User Interface Design
COMP1173

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1. Introduction:

User interface design plays a crucial role in determining how people engage with technology in the always changing world of digital encounters. This paper explores the standards, principles, and concerns that form the basis of the complex field of user interface design. Every aspect, from font and color schemes to input techniques, is vital to creating smooth and captivating user experiences.

The acknowledgement of many user groups, each with distinct wants and preferences, is fundamental to our investigation. We learn how UI design may accommodate certain user situations, promoting convenience and enjoyment, through personas like Maria, the health-conscious yoga instructor, and John, the busy professional.

Assessment techniques, such as cognitive walkthroughs and heuristic assessment, provide crucial insights for improving prototypes and guaranteeing usability. This voyage ends with a reflection on the iterative nature of user interface design, stressing the value of user-centered methodologies and ongoing improvement.

Through reading this report, we will learn about the nuances of user interface design as well as its transformational power to improve user pleasure and shape digital interactions.

2.Background reseach:

2.1 Considerations for User Interface Design
Input Method:

A crucial component of user interface design are input areas, which let users provide unusual answers. These are frequently seen when people fill out online forms for e-commerce or make online inquiries, or when they enter personal data and delivery addresses (Google Input Tools, 2023). Various input field and state kinds have been found through input UI design investigation, along with stylistic approaches and usability guidelines for producing faultless user experiences (UiPath Documentation Portal, 2023).

Common Gestures:

Gesture-based navigation is included into both iOS and Android. The on-screen home button on Android 9 Pie is still in the shape of a pill, but iOS users may now swipe up from the bottom of the phone to access the gesture bar. A helpful feature of Android's system navigation is the ability to return to any screen from practically any other screen (Lingoda, 2023). Developing an app that satisfies the needs of both platforms is crucial (BetterUp, 2023).

Web apps against native apps and progressive web apps (PWAs):

An program that can be downloaded via an app store, such the App Store, Google Play, or Galaxy Apps, is referred to as native. A web app, on the other hand, is a software that operates inside a web browser. A responsive website that offers an app-like experience is called a Progressive Web

App (PWA). PWAs are different from native applications in that they run in a browser and don't need to be downloaded from an app store (Topflight applications, 2023). Given the extensive usage of smartphones worldwide, creating a native app is more successful in this situation than the other possibilities (Flatlogic Blog, 2023).

Screen Sizes:

Designing for a range of screen sizes and resolutions is a difficult process that calls for careful testing, technological know-how, and a strategy that puts the user first. According to BrowserStack (2023), there are three main approaches to creating interfaces that are adaptable: implementing responsive design, giving priority to mobile-first principles, and optimizing media and graphics. For the six most common screen sizes, six designs—320, 480, 760, 960, 1200, and 1600 pixels— are often created in adaptive design. The 6.1-inch screen of the iPhone, which is the ideal size— neither too tiny nor too large—would fit within the design (Statcounter Global Stats, 2023).

2.2 Usability/Design Guidelines and Standards

Jakob Nielsen and Rolf Molich's Ten User Interface Guidelines:

Successful businesses like Apple, Google, and Adobe frequently use the Ten User Interface Guidelines—created by Jakob Nielsen and Rolf Molich—into their product designs (Interaction Design Foundation, 2023). According to the Interaction Design Foundation (2023), these guidelines place a strong emphasis on the following: system status visibility; real-world system compatibility; user control and freedom; consistency and standards; error prevention; recognition over recall; flexibility and ease of use; minimalist and aesthetically pleasing design; aid in error identification, diagnosis, and recovery; and help and documentation.

Usability Elements For Exceptional Experiences:

Furthermore, Usability Elements for Exceptional Experiences by Nielsen and Molich are essential. These include the following: engagement (engaging users and being appropriate for its industry/topic), effectiveness (assisting users in accurately completing actions), efficiency (allowing users to complete tasks quickly via the simplest process), and ease of learning (facilitating new users' easy achievement of goals and even more so on subsequent visits) (Interaction Design Foundation, 2023).

Design Principles:

Design Principles are suggestions for creating a satisfying user experience. They include layout (list or grid structure), text (font, tone, labels/fields), style (colors, brand logos), accessibility (Aria markup for users with disabilities), and design patterns (forms) (Interaction Design Foundation, 2023).

Efficiency, error prevention, and user control—all essential for any application involving delivery and selection—are emphasized by incorporating the Ten User Interface Guidelines and Usability Elements for Exceptional Experiences (Interaction Design Foundation, 2023). Additionally, a strong emphasis is placed on engagement and simplicity in learning, both of which are essential for drawing in and keeping people (Interaction Design Foundation, 2023). The ultimate choice,

nevertheless, need to take your intended user base's unique requirements and preferences into account. It is advised that you do user research and usability testing to make sure your design decisions match user needs and expectations (Interaction Design Foundation, 2023).

3. User Group:

The success of a user interface design largely depends on how well it caters to its user groups. For our food and recipe box delivery application, we have identified the following primary user groups:

Heal-Conscious Individuals

This group includes individuals who are conscious about their diet and prefer healthy and nutritious meals. They might be following a specific diet plan like keto, vegan, or gluten-free.

Maria

Key Facts

- Conscious about what they eat and prefer meals that are healthy and nutritious.

- be following a specific diet plan and would appreciate meals that cater to their dietary needs.

- convenience and would appreciate a service that saves them time on meal planning and grocery shopping.

Scenario

Maria is planning her meals for the upcoming week. She opens the app and filters the recipes to show only vegan options. She selects a few recipes that she finds interesting and orders the corresponding recipe boxes.

Profile

Maria is a 35-year-old yoga instructor who follows a strict vegan diet. She is always looking for new and exciting vegan recipes to try. She appreciates the convenience of having recipe boxes delivered to her home, saving her the time and effort of meal planning and grocery shopping.

Contact

- 123-456-7890
- hello@reallygreatsite.com
- www.reallygreatsite.com

Key Skill

- Communication skills
- Time management skills
- Modern classroom technology
- Safe and creative classrooms
- Collaboration

Busy Professionals

People in this category struggle to find time to prepare meals, buy for groceries, and cook because of their hectic work schedules. The ease of having meals prepared ahead of time and all the materials delivered right to their home would be greatly appreciated.

JOHN

PROFILE

John is a 40-year-old lawyer who often works late hours. He wants to eat healthily but doesn't have the time to plan meals and shop for groceries. He would appreciate a service that delivers recipe boxes that he can quickly cook at home.

CONTACT ME

📞 123-456-7890

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📍 123 Anywhere St.,
Any City, ST 12345

KEY FACTS

·WORK LONG HOURS AND MAY NOT HAVE THE TIME OR ENERGY TO PLAN MEALS AND SHOP FOR GROCERIES.

·CONVENIENCE AND WOULD APPRECIATE A SERVICE THAT SAVES THEM TIME ON MEAL PLANNING AND GROCERY SHOPPING.

·WANT TO EAT HEALTHILY AND WOULD PREFER MEALS THAT ARE NUTRITIOUS AND WELL-BALANCED.

SENARIO

John has a busy week ahead with several court appearances. He uses the app to select meals for the week and schedules a delivery. This way, he doesn't have to worry about meal planning or grocery shopping during his busy week

# 4. Visual Design

Visual Design Color Scheme
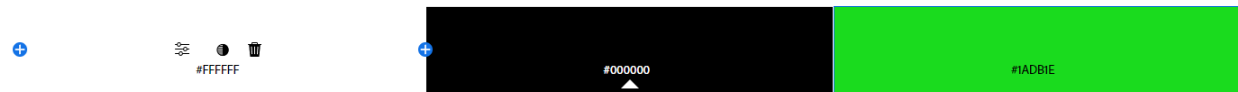
The text, background, and clicked button have been set to the following colors: black (#000000), white (#FFFFFF), and green (#1ADB1E). A classic combination that makes for great reading contrast is black text on white backdrop. This is consistent with color theory's notion of contrast, which holds that designs with contrasting hues are eye-catching and lively (O'Connor, 2023). The clicked text's green hue may have anything to do with color psychology. Green is frequently linked to positive conduct and might indicate to the user that they have completed a certain section of the interface (Superside, 2023).

Typography

The following colors have been specified for the text, background, and clicked button**: black (#000000), white (#FFFFFF), and green (#1ADB1E).** Black text on white background is a traditional combination that provides excellent contrast for reading. This is in line with the idea of contrast in color theory, which maintains that designs with contrasting colors are striking and vibrant (O'Connor, 2023). The green tint of the clicked text can be related to color psychology. Green is often associated with positive behavior and might serve as a visual cue to the user that they have finished a certain interface portion (Superside, 2023).

Layout

I'm using a grid layout as it aids in making information accessible and understandable, a key aspect of information architecture (IA). It helps individuals understand their environment and find what they're looking for, both online and offline. Here is an example of a Grid Layout according to Codecademy.com
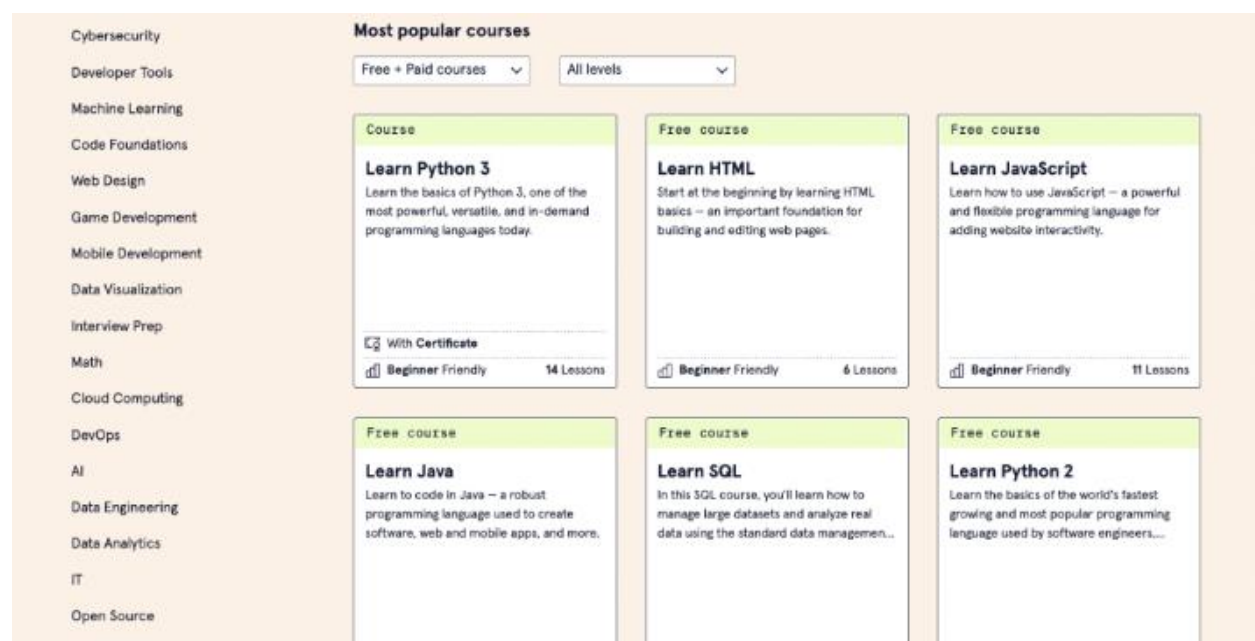
Organizing IA functions from two perspectives: Customers view information, services, and products as linguistic spaces. It's possible to organize these spaces, or information ecosystems, to be as accessible and understandable as possible. Good IA is informed by context, users, and content (Morville & Rosenfeld, 2006). You can access the information architecture of my recipe box and meal delivery app in the mid-fidelity session.

Graphic Design Elements

Graphic design elements are the visible components—such as buttons, menus, and control panels—that users interact with. They play a crucial role in creating user interfaces that are easy to use and encourage movement inside the system. Some crucial elements of graphic design that you might use into your application are as follows:

- **Buttons**: Buttons are interactive design components that a user may tap or click to start a certain action. You may include buttons, for instance, to add a recipe to the meal box or to check out (Tidwell, 2010).
- **Icons**: Icons are a small, aesthetically pleasing way to represent various capabilities or functionalities. One may utilize an icon of a shopping cart for the checkout button, a heart for the favorites function, and so on (Tidwell, 2010).
- **Visuals**: Having clear, crisp photos of the recipes may improve the app's aesthetic appeal and aid users in selecting.
- **Badges**: Using badges as visual cues, you may express certain details about an item. To designate recipes that are gluten-free or vegetarian, for instance, you may utilize badges (Tidwell, 2010).
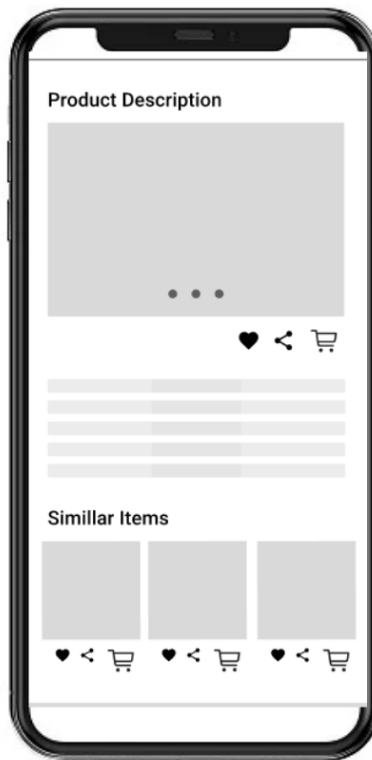
5. Low-Fidelity

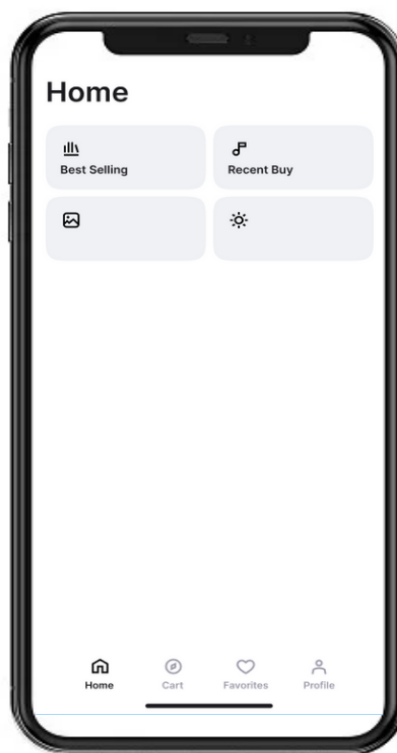## Alternative 1:

Hamburger Navigation
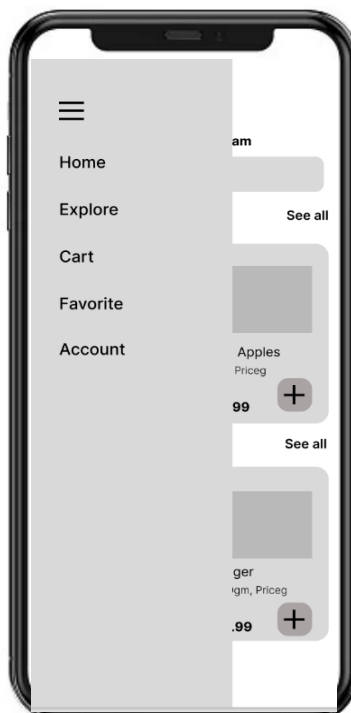
This design I use Hamburger Navigation feature to link all the page such as: Home, Category, Login,.... User can wipe from the bottom to top to out the sofware.
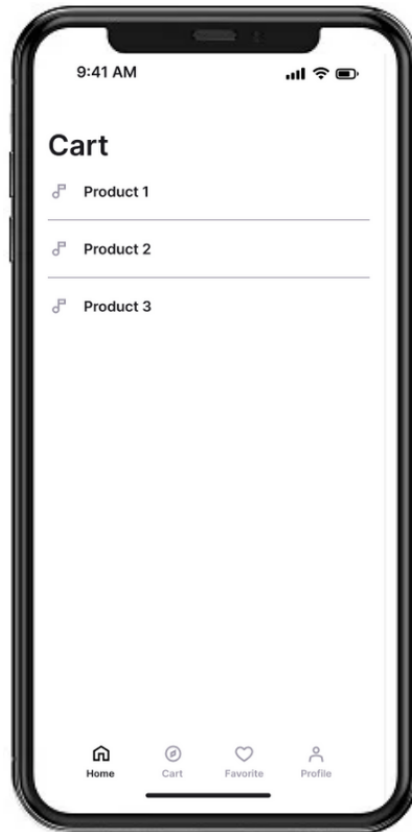

Product Description

The purpose of this page is showing the detail of the product, also showing the recipe of the mean.

Alternative 2

Home Page with navigation bar

This Home Page allow user access to their cart, favorite and their profile on bottom navigation. Also it show the best selling, and recent recipe that user have been bought before

Cart Page

This is show for customer what they have add to the basket.

6. Evaluation And Selection Process

Evaluation

A variety of evaluation methodologies were looked at in order to determine the usability and efficacy of the designs when it came to the evaluation and selection process for the low-level prototypes. The following methods of evaluation were taken into account:

HEURISTIC EVALUATION:

Heuristic evaluation is a method that uses a set of established usability guidelines or heuristics to evaluate the prototype. This technique provides a systematic way to identify usability issues and assess the overall effectiveness of the design. It is efficient, provides professional input, follows a systematic approach, evaluates based on objective standards, and facilitates early problem identification. However, it may have a limited viewpoint, limited expert availability, variability in interpretation, inflexibility, and lack of user feedback (Smith & Kheng, 2023).

PROS:

- **Efficiency:** Heuristic evaluation is suited for early-stage prototype evaluations since it is frequently faster and need fewer resources than other evaluation procedures.
- **Professional Input:** Because of their familiarity with usability principles and best practices, professional evaluators are able to offer insightful opinions.
- **Systematic Approach:** To ensure comprehensive coverage of important usability elements, the evaluation adheres to a set of organized usability guidelines.
- **Evaluation Based on Objective Standards:** Heuristic evaluation minimizes the impact of subjective judgments and prejudices by concentrating on objective standards.
- **Early Problem Identification**: It facilitates the early detection of usability problems in the design phase, enabling prompt corrections and enhancements.

CONS:

- **Restricted Viewpoint:** Certain usability difficulties unique to the task domain or user environment may be missed by heuristic evaluation.
- **Expert Availability:** Access to competent assessors may be restricted, particularly in specialized or niche fields.
- **Interpretation Variability:** Different evaluators may interpret usability heuristics differently, which might result in inconsistent evaluation findings.
- **Inflexibility:** Emerging usability problems that are not addressed by the preset set of criteria may go unnoticed by the evaluation.
- **Absence of User Feedback:** Heuristic assessment may overlook crucial information about user wants and preferences since it does not solicit direct feedback from end users.

Cognitive Walkthrough:

Cognitive walkthrough prioritizes user-centered design, provides comprehensive analysis, and is applicable at an early stage of the design process. However, it can be time-consuming, requires expertise, and is restricted to particular tasks (Interaction Design Foundation, 2023).

PROS:

- **User-Centered**: It prioritizes learning convenience, especially for infrequent or novice users.
- **Comprehensive Analysis:** It offers a thorough examination of task performance.
- **Early Design Assessment:** It is applicable at an early stage of the design process.

CONS:

- **Time-consuming:** The procedure might take a while, particularly for intricate interfaces.
- **Expertise Required:** It necessitates familiarity with the duties and goals of the user.
- **Restricted to Particular Tasks:** It assesses the user interface just for the tasks that are performed step-by-step.

User Testing:

User testing provides real user feedback, is versatile, and finds unexpected problems. However, it can be resource-intensive, has a limited scope, and may result in an observer effect (User Interviews, 2023).

PROS:

- **Real User Feedback:** It offers firsthand commentary on actual users' experiences with the system.
- **Versatile:** It may be applied in many design and development phases.
- **Finds Unexpected Problems:** Users may utilize the technology in ways that the creator had not intended.

Cons:

- **Resource-intensive:** Finding and scheduling participants can be expensive and time-consuming.
- **Restricted Scope**: The majority of users may not be represented by the few individuals that are usually involved.
- **Observer Effect:** When people are aware that they are being watched, they may behave differently.

Focus Groups:

Focus groups allow for multiple viewpoints, are interactive, and provide rich data. However, they can be influenced by group dynamics, are difficult to evaluate, and may present logistical difficulties (Gundumogula & Gundumogula, 2023).

Pros:

- **Multiple Viewpoints:** It makes it possible to investigate a variety of viewpoints and concepts.
- **Interactive:** Participants are able to expand on and generate new ideas from one other's answers.

- **Rich Data:** Qualitative, rich data may be obtained from it.

Cons:
- **Group dynamics**: Opinions of others might be influenced by dominant players.
- **Difficult to evaluate:** It can be challenging and time-consuming to evaluate qualitative data.
- **Logistical Difficulties:** Focus group scheduling and facilitation might provide difficulties.

Selection Process:
The project objectives, the resources at hand, and the unique qualities of the low-level prototypes were all carefully taken into account during the selection process to find the best assessment approach. It was decided to move on with heuristic evaluation as the main assessment approach after weighing the benefits and drawbacks of cognitive walkthrough, focus groups, and heuristic evaluation..

Selection:
Combining heuristic evaluation and cognitive walkthrough could be a wise decision as these techniques allow for the systematic evaluation of the interface using accepted usability standards and task performance, respectively. They offer complementary advantages, provide various viewpoints, and enhance coverage of usability issues detection (Smith & Kheng, 2023).

Here is the reason why I combine 2 methods together:

Complementary Advantages: There are advantages to each of these strategies. While Cognitive Walkthrough is useful at understanding how a new user might approach activities in your system, Heuristic Evaluation is good at finding broad usability concerns based on known principles. These techniques may be used to provide you a comprehensive and in-depth understanding of usability.

Various Viewpoints: Heuristic evaluation offers the viewpoint of an expert and focuses on whether the design complies with recognized usability standards. Conversely, Cognitive Walkthrough provides a user's viewpoint and concentrates on job completion. By utilizing both techniques, you may see your design from many perspectives.

Enhanced Coverage: The detection of usability issues may be covered up to a greater extent by using a variety of assessment techniques. Certain problems may be detected by one approach but not by the other.

## 7. Final Mid-fidelity Prototype Design
Home Page

Here is the Home Page:

This Page allow user to search the product that they want. Also showing exclusive offer, best selling. When the user find a meal that they want. By Clicking the Plus Button the cart will increase. Using bottom navigation bar is very good for customer to access to another page easily. If the user pressed the card instead of plus button, it will link to a product detail. They can see the review, the detail. Product page still allow customer to add to cart.
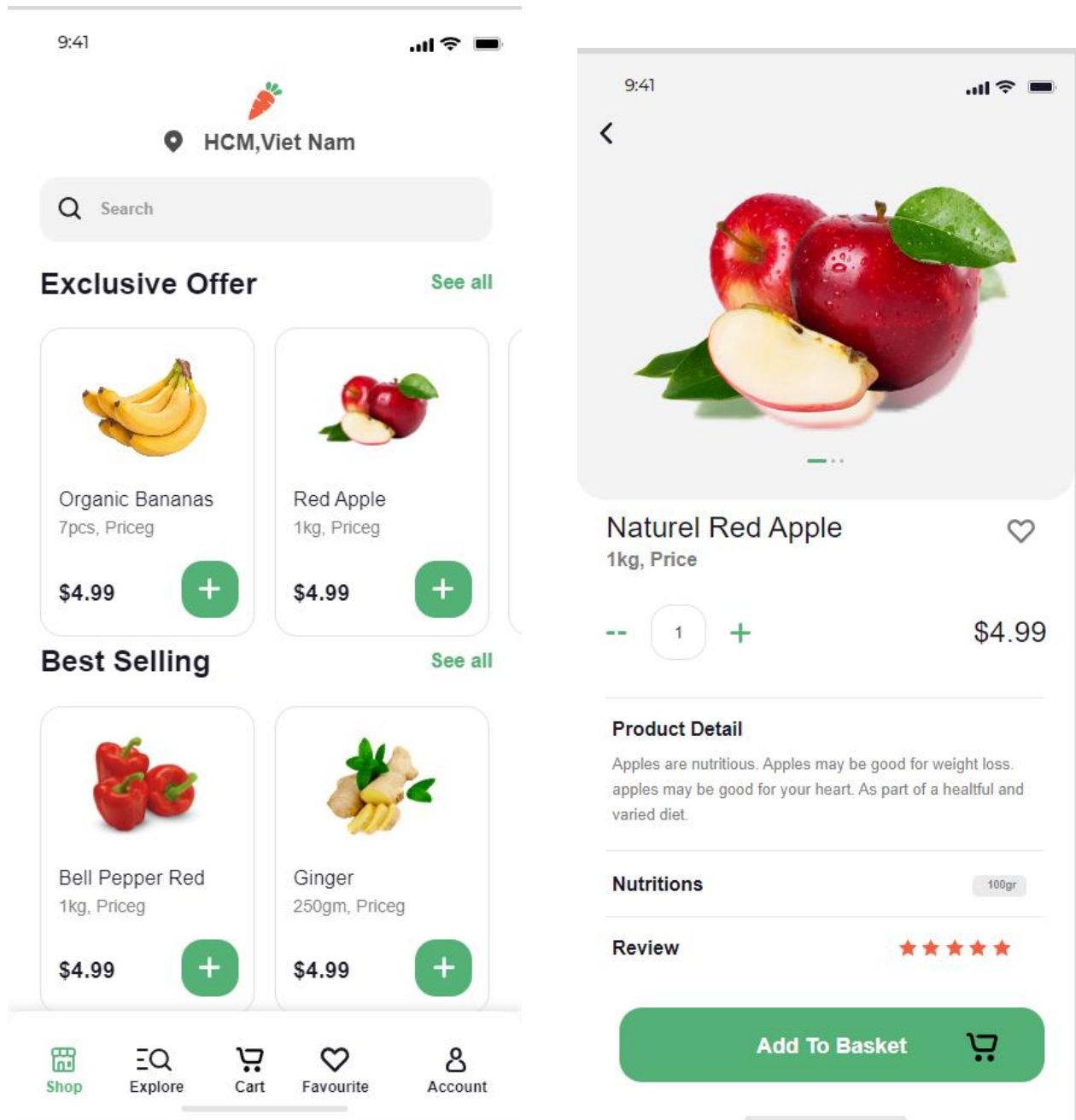
Explore Page:

Explore Page will display arranged meal into exist category. I've use the grid layout, my opinion design view using grid, it looks very intuitive. If customer click in the card, it will locate to the page that contain all the related product
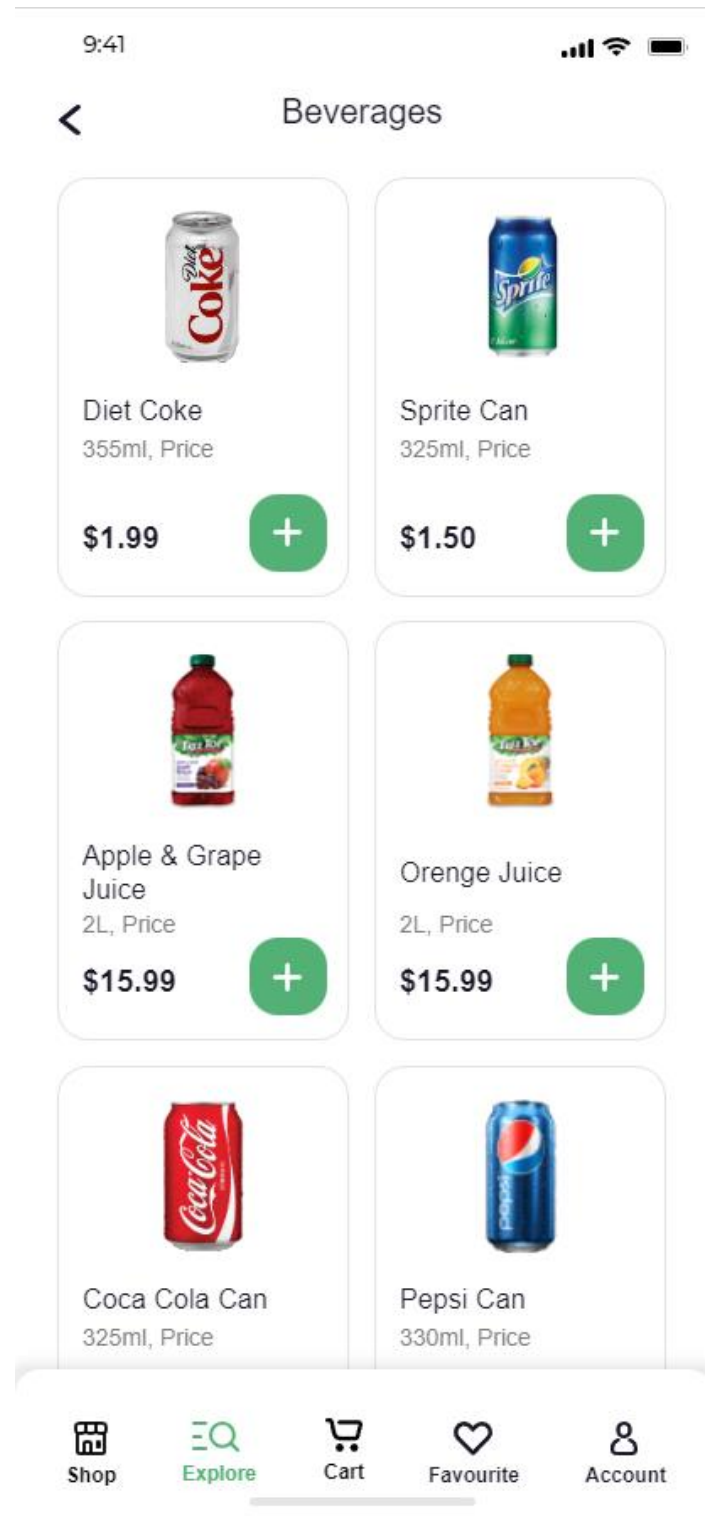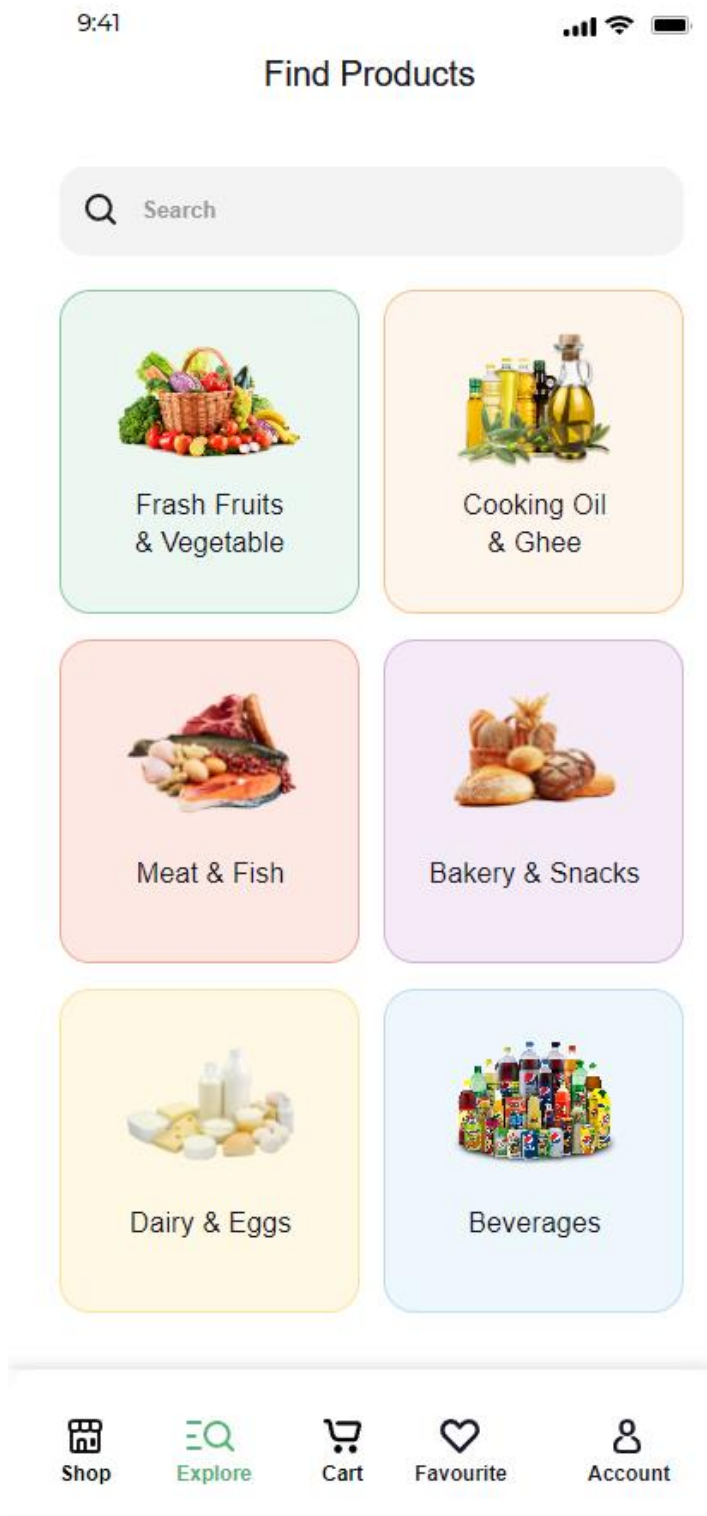
Cart Page:

This card show the customer the product that they have add, more over checkout button will show another card. Checkout card delivery, discount and total cost
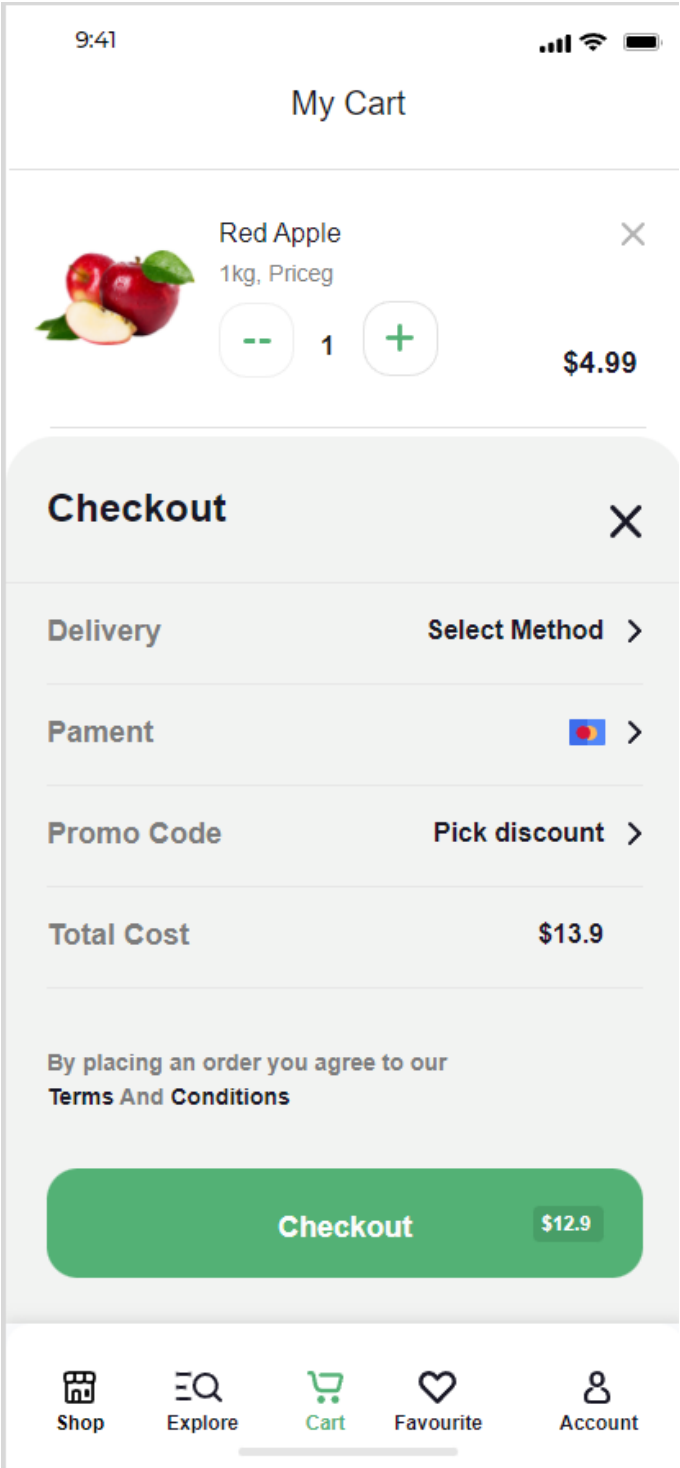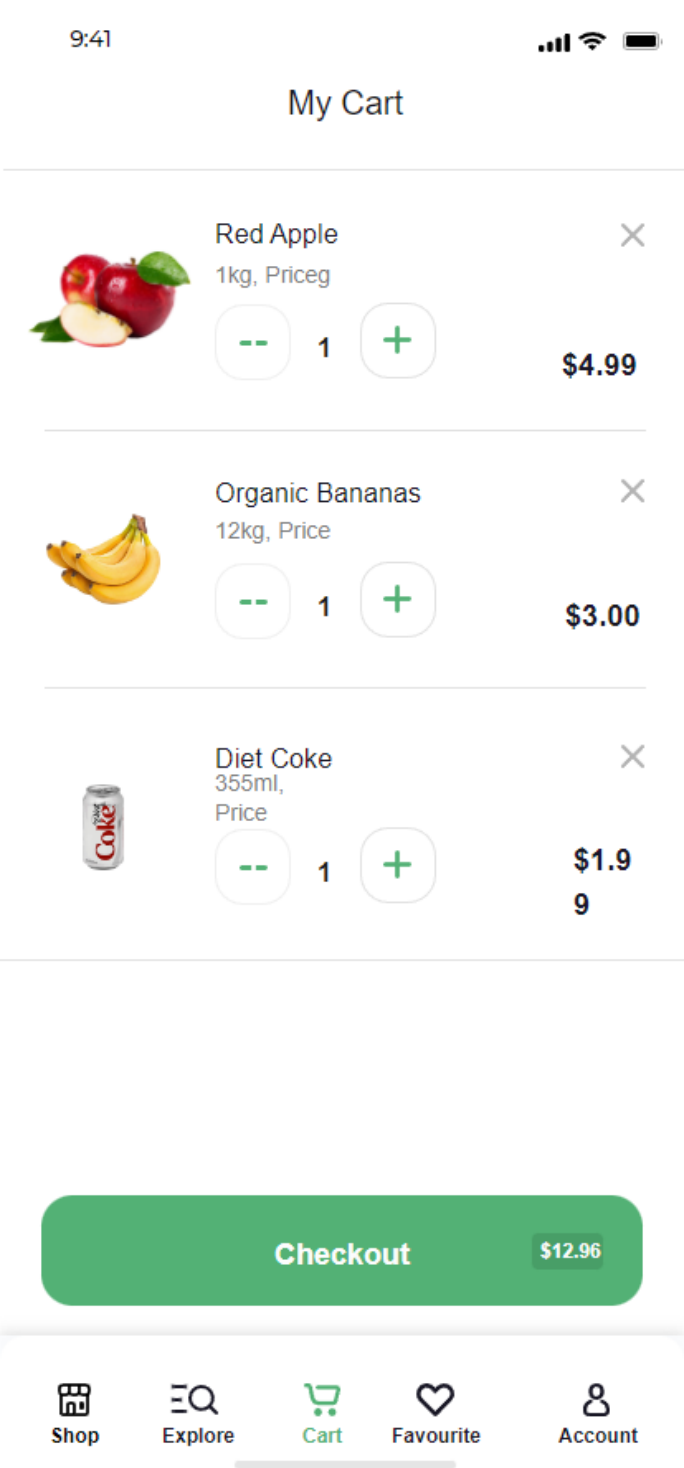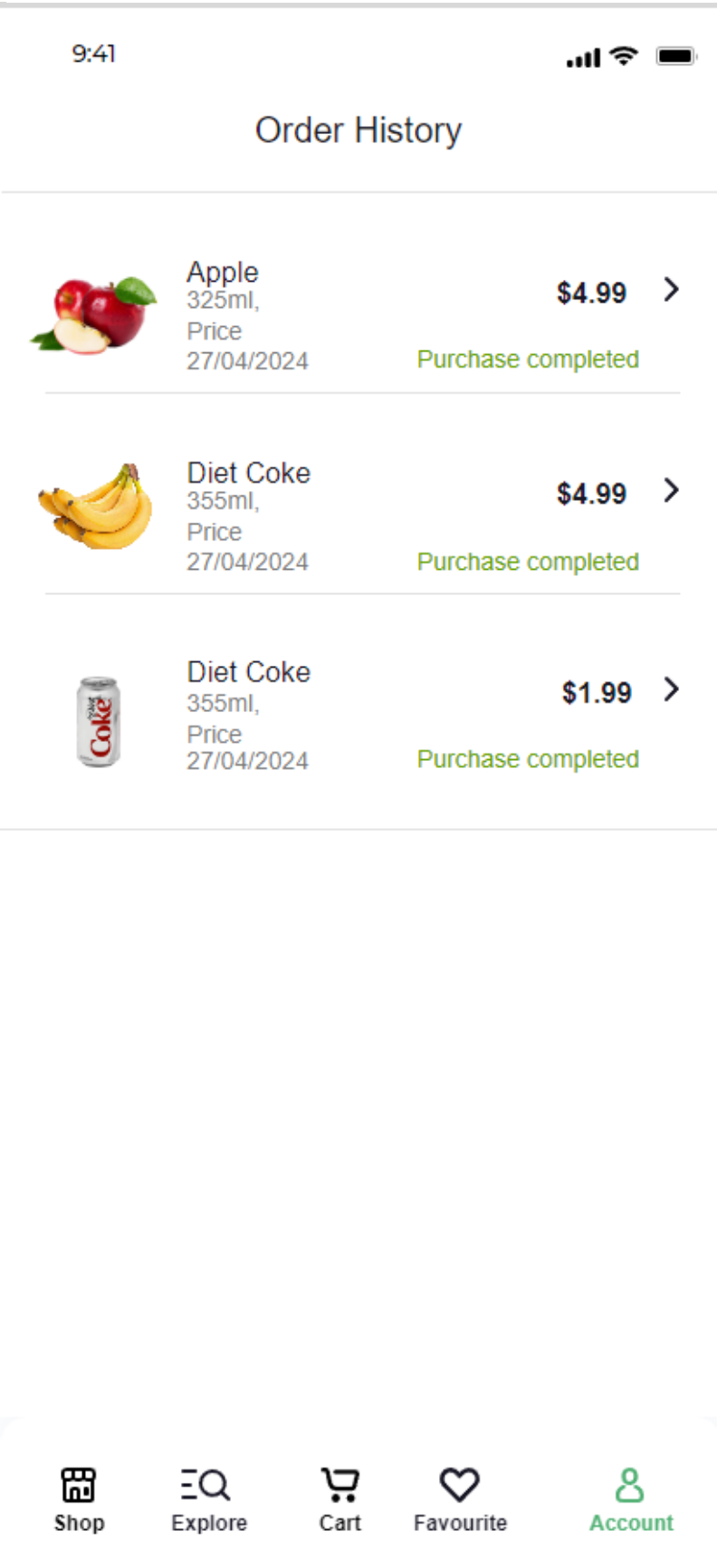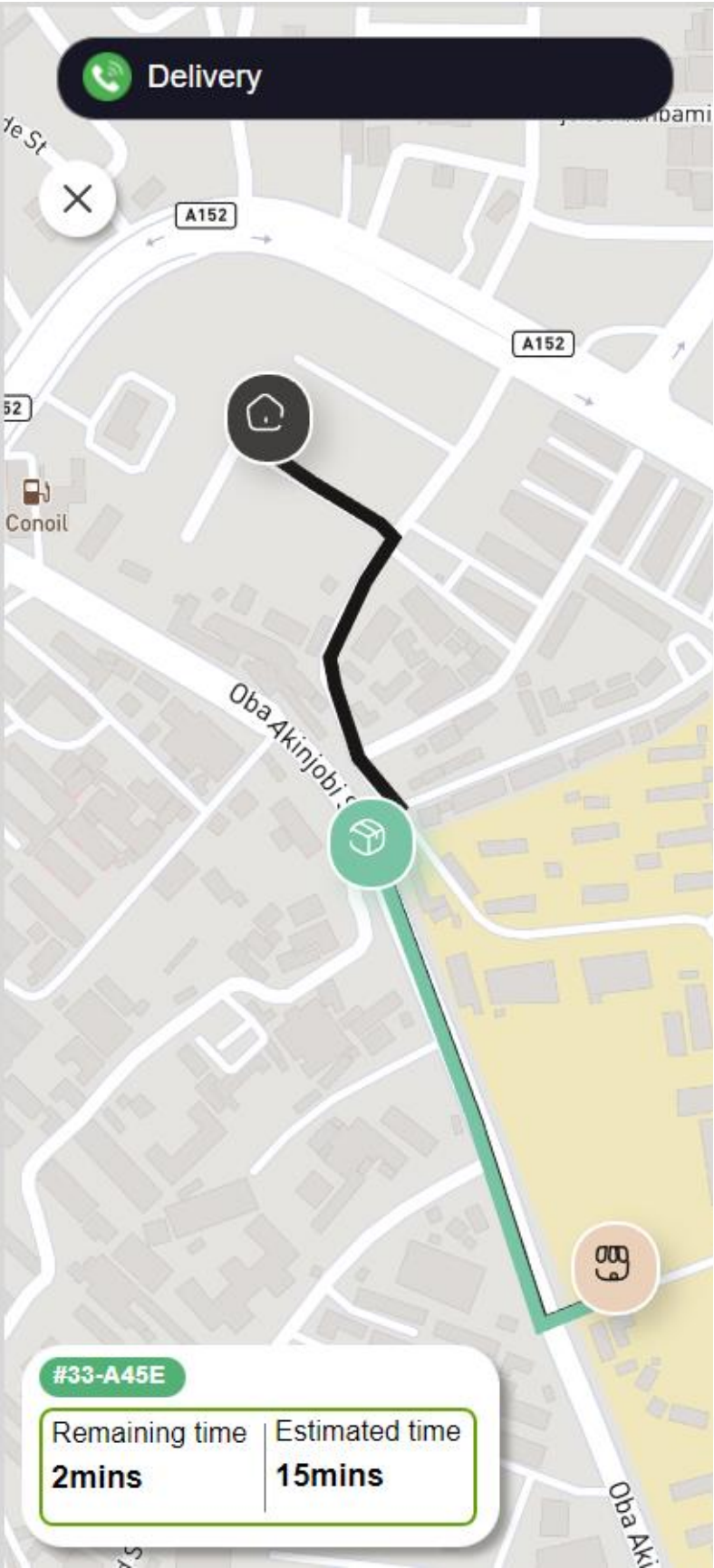
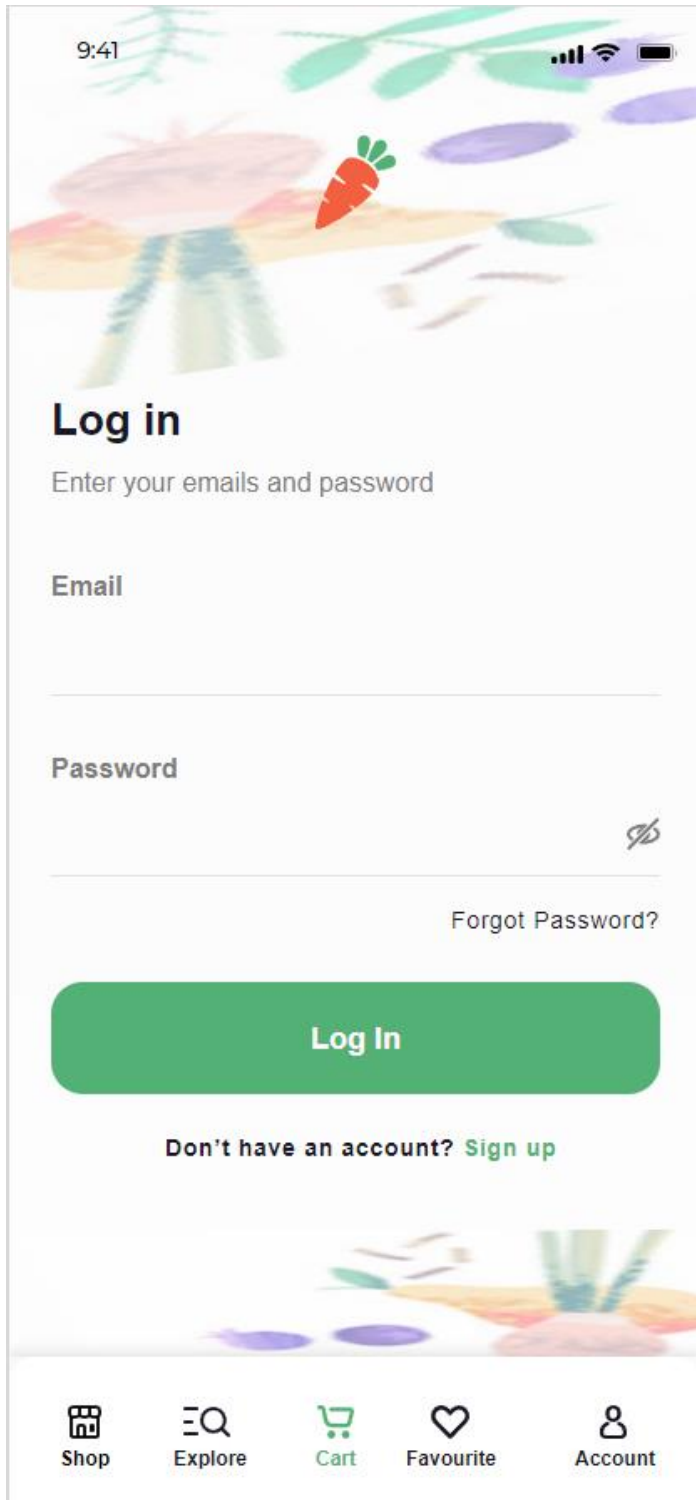**Success Page And Tracking The Order:**
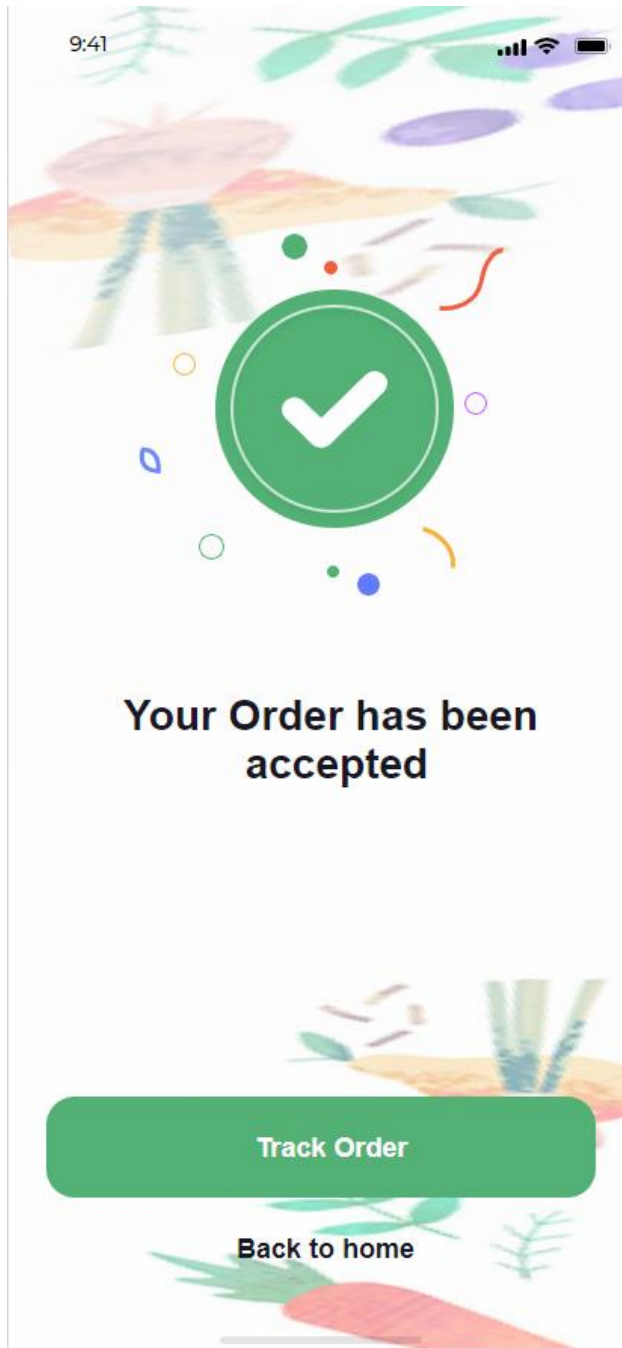
This page will appear after customer pressed checkout button, if they click Back to home, customer will return to home. If they pressed the Track Order it will display the tracking order. This Page include estimate time, shipper, location of customer home and the store. I've also

implement phone call simulation if customer pressed that call button. I will locate to the order history.

Delivery

Conoil

Oba Akinjobi

#33-A45E

Remaining time	Estimated time
2mins	15mins

Order History

Apple
325ml,
Price
27/04/2024   Purchase completed
$4.99 >

Diet Coke
355ml,
Price
27/04/2024   Purchase completed
$4.99 >

Diet Coke
355ml,
Price
27/04/2024   Purchase completed
$1.99 >

Shop   Explore   Cart   Favourite   Account

Login and Sign Up:

This page will be appear if user presses the checkout button without login before. In the login page it also allow customer to make their account.

8. Critical Reflection.

I have gained an understanding of the fundamentals of user empathy and functionality by exploring the complex field of user interface design through this assessment. The delicate interaction between functionality and aesthetic appeal is highlighted by the emerging problem of striking a balance between the two. In the future, I hope to have a deeper grasp of user research methodology and make sure that designs are truly embraced by a variety of user groups. In addition, I understand how important it is to keep up with changing design and technology trends in order to be flexible in this fast-paced industry. This experience has highlighted the iterative process of UI design and the ongoing pursuit of innovation and improvement.

9. Conclusion

To sum up, our investigation into user interface design has illuminated the complex relationship between form and function and the critical role it plays in forming digital interactions. Through an exploration of standards, principles, and user concerns, this trip has shown how crucial it is to accommodate various user groups and their unique requirements and preferences. It has become clear from the review and selection process of low-fidelity prototypes how important it is to use a mix of assessment methods, including cognitive walkthroughs and heuristic evaluation, to guarantee thorough usability testing.

The assessment's conclusion has shed light on the iterative process of UI design and highlighted the ongoing pursuit of innovation and improvement. In order to ensure continuous success and growth in this fast-paced industry, it will be critical to include user research approaches and maintain a dedication to remaining current with emerging technology and design trends. In the end, user interface design has the capacity to change lives by enabling us to create smooth, captivating digital experiences that profoundly connect with users and improve their lives in the rapidly changing digital space.

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