option to customize the filter option however. The “Clear” button also is a nice shortcut for users rather than finding each filter again and unselecting them.
Aesthetic and Minimalist Design	The filter list is very minimal in its design and aimed to lay out filters as simple and clearly as possible. The aesthetics are somewhat off putting if someone does not like purple or has visual impairments that make it harder for them to read purple.
Help Users Recognize, Diagnose, and Recover from Errors	The two main aspects are the active filters box near the top and the apply button near the bottom. The active filters box helps users recognize they have made an error. The apply button is a measure taken that lets users more easily recover from errors by waiting to confirm their choices.
Help and Documentation	The active filters box is the only feature that really helps the user navigate through the filters page.

Categories Tab

Heuristic	Detail
Visibility of System Status	The category that is chosen by the user is constantly displayed at the top. Previous iterations of the Disneyland app also had this and there were visibility issues. The bars that were added to the top along with moving the clickable arrow should help remind users of the category tab's use.
Match between System and Real World	There is no real match between the system and the real world besides the icons that are displayed next to each category option. It is a relatively simple list layout with sections aiding the user to navigate through it.
User Control and Freedom	Users are not able to sort the list in their own way. They are also unable to select multiple categories. Overall control and freedom are somewhat lacking.
Consistency and Standards	The layout is similar to other lists within the application. It is also pretty standard in terms of being a list and having groupings much like the filter page.
Error Prevention	The feature has poor error prevention as it is still similar to previous Disneyland App iterations where the category selected is shown at the top, but users may forget about the category they chose and the respective map is not showing them what they are hoping to find on the map.
Recognition rather than Recall	Aside from the icons and the groupings of section, the categories tab demands a lot of recall from the user.
Flexibility and Efficiency of Use	In an effort to be minimal and keep the feature simple to use, it is not very flexible and does not incorporate any shortcuts.
Aesthetic and Minimalist Design	The categories are organized well into sections except the other section may be confusing to look through. There is enough

	white space for users to be able to relax when looking at it unlike the filter page.
Help Users Recognize, Diagnose, and Recover from Errors	The feature does little to help users recover from a misclick or misselection of a category.
Help and Documentation	There is no documentation or help for the feature.

Map

Heuristic	Detail
Visibility of System Status	The map may have poor visibility of system status depending on the category tab. In the case of displaying wait times though, it is very obvious what is being displayed and users should find it easy to find information. New users may struggle navigating the map however and get lost in where they are.
Match between System and Real World	The map reflects well in what a user would see in a standard map. In addition, the length of wait times are color coordinated as red to be long and green to be short much like how people expect it to be.
User Control and Freedom	There is a lot of user control and freedom as the map is free control by the user. Categories that control what is shown is allowed at the top of the screen through the category tab. While the map is restricted to Disneyland and its surrounding areas, the map is well detailed and allows for many different degrees of zoom which give the user more freedom.
Consistency and Standards	The map is consistent with what would be expected from a real life map.
Error Prevention	The map is constrained to the areas around Disneyland and the parks themselves. This way, users may not accidentally navigate out of bounds like they might on a different application such as Google Maps for example. Aside from the constraints, there is

	little error prevention on the page.
Recognition rather than Recall	The map is very detailed, but for new users, it can be very hard to navigate the map without prior experience. New users will find that there is a high demand for recall over recognition. Labels are created for waitimes and lands are sectioned off to help with recognition, but there is overall a lot of recall.
Flexibility and Efficiency of Use	Since the map is already free control, there is not much flexibility. Users do have the option to display results in a list which may save experienced users some hassle.
Aesthetic and Minimalist Design	The aesthetic of the map looks good as it provides the best details of the parks that not many other applications would provide. The category tab helps keep a minimalistic design. Color coordinating the waitimes helps add to the intuitive aesthetic.
Help Users Recognize, Diagnose, and Recover from Errors	The page does little to help users recognize they made an error due to the freedom the map gives users. The system can not detect very well if the user is struggling in their search.
Help and Documentation	The category tab can help users with finding what they are looking for, but the map lacks help features and serves primarily as a standard map.

Christine

Icon Clarity

Heuristic	**Detail**
Visibility of System Status	The system status is made easily visible by the **change in icon color** to indicate which page that the user is currently on. At the **navigation bar** at the bottom, there are the main icons in grey, and when highlighted/selected, change colors to a brighter purple shade.

Match between System and Real World	Icons were specifically chosen with “user-friendliness” and “familiarity” in mind. We tried to implement symbols that were universally used, and coincided with their real-life versions, such as Home being a house.
User Control and Freedom	The bottom navigation bar is consistent throughout all pages, so that users can have a reliable constant. On pages where the navigation bar is covered or absent (such as the filter page), there is a clearly marked [x] icon to indicate the users ability to close out the page.
Consistency and Standards	Symbols and icons were used consistently throughout the app when referring to the same feature, and were displayed in the same places and orientations to help users navigate the layout better.
Error Prevention	The only error prevention available can be seen in the form of the “Apply” button on the filters page. This button gives users a chance to confirm their selected options before applying them to filters, which is prevention of error.
Recognition rather than Recall	Use of same icons in the navigation bar as well as all pages helps users easily recognize the current system status rather than be forced to recall what page they are on.
Flexibility and Efficiency of Use	Icons are not flexible and do not add to any efficiency of the system.
Aesthetic and Minimalist Design	Symbols and icons were intentionally made with very simple designs, just filled in shapes with no unnecessary designs or added effects unless they served the purpose of highlighting the icon as being ‘selected’ or ‘active’.
Help Users Recognize, Diagnose, and Recover from Errors	There are no current error messages in place.
Help and Documentation	There is no help option on this page, nor any documentation on how to navigate it.

Home Page

Heuristic	Detail
Visibility of System Status	The system status is made easily visible by the change in icon color to indicate which page that the user is currently on. Color is mainly used to highlight what sections of the page are ‘active’ or ‘selected’, such as the blue highlight in the grey bar indicating what park is selected, and the blue rectangle highlighting what the current date on the calendar is. The drop shadow at the bottom allows the user to understand that there is an ability to scroll further down. However, it is difficult for users to tell that they are able to click on the date to be redirected to a new page.
Match between System and Real World	The calendar is formatted in the way that most calendars are, with 7 day weeks starting with Sunday. The icons used in park information offer users a better chance of recognizing the two different parks.
User Control and Freedom	Users cannot change the date on the calendar, but are free to view the dates themselves to check for events and other date-related activities.
Consistency and Standards	The homepage follows the chosen color palette, taking inspiration from the original app’s color design. Its design is mostly consistent.
Error Prevention	There is no error prevention in place.
Recognition rather than Recall	The options on the homepage are mostly self-explanatory, barring the fact that it is difficult to tell that you can click on the date on the calendar to view hours and events for that day. Unless a user recognizes or remembers this feature already, it is invisible to newer users.
Flexibility and Efficiency of Use	There are no accelerators in place to aid expert users on the homepage, and no directors to aid new users in understanding what all the options and icons are, as well as what on the page is clickable and what isn’t.

Aesthetic and Minimalist Design	Our goal was to minimize the amount of information on the homepage, and so the design was reduced to the park information and calendar in terms of importance, with the what's new tab being the last priority and therefore placed at the bottom.
Help Users Recognize, Diagnose, and Recover from Errors	There are no current error messages in place
Help and Documentation	There is no help option on this page, nor any documentation on how to navigate it.

Filter and Sorting

Heuristic	**Detail**
Visibility of System Status	Status of active filters is highlighted at the top of the page under the designated section. When opening up the tabs to see the drop-down menu options for filters, the currently active options are also highlighted in a bright green color.
Match between System and Real World	The icon for the search bar is intuitive for users who understand that the icon is a magnifying glass and represents the ability to look for something in particular
User Control and Freedom	Filters is specifically made as a page that gives the user to option to customize what they want to see on the map page, and so there is a lot of freedom in what filters can be chosen and applied.
Consistency and Standards	The page fits the color palette initialized in the beginning, but the highlighted active filter is not consistent with other highlighted buttons throughout the application.

Error Prevention	The only error prevention available can be seen in the form of the “Apply” button on the filters page. This button gives users a chance to confirm their selected options before applying them to filters, which is prevention of error.
Recognition rather than Recall	The use of the active filters bar at the top allows users to remember what options they have currently active, rather than attempting to recall what they must select and deselect before applying.
Flexibility and Efficiency of Use	The filter page generally has no way to speed up selecting filters that users are familiar with ore frequently use, such as having a favorites tab. However, there is the presence of a “clear” button, allowing users to the chance to wipe out all selected filters rather than go back and deselect them all.
Aesthetic and Minimalist Design	There are no unnecessary effects to the filter page; all effects such as differing color or drop shadows represented highlighting change or status in the buttons.
Help Users Recognize, Diagnose, and Recover from Errors	There are no current error messages in place, but the “clear” button is available for users if they want to restart their selection.
Help and Documentation	There is no help option on this page, nor any documentation on how to navigate it.

Categories Tab

Heuristic	**Detail**
Visibility of System Status	This page is opened from the map page, and so the selected category shows up as active in the top bar of the maps page.

Match between System and Real World	Icons used for the options are as close to their representation as possible, such as rides being a roller coaster, dining being utensils, and shops being a handbag.
User Control and Freedom	There is only user control present in the selection of the category, but no option to select more than one, or to change the options available.
Consistency and Standards	This page follows the same color standards as the chosen palette, and also contains similar section separations at the home page.
Error Prevention	There is no error prevention in place, as users are only able to select the category they want to see, and can take no other actions.
Recognition rather than Recall	There is poor recognition here, because the system status is unavailable for viewing from this page. It is only available on the maps page, which is covered when we open the categories tab.
Flexibility and Efficiency of Use	There are no accelerators in place to aid expert users, and no directors to aid new users understand their options.
Aesthetic and Minimalist Design	There are no unnecessary effects, and the categories are grouped and organized nicely in an intuitive format for the user.
Help Users Recognize, Diagnose, and Recover from Errors	There are no current error messages in place.
Help and Documentation	There is no help option on this page, nor any documentation on how to navigate it.

Map

Heuristic	**Detail**

Visibility of System Status	The status of the categories applied to the map are easily seen at the top of the page. The markers on the map are color coded on a Green-Yellow-Red color intensity scale to indicate traffic at a certain attraction or area. There are also boundaries outlining the lands to show selected lands, and purple rings in the markers to indicate FastPass statuses.
Match between System and Real World	The map closely represents the real world bird's-eye view, in order for users to recognize landmarks and use the map to their advantage in terms of navigation.
User Control and Freedom	There is a lot of user freedom in the form of navigation: users can move around the map, click on certain markers to expand and see their information, or zoom in and out to get a better look at the map layout and find their way around.
Consistency and Standards	The map markers all follow the same formatting, and the FastPass marker follows the chosen color palette.
Error Prevention	The map only shows the details of the area of Disneyland and California Adventures, so there is less of a chance for users to get lost. However, the map could benefit from an icon that would 'center' the map at a chosen specific point, such as the middle of the map or their current location, in order to help users navigate more easily.
Recognition rather than Recall	The map has boundary outlines to help users recognize which parts of the park belong to which land, but no active statuses to indicate which land that they are currently in.
Flexibility and Efficiency of Use	There are no accelerators to help expert users navigate more quickly, and no indicators to help new users understand that they have the option to click on markers to view more information
Aesthetic and Minimalist Design	We tried to stay as true as possible to the original map design of the app, and the markers display only what information is most important, and can show more if clicked on.

Help Users Recognize, Diagnose, and Recover from Errors	There are no current error messages in place.
Help and Documentation	There is no help option on this page, nor any documentation on how to navigate it.

Henry

Icon Clarity

Heuristic	Detail
Visibility of System Status	The **bottom bar** of the app shows the currently selected tab/page. The icon for the page becomes a darker color when it is selected.
Match between System and Real World	The icons are meant to resemble what you expect their usage to be is.
User Control and Freedom	The bottom bar allows users to choose from a variety of options for displaying different categories of information on the app/
Consistency and Standards	The icons used throughout the app with a consistent meaning with standard meaning of function.
Error Prevention	There is not much error prevention as there is nothing denoting what certain functions do except for an icon. This means that users may start clicking different buttons to see what they do because they cannot find something.
Recognition rather than Recall	Having the different icons at the bottom resemble something that has similar characteristics as icons in other systems that perform the same function is an example of recognition. Users will see a specific design

	and remember what the function is.
Flexibility and Efficiency of Use	The bar separates very different app functions and improves the efficiency of app navigation.
Aesthetic and Minimalist Design	There are few icons and they are large enough such that the bottom bar does not feel cluttered. The basic design of the icons are minimal and are visually appealing.
Help Users Recognize, Diagnose, and Recover from Errors	Icons themselves do not help users recognize or recover from errors.
Help and Documentation	There is no documentation explaining the icons but we tried to keep the icons minimalistic.

Home Page

Heuristic	Detail
Visibility of System Status	Users can see that they are on the home page by seeing that the home page icon is highlighted at the bottom.
Match between System and Real World	The calendar on the homepage resembles a real world calendar design.
User Control and Freedom	There is no customization but the user can access many functions from the home page and use things such as the calendar.
Consistency and Standards	The vertical scrolling home page is typical of many app designs.
Error Prevention	The home page does not do much for error prevention.
Recognition rather than Recall	The different sections of the home page are labelled so the user understands what the different sections are for instead of having to remember where everything is.
Flexibility and Efficiency of Use	The home page is not customizable and has a fixed setup so there is no flexibility. However it is not cluttered and very intuitive usage and so is efficient.

Aesthetic and Minimalist Design	Home page is kept minimal and organized under different sections.
Help Users Recognize, Diagnose, and Recover from Errors	There is no error prevention available on the home page.
Help and Documentation	The home page does not have any documentation for the sections.

Filter and Sorting

Heuristic	Detail
Visibility of System Status	There is great visibility for the filters. There is a popup when you press on the Filters button and then the selected filter options will be highlighted indicating what filters are currently active.
Match between System and Real World	There is no resemblance with the real world in terms of the filters.
User Control and Freedom	There is plenty of user control as the filter options directly affect what is displayed towards the user. As there are plenty of options, the user has the freedom to completely customize what they see.
Consistency and Standards	The filter options are consistent with typical designs of drop down menus.
Error Prevention	Because there are a lot of checkboxes for the filters, it limits what the user can filter and thus is a form of error prevention.
Recognition rather than Recall	Grouping the filter options together allows people to know where to find these instead of having to remember where to find a filter if it were unnamed.
Flexibility and Efficiency of Use	Filters are very flexible as they allow for high levels of customization. Given that the filters are straight forward, it is very easy and efficient to apply a filter.
Aesthetic and Minimalist Design	The filter section is not cluttered and kept as minimal as possible with a consistent clean

	design.
Help Users Recognize, Diagnose, and Recover from Errors	There is nothing in place to help users recognize, design, and recover from errors.
Help and Documentation	There is no documentation for the filters page.

Categories Tab

Heuristic	Detail
Visibility of System Status	The currently selected category is displayed in the center of the top bar.
Match between System and Real World	Icons are used for the categories and signify what the categories are.
User Control and Freedom	Users are given the ability to select from a variety of categories to display and change what the app displays.
Consistency and Standards	The drop down menu follows typical drop down designs.
Error Prevention	Because there are only a limited amount of options to choose from, the user cannot select anything else and therefore this is a form of error prevention.
Recognition rather than Recall	There is not much recognition and the user has to remember what is in each category.
Flexibility and Efficiency of Use	The use of the categories drop down is very intuitive and easy to use as the user just needs to find the category of what they want to display and then click it.
Aesthetic and Minimalist Design	Consistent design and color scheme throughout the application.
Help Users Recognize, Diagnose, and Recover from Errors	The design does not help users recognize, diagnose or recover from errors.
Help and Documentation	There is no documentation for the categories.

Map

Heuristic	Detail
Visibility of System Status	The map is always changing as the user navigates around the map and actively shows what the user wants to view on the map and they are able to see that they are on the map by the highlighted option at the bottom bar.
Match between System and Real World	The map resembles an actual paper map of the park.
User Control and Freedom	The user has lots of control as they can control what part of the map is being displayed by moving around the map.
Consistency and Standards	The map is consistent with what would be expected to be seen on the actual physical paper map.
Error Prevention	The map only shows the area of the park and therefore is a form of error prevention.
Recognition rather than Recall	Because of the size and complexity of the map, there may be poor recognition especially for new users, who will need to look around the map and look for labels to figure out where something is situated in the park.
Flexibility and Efficiency of Use	Since the map is essentially a digital version of the physical map, there is not much flexibility.
Aesthetic and Minimalist Design	The map is very aesthetic in that it resembles the park however it may feel cluttered and be information overload for certain users.
Help Users Recognize, Diagnose, and Recover from Errors	The map does not help users recognize, diagnose, and recover from errors.
Help and Documentation	There is no documentation for the map.

Juleanne

Icon Clarity

Heuristic	Detail
Visibility of System Status	**Bar at the bottom** of the home page allows users to recognize they are on a specific page (Home, Map, Search, etc.). Each time they press on a specific tab, the icon turns into a color purple so that they are aware they're on a specific page.
Match between System and Real World	The icons we chose are equivalent to symbols and their real-world meanings.For instance, the icons used to describe different tabs on the profile page, match the title (i.e. My Plans resembles a calendar, Photos resembles a camera)
User Control and Freedom	Users can freely navigate to each of the four pages of the app (Home, Map, Search, Profile) using the bottom bar. Users are able to exit from a menu or press on drop-down menus to close them.
Consistency and Standards	The original Disneyland app kept their icons consistent, however we duplicated icons and assigned them new meanings.
Error Prevention	We didn't input any error prevention, which means users will struggle to recognize whether they've made a mistake or not.
Recognition rather than Recall	Usage of icons overall promotes recognition over recall. Highlighted icon at the bottom of the page reminds users which section they are in. Icons contribute to recognition, but do not solve the entire problem of recall.
Flexibility and Efficiency of Use	Icons don't provide flexibility and efficiency.
Aesthetic and Minimalist Design	Icons were sized correctly. Consistent color palette throughout the app
Help Users Recognize, Diagnose, and Recover from Errors	Since our redesign didn't have error messages or errors, icons were not

	redesigned for such a purpose.
Help and Documentation	Our redesign was a very high fidelity model; therefore, our redesign did not include documentatio.

Home Page

Heuristic	Detail
Visibility of System Status	There's no display of visibility of system status anywhere in the application
Match between System and Real World	The system matches most real-world home page designs where users are allowed to scroll vertically and can choose from a clear, concise menu. However, the order of the home page menu is not standard.
User Control and Freedom	Users are not restricted to anything except customization.
Consistency and Standards	Scroll function and discovering events at the park are consistent with most applications similar to Disneyland App. However, I would think that the layout of the Homepage would be flipped since most apps require users to sign in on the bottom of a home page or at the very top.
Error Prevention	No Error Prevention messages were designed to be displayed.
Recognition rather than Recall	Users can recognize calendar, hours, and scroll function.
Flexibility and Efficiency of Use	Homepage is efficient in having information condensed into more broad groups rather than crowding the Home Page.
Aesthetic and Minimalist Design	Home page is minimal with condensed information and consistent aesthetic content throughout the Home Page and the app.
Help Users Recognize, Diagnose, and Recover from Errors	No Error messages are not integrated in this prototype version.

Help and Documentation	No Help or documentation was created for users because of the early stages of this high-fidelity model.

Filter and Sorting

Heuristic	Detail
Visibility of System Status	No visibility of system status.
Match between System and Real World	Drop down filter menu is conventional on other similar applications
User Control and Freedom	Users are free to use all provided features except customization.
Consistency and Standards	Standardized drop down menus that have another ‘branch’ to the ‘tree’, usually have another drop down menu to display the various options.
Error Prevention	No error prevention messages display.
Recognition rather than Recall	A darkened label means that filter had been chosen, which is pretty standardized in menus.
Flexibility and Efficiency of Use	FIlter would allow users to efficiently find what they are looking for, by filters.
Aesthetic and Minimalist Design	Consistent palette and clean design all throughout the application
Help Users Recognize, Diagnose, and Recover from Errors	Currently no design in displaying messages for users who make errors on the app.
Help and Documentation	No help and documentation were provided due to the high-fidelity model of this prototype version.

Categories Tab

Heuristic	Detail

Visibility of System Status	No visibility of system status displayed
Match between System and Real World	Categories were conventionally organized, like a menu -- grouping by broader topics.
User Control and Freedom	Users are allowed to use all provided functions except customization.
Consistency and Standards	Standardized drop down menus that have another ‘branch’ to the ‘tree’, usually have another drop down menu to display the various options.
Error Prevention	No error prevention messages display.
Recognition rather than Recall	Organization of Category menu allows users to recognize the organization and efficiently allow users to help find what they’re looking for.
Flexibility and Efficiency of Use	Category menu would allow users to efficiently find what they are looking for, by the broad group titles.
Aesthetic and Minimalist Design	Consistent palette and clean design all throughout the application
Help Users Recognize, Diagnose, and Recover from Errors	Currently no design in displaying messages for users who make errors on the app.
Help and Documentation	No help and documentation were provided due to the high-fidelity model of this prototype version.

Map

Heuristic	Detail
Visibility of System Status	No visibility of system status was displayed
Match between System and Real World	Map reflects both current brochure maps with more accurate design of landmarks; and digital maps, ie Google Maps, where traffic can be recorded as data, and allow users to know how heavy wait time might be (red- long wait , green-short wait, yellow-medium to long

	wait)
User Control and Freedom	Users are allowed to use all provided functions except customization.
Consistency and Standards	Standardized map, however no guided-navigation function was included.
Error Prevention	No error prevention messages display.
Recognition rather than Recall	Map is designed with easy, enlarged landmarks to recognize locations of the map
Flexibility and Efficiency of Use	Flexible to allow users to navigate throughout the map. Map is efficient because the map's display is colorful, bright and not confusing.
Aesthetic and Minimalist Design	Consistent palette and clean design all throughout the application
Help Users Recognize, Diagnose, and Recover from Errors	Currently no design in displaying messages for users who make errors on the app.
Help and Documentation	No help and documentation were provided due to the high-fidelity model of this prototype version.

Matthew

Home Page/Icon Clarity

Heuristic	Detail
Visibility of System Status	The **bottom bar** icon is highlighted depending on what tab the user is on, whether it be home page, search, etc.
Match between System and Real World	The icons are designed to reflect what is found in each button
User Control and Freedom	Users can freely navigate between the different tabs at the bottom
Consistency and Standards	The home page sets the standard of the app, and the color/design that is present throughout the app, giving users a familiarity and making the app cohesive

Error Prevention	The bottom bar is always at the bottom, so there is always and option to go home if the user makes a mistake
Recognition rather than Recall	All the icons are clearly presented at the bottom, and only the most salient information is shown on the homepage to prevent cognitive overload, easing the user into the system.
Flexibility and Efficiency of Use	Home page is designed like a standard home page with information and a bottom bar in many apps, giving users a familiarity with how to navigate
Aesthetic and Minimalist Design	We kept the homepage free of ads and kept only the necessary information
Help Users Recognize, Diagnose, and Recover from Errors	Users can press home to know that they will be taken back to the starting page.
Help and Documentation	There is no clear way to get help if needed, must navigate to settings

Filter and Sorting

Heuristic	Detail
Visibility of System Status	**Filters** are highlighted when selected, indicating to the user that their selection has been successfully completed
Match between System and Real World	The filters are appropriate to whatever category is selected, and whatever the user may want to filter by
User Control and Freedom	Users can choose filters that they want
Consistency and Standards	Colors and text are consistent with the categories tab and the overall app
Error Prevention	Users should be able to “x” out selected filters to easily remove them, not clear that they can do that, however, there is an apply button that gives users and extra step to double check what they selected and prevent errors

Recognition rather than Recall	Selected categories are listed at the top of the page, so users dont have to scroll to remember what filters they selected
Flexibility and Efficiency of Use	Easy for novice users to use, and organized for expert users
Aesthetic and Minimalist Design	Filters are sorted by type, and will only be shown if the user discloses the filters list from the tab
Help Users Recognize, Diagnose, and Recover from Errors	Doesnt help users prevent errors, since most errors will just be misclicks
Help and Documentation	No real help/documentation since functionality is pretty straightforward

Categories Tab

Heuristic	Detail
Visibility of System Status	The Select Category tab will change to the category that is selected once the user chooses one, indicating that the correct filter has been applied
Match between System and Real World	There are icons to indicate each category
User Control and Freedom	Users can choose any category that is clickable under each type
Consistency and Standards	Icons and colors are consistent with the rest of the app
Error Prevention	Hard to prevent misclicks, once you click one the menu will automatically go away, so if you misclicked you would essentially have to do the whole sequence over again
Recognition rather than Recall	Select Category is at the top reminding the user of what current task they are doing
Flexibility and Efficiency of Use	One tap will select the category by itself, no extra tap is needed
Aesthetic and Minimalist Design	Categories are organized by type to prevent cognitive overload

Help Users Recognize, Diagnose, and Recover from Errors	
Help and Documentation	Not much help/documentation because it is mostly straightforward

Map

Heuristic	Detail
Visibility of System Status	Maps will display a wait time to indicate that the information is current and updated
Match between System and Real World	The map is a good indicator of the real world since it is based on the actual theme park. While it does take some liberties on scale, certain points and icons are clickable so that it's easy for the user to see where they can go
User Control and Freedom	The user can scroll around the map freely and isn't constrained to a single view
Consistency and Standards	The map uses familiar techniques and methods found in other map apps, such as pinch to zoom and can scroll around
Error Prevention	Users can easily tap outside of a info box to close the box
Recognition rather than Recall	There are certain icons that indicate that several points on the map are clickable
Flexibility and Efficiency of Use	Easy to use for both novice and expert users
Aesthetic and Minimalist Design	The map is not cluttered with too much information and shows the appropriate amount of info at each zoom level
Help Users Recognize, Diagnose, and Recover from Errors	Errors in the map are mostly just mis-clicks, and the user can exit out just by tapping outside of the info box
Help and Documentation	There is no real instruction provided for the map since we assume that since the functionality is very similar to other digital maps, users will know how to use it

Thomas

Icon Clarity

Heuristic	Detail
Visibility of System Status	**Icon bar** at the bottom of the screen so users know where they are. The system keeps the user informed of where they are by darkening the icon the user is currently on.
Match between System and Real World	The icons are relevant to their real word equivalents. For example, the house icon is the home page, the pin icon is the Disneyland map, and the magnifying glass is the search bar. For language, descriptions are kept short and simple
User Control and Freedom	Regarding the icon bar, users have full control and freedom. They can choose what icons to tap on to switch pages, or they can stay on a page indefinitely.
Consistency and Standards	Icons are consistent and standard such as the home icon being a house, pin for map, and the search icon being a magnifying glass.
Error Prevention	There is no error prevention for the icon bar as users are free to tap and choose which pages they want to visit. This means that users can tap on an icon and be sent to a page they did not mean to go to.
Recognition rather than Recall	Icon bar values recognition rather than recall as icons are standard, such as the home and search icons. Users can also see what page they are currently on through the recognition that the selected icon is highlighted.
Flexibility and Efficiency of Use	No flexibility and do not add efficiency of use
Aesthetic and Minimalist Design	Icons are very simple. Just shapes that resemble their uses; a house icon for the home page and magnifying glass icon for the search page. No irrelevant information and icons get straight to the point.

Help Users Recognize, Diagnose, and Recover from Errors	There are no error messages set in place
Help and Documentation	Currently, there is no documentation explaining each individual icon and what they are used for. But our icons are fairly simple and correspond to its purpose, ie. magnifying glass for search page, so the system without this documentation.

Home Page

Heuristic	Detail
Visibility of System Status	The user is able to see they are on the home page if the house icon, in the bottom bar, is being highlighted. Other than this, it is quite difficult for the user to tell that they are on the home page.
Match between System and Real World	Dates and times on the home page are all standard. The calendar on the homepage resembles a real world calendar being a 7 day week calendar.
User Control and Freedom	Users are free to scroll through the page and select calendar days, or new attractions to view. But they can not change or add anything to the calendar, no rearrangement or remove sections of the homepage.
Consistency and Standards	The redesign is consistent with the park selection and hours, as well as the new park attractions sections. Formatting is different though as ads were removed, and a calendar feature was added.
Error Prevention	In terms of the calendar, users are not able to make any changes to it. Other than that, there are no other error preventions set in place.
Recognition rather than Recall	The home page is split into different sections, each being labeled. This helps with the system being recognition rather recall. Users may need to recall which park they are viewing but its name being displayed, as well

	as the icon being highlighted helps with recognition. Newer users may not know that they can select and view specific calendar dates, so this would have to be recalled.
Flexibility and Efficiency of Use	The home page is not really flexible as users are not able to switch the sections around, nor are they able to make changes to the calendar. Newer users may be inefficient at first due to the new design, but with the easy to follow scrolling and sections, it won't be too long to be comfortable with it. Experienced users will have no problem navigating through the page with efficiency.
Aesthetic and Minimalist Design	The page is not overwhelming as users are only able to see a few sections at a time. Our redesign of the home page made it much more minimalist as we removed ads and only kept important features and information.
Help Users Recognize, Diagnose, and Recover from Errors	The home page does not currently have any errors messages set in place.
Help and Documentation	The home page does not currently have a help option or any documentation for each section.

Filter and Sorting

Heuristic	Detail
Visibility of System Status	When users tap on the filter icon, a pop-up menu is displayed. There is good visibility by the system as filter options are highlighted when selected by the user. The system also has a counter, at the top of the screen, for users to see how many filter options they have selected.
Match between System and Real World	Magnifying glass denotes a search function. Filters are categorized into real world and easy recognizable categories. Other than this, there are no matches between the system and the real world.

User Control and Freedom	Users have a lot of control here as they are able to pick which filters they want to apply. Users can also control clutter by minimizing sections they are not using anymore.
Consistency and Standards	Filter options are consistent with the old design, just not there is much less clutter. Categories are consistent to what they actually mean, ie height category will have filters for height requirements.
Error Prevention	The only error prevention set in place is the apply button at the bottom. So rather than filters being instantly applied, users will have the chance to double check if they selected the correct filters.
Recognition rather than Recall	There is slightly more recognition than recall in the filter menu. The filter options are categorized under a common name, so ones like age and height will easily be recognizable. But for ones like interest and thrill factor, users may need to recall specifically what those filter options are.
Flexibility and Efficiency of Use	The clear button adds a very nice shortcut for the users as they don't have to go and find every filter option they chose and deselect them. They can just tap the 'clear' button and all filters will be wiped.
Aesthetic and Minimalist Design	The new design is very aesthetic and minimal compared to the old design. The old design was very cluttered with every filter option being displayed. But the new design has a lot less clutter as filter options are now in a drop down menu and are hideable.
Help Users Recognize, Diagnose, and Recover from Errors	There aren't really any error messages set in place for the user. But there is the 'clear' button so if a user does make a mistake, restarting is very easy.
Help and Documentation	There are no help options or documentation on this page.

Categories Tab

Heuristic	Detail
Visibility of System Status	Users can reach the category tab through the map page when they tap on the category/arrow at the top of the screen. When tapped on a drop down menu will appear. Other than this there are no displays of system status
Match between System and Real World	The only match between the system and the real world are the icons next to each category. For example, the desert icon is an ice cream cone, and restrooms are denoted by two people.
User Control and Freedom	The only control the user has in the categories tab is to choose which category they want to select. Other than that, the user can not create their own categories nor select more than one category at a time.
Consistency and Standards	The categories tab stays pretty consistent with all other layouts as all groupings are denoted under a common category.
Error Prevention	There is no error prevention set in place, so if a user chooses the wrong category, all they can do is go back and select the correct one.
Recognition rather than Recall	The categories tab has little recognition as each category is clearly labeled and has an accompanying icon. Other than this, users will have to recall what is in each category.
Flexibility and Efficiency of Use	There are no shortcuts, nor is the design very flexible, but it is simple which allows for ease of use.
Aesthetic and Minimalist Design	The categories tab is very minimalistic as there are no extra and unused features. Each category is clearly labeled and grouped under a common theme.
Help Users Recognize, Diagnose, and Recover from Errors	There are no current error messages set in place.
Help and Documentation	There is no documentation or help for the

	categories tab.

Map

Heuristic	Detail
Visibility of System Status	Users will know they are on the map page through the icon being highlighted while the others are not. While on the map page, it is difficult for users to realize what category they are viewing other than seeing its name at the top of the screen.
Match between System and Real World	The map in the system matches its real world equivalents. For example, the castle in the map would be where the castle is in the real world. The same goes for the water, trees, and rides.
User Control and Freedom	Regarding the map, users have a lot of control as they are able to move around, zoom in and out, and tap on rides and attractions to get information about it.
Consistency and Standards	The system's map is consistent with what a real world map would be. It has its points of interest labeled.
Error Prevention	There isn't really any error prevention regarding the map, except that it only encompasses the Disneyland and California Adventures area. This means that if a user were to scroll away from these areas they would not see anything, signifying to them that they are going in the wrong direction and should go back.
Recognition rather than Recall	The map is made like a replica of the real world, so there is a lot of recognition used here. Wait time on rides also update in real time so users don't have to worry about recalling when to go on a ride.
Flexibility and Efficiency of Use	To help with efficiency of use, the map does feature filtering options and a list containing all attractions. Barring this, there are no other

	shortcuts for the user. There is also not much flexibility other than being able to view specific information about a ride by tapping on it.
Aesthetic and Minimalist Design	With the map being something like a replica of the real world, it is very aesthetic. The map is minimal in the sense that there is nothing extra added, and everything there is useful to the user. Our design keeps the map minimal by allowing attractions to only have its name and a small description. If users want a more detailed description of the attraction, they would have to tap on it.
Help Users Recognize, Diagnose, and Recover from Errors	There are no current error messages set in place. Even if the user scrolls out of the amusement park's range, they will just see a blank map.
Help and Documentation	There is no documentation explaining how to navigate the map for users, nor is there a help option/feature.

Appendix 7: Accessibility Evaluation

We evaluated the Disneyland App's accessibility through WebAIM's WCAG 2 Checklist. Going through each general guideline and some of their level A requirements, we found 3 guidelines that we feel the Disneyland App does not meet and can improve on. The guidelines we found are the following:

Guideline 1.3
Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure

Guideline 2.4
Navigable: Provide ways to help users navigate, find content, and determine where they are.

Guideline 3.3
Input Assistance: Help users avoid and correct mistakes

When compared to the overall guidelines, the Disneyland App receives an average rating when it comes to accessibility. General icons buttons also have alternative text, the format stays

relatively consistent throughout the apps pages, and foreground background separation is good. While they certainly take measures for accessibility, in particular the filters page provides information for attractions that make in park accommodations, the Disneyland App fails to go beyond the basics in serving people who need different types of accessibility. One example where they do this however is the “Show List” option on the map page. What the option does is display all the attractions on the map in the form of a scroll down list. Besides this feature which itself is limited as it does not organize the list well nor does it give users an option to organize it to their preference, the app does not provide many other ways to view the information within the application.

The Disneyland App is not easy to use and there are many options that are hard to find or confusing to navigate even if someone does not need extra accessibility. We found through our project that new users found the learnability of the app to be poor. When going further and looking deeper into the application, icon shortcuts on the bottom bar are unclear and add to the overall confusion of the app.

Going along with this confusion, the app does very little to correct user error or help users recognize errors. For example, a common issue users both new and old ran into when using the application was on the map page where the Categories Tab fails to indicate users they may be viewing the wrong category. This is partially due to the categories themselves, but as part of making accessibility better, their descriptions should also be improved or other ways to convey the information should be implemented.

Overall, the Disneyland App can improve on the number of ways that information can be displayed, cleaning up and making navigation of the system more intuitive, and adding ways to either better inform users when they are making a mistake or ways to fix mistakes when using the application.