

TradeSphere

Flutter Project

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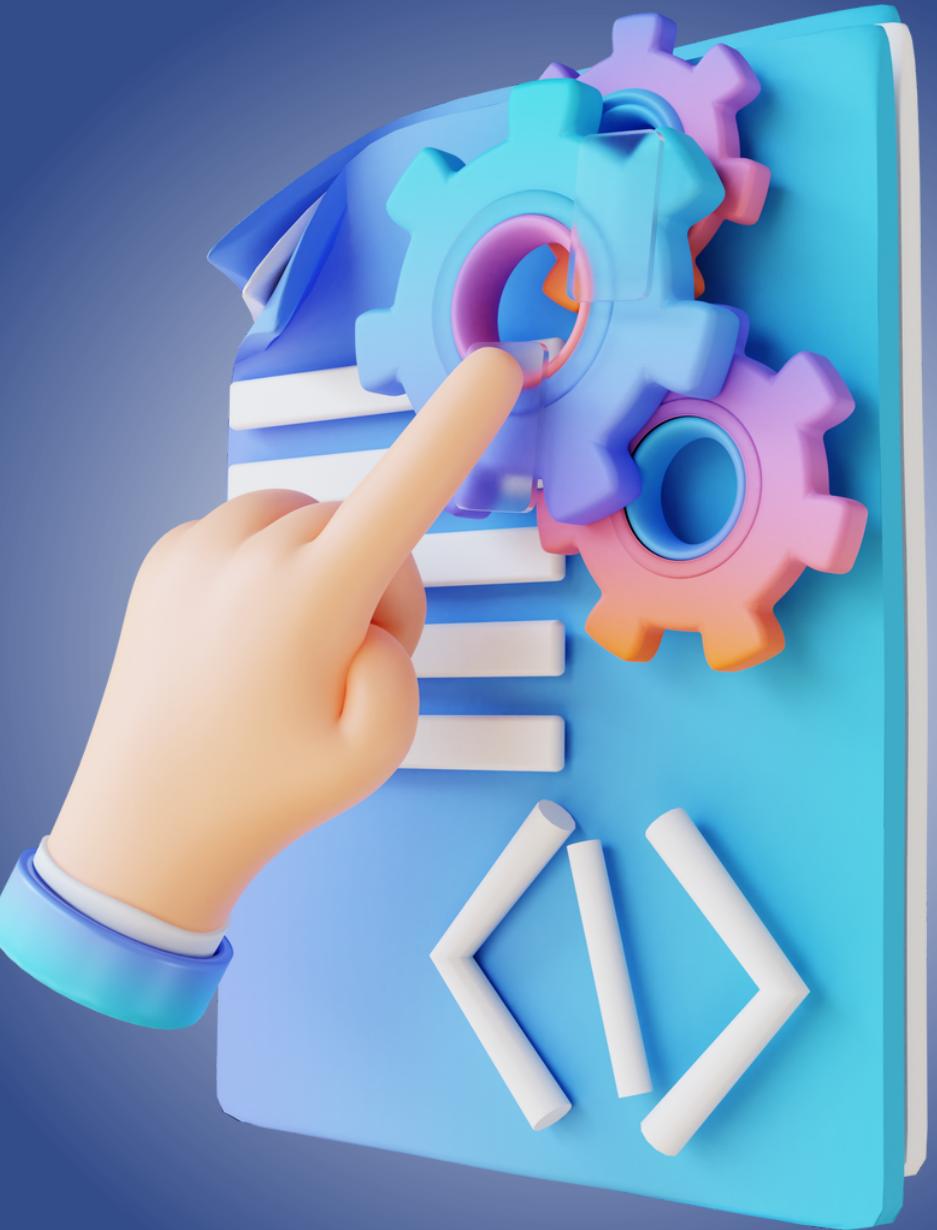


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CHAPTER 1

Flutter Application



Introduction

- TradeSphere is the mobile application designed to provide a seamless and delightful shopping experience for users on both iOS and Android platforms.
- Built using the Flutter framework, the app aims to combine an intuitive user interface with robust functionality, ensuring secure transactions and efficient product management.



Problem Statement

“ Develop a Flutter-based e-commerce application that provides users with a seamless shopping experience. The application should allow users to browse through a variety of products, add items to their cart, make secure payments, and track their orders. Additionally, the app should feature user authentication, product categorization, search functionality, and a user-friendly interface to enhance the overall shopping experience. ”



Features

- 1. User-Friendly Interface:** Create an intuitive and visually appealing UI to enhance the shopping experience.
- 2. Efficient Product Management:** Develop a reliable system to manage product listings, including details, images, and inventory.
- 3. Secure Transactions:** Integrate a secure payment gateway and encryption protocols to ensure financial transaction security.
- 4. Cart Management:** Implement a robust shopping cart system for easy addition, removal, and update of items.
- 5. Cross-Platform Compatibility:** Build the app to work seamlessly on both iOS and Android platforms using Flutter for code reusability.
- 6. Real-time Updates:** Enable real-time updates for product availability, prices, and order status to keep users informed.

Requirements

Hardware

Development Machine:

- Minimum 8 GB RAM , Intel Core i3 Processor or better.
- Physical devices for testing on both iOS and Android platforms.
- Internet Connection
- Storage

Software

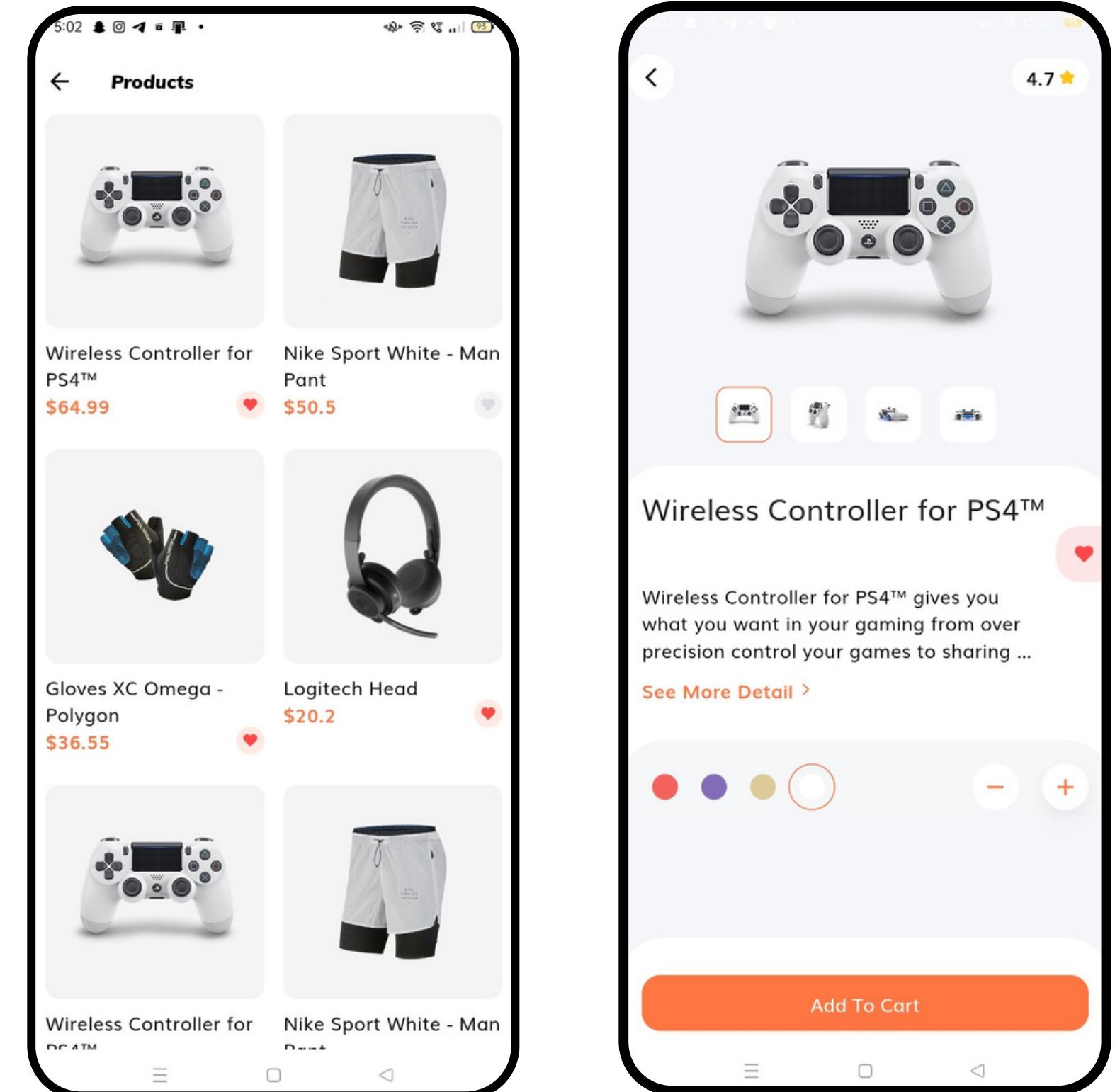
IDE's & Plugins:

- Android Studio IDE
- Android Emulator
- VSCode
- Dart Plugin
- Flutter SDK
- Firebase Authentication

Implementation

PRODUCTS SCREEN

- The Products Screen showcases a visually appealing collection of items available in the e-commerce app.
- Users can easily browse categories, search for specific products, and access key information like prices and descriptions.
- It serves as the gateway for users to explore and select items for purchase.



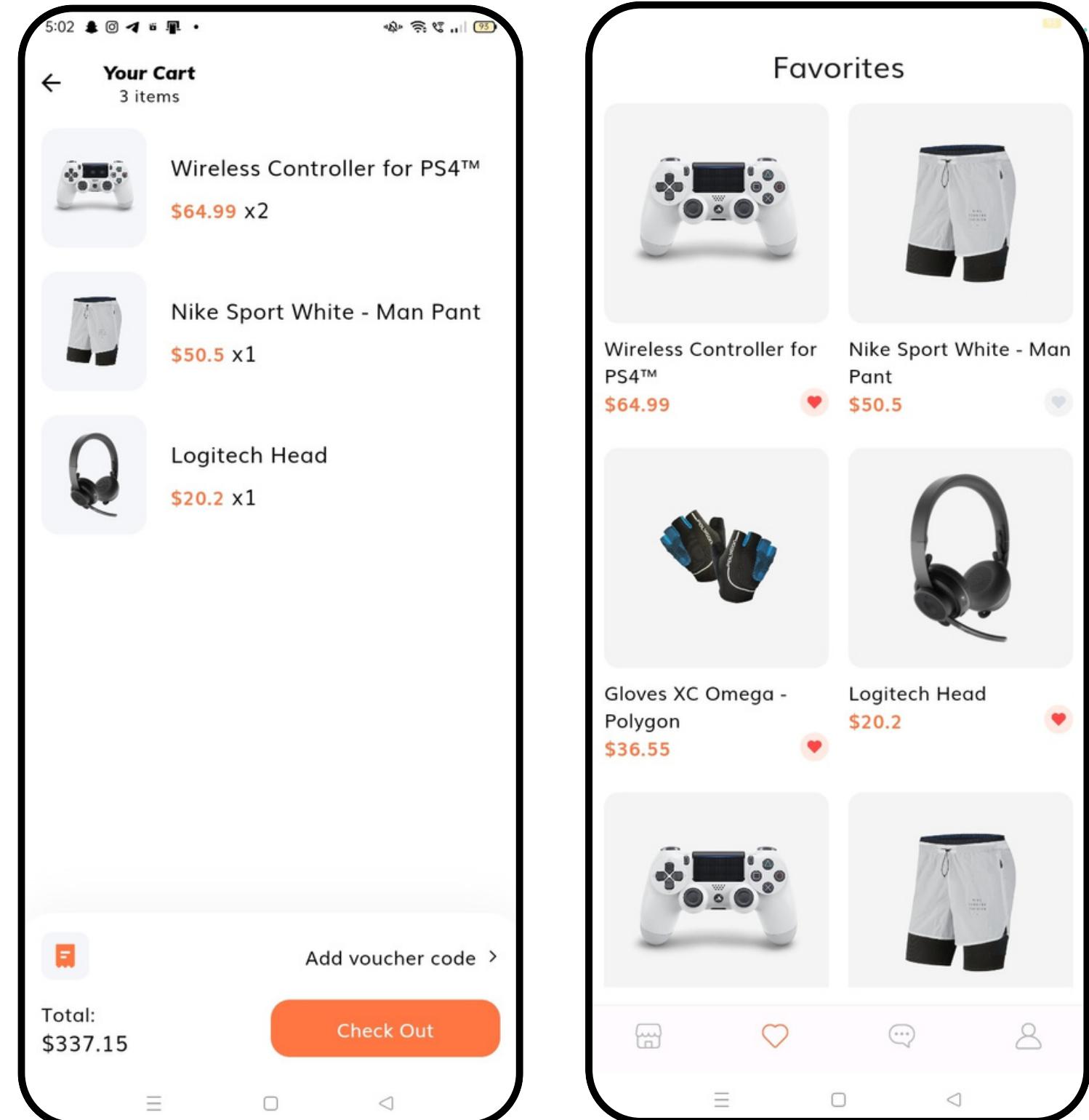
Implementation

- **CART SCREEN**

The Cart Screen provides a summary of selected items for purchase, enabling users to review, adjust quantities, and proceed to checkout seamlessly.

- **FAVORITES SCREEN**

The Favorites Product Screen allows users to conveniently save preferred items for future reference or purchase, streamlining the decision-making process and facilitating easy access to desired products.



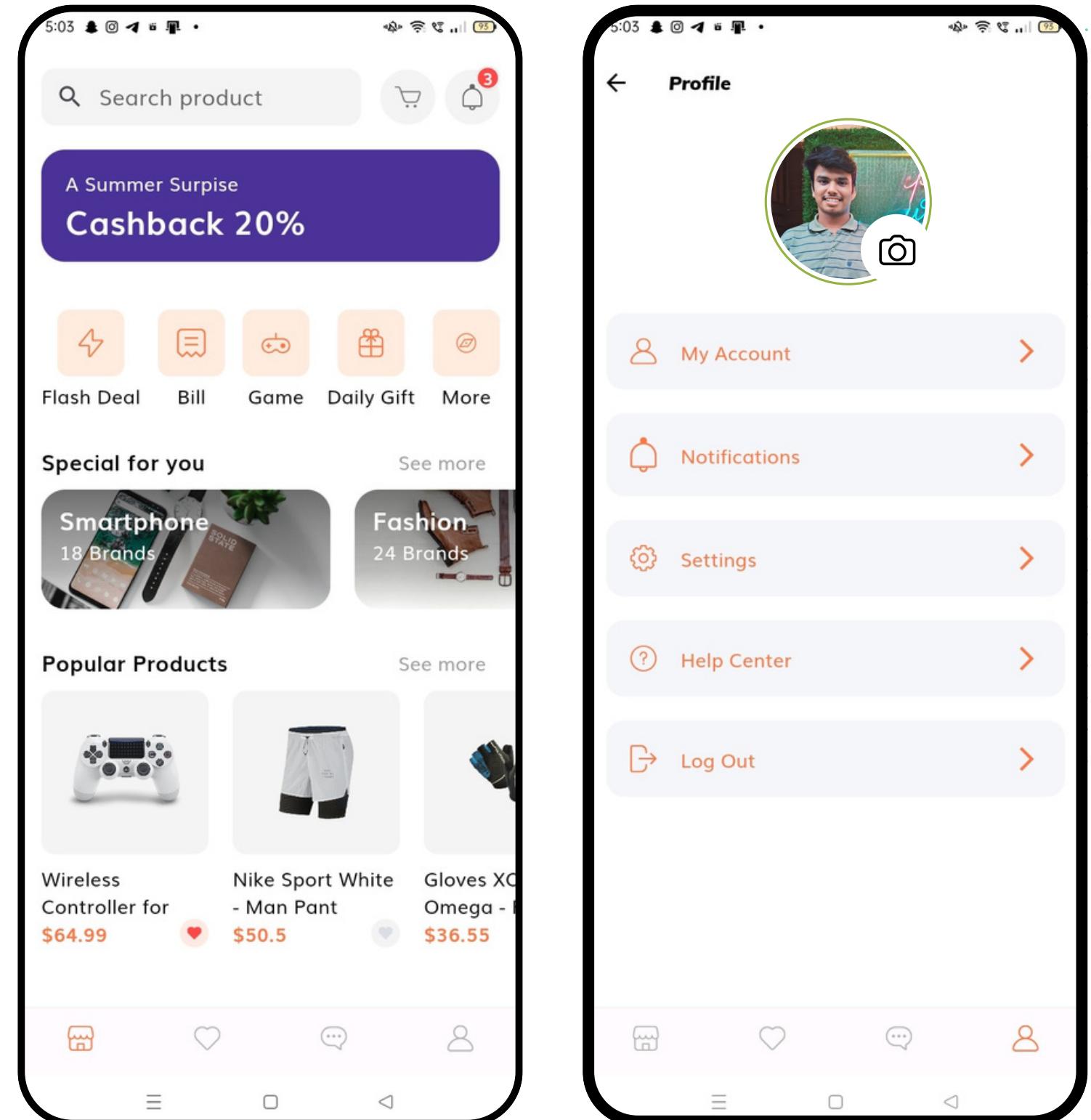
Implementation

- HOME SCREEN

The home screen is where users explore featured products, promotions, and categories. It showcases new arrivals, best sellers, and special offers, with interactive elements like sliders for highlighting products.

- PROFILE SCREEN

The profile screen is a personalized space for users to manage their account settings, view order history, and access account-related features. It includes sections for account information, order history, saved addresses, and preferences, offering a convenient way to track interactions with the app.



Literature Survey

Sr No.	IEEE Paper Name	Published By	Date	Limitations
1.	"Design and Implementation of E-commerce Application Based on Flutter Framework"	Jianwen Jiang, Zongmin Ma	June 2020	Limited discussion on security measures, scalability concerns not addressed, lacks comparative analysis with other frameworks.
2.	"Enhancing User Experience in E-commerce Mobile Applications Using Flutter"	Oussema Jemli, Alaa Jouablia	September 2021	Focuses mainly on UI/UX aspects, lacks in-depth discussion on backend integration and transaction security, limited evaluation metrics.

Literature Survey

Sr No.	IEEE Paper Name	Published By	Date	Limitations
3.	"A Comparative Study of Cross-Platform Mobile Development Frameworks for E-commerce Applications"	M. Satyanarayana, R. Srinivas	December 2019	Doesn't specifically focus on Flutter, lacks detailed analysis of Flutter's performance and features compared to other frameworks, limited discussion on real-time updates.
4.	"Security Analysis of Mobile E-commerce Applications: A Systematic Literature Review"	Noura Alomar, Lo'ai Tawalbeh	March 2022	Primarily focuses on security aspects, lacks discussion on development frameworks like Flutter, limited coverage of UI/UX design considerations.

Conclusion

- The Flutter-based e-commerce application addresses the need for a user-friendly platform for online shopping.
- Key features such as product browsing, cart management, secure payments, and order tracking enhance the overall shopping experience.
- Incorporating user authentication ensures security and personalized interactions.
- Intuitive navigation and search functionality facilitate easy product discovery.
- The project aims to create a robust solution catering to the diverse needs of modern consumers in the digital marketplace.



References

- [1] Jiang, J., & Ma, Z. (2020). Design and Implementation of E-commerce Application Based on Flutter Framework. *International Journal of Computer Science and Network Security*, 20(8), 223-230. DOI: 10.1109/ACCESS.2020.2985046.
- [2] Jemli, O., & Jouablia, A. (2021). Enhancing User Experience in E-commerce Mobile Applications Using Flutter. *International Journal of Interactive Mobile Technologies*, 15(2), 119-130. DOI: 10.3991/ijim.v15i02.18007.
- [3] Satyanarayana, M., & Srinivas, R. (2019). A Comparative Study of Cross-Platform Mobile Development Frameworks for E-commerce Applications. *International Journal of Computer Applications*, 180(25), 17-22. DOI: 10.5120/ijca2019918675.
- [4] Alomar, N., & Tawalbeh, L. (2022). Security Analysis of Mobile E-commerce Applications: A Systematic Literature Review. *International Journal of Advanced Computer Science and Applications*, 13(1), 323-335. DOI: 10.14569/IJACSA.2022.0130423

CHAPTER 2

Progressive Web Application



Introduction

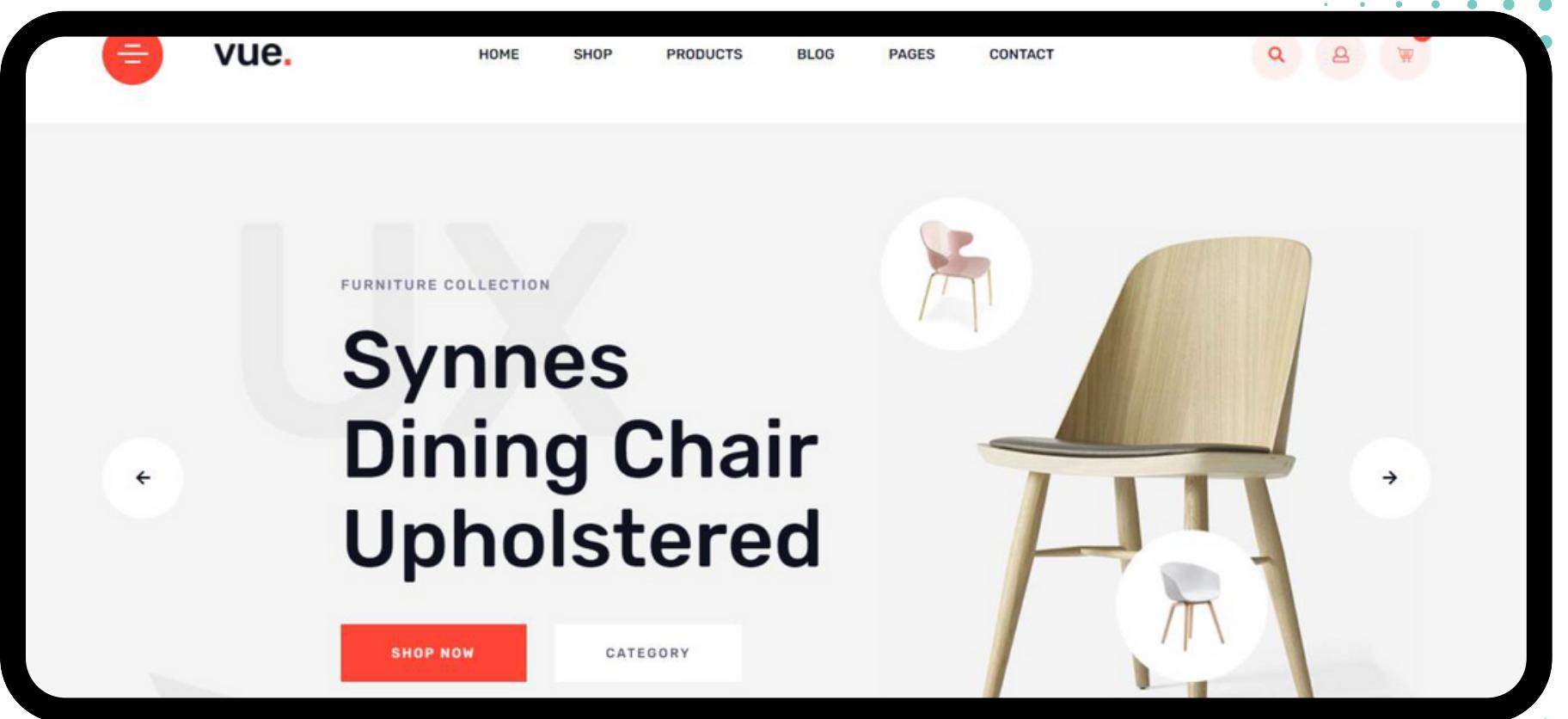
- A Progressive Web Application (PWA) for e-commerce revolutionizes online shopping by combining the best aspects of websites and mobile apps.
- PWAs offer a seamless and fast shopping experience across devices, with features like offline browsing, push notifications, and responsive design.
- This innovative approach enhances user engagement and convenience, driving sales and fostering customer loyalty.



Implementation

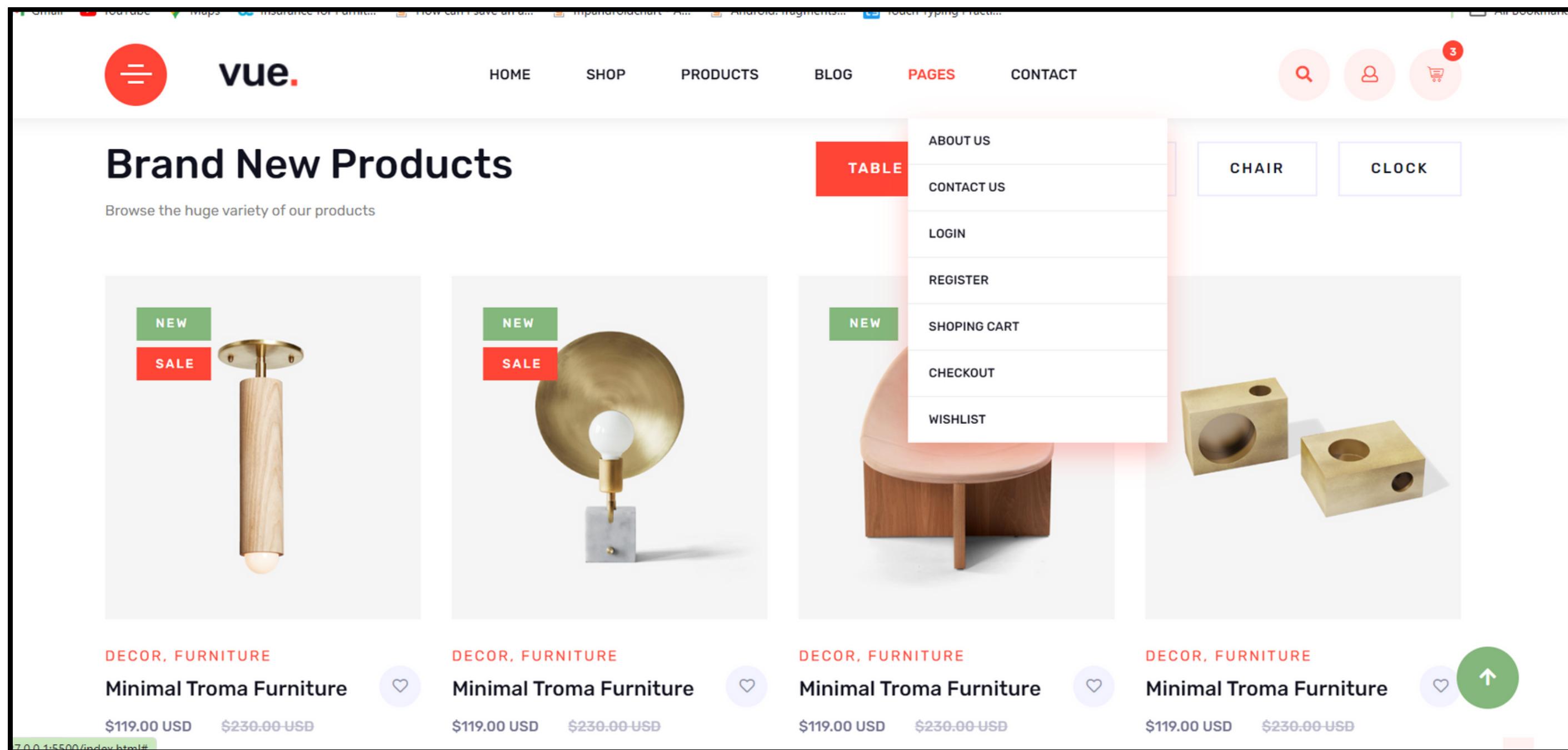
PWA SERVICE WORKER:

- A service worker, a JavaScript file in web development, operates in the background.
- It enables push notifications, background synchronization, and offline capabilities.
- By caching resources locally, it sustains web apps offline.
- Intercepting network requests, it serves cached content for uninterrupted user experiences.



Implementation

PWA SERVICE WORKER:



Implementation

PWA SERVICE WORKER:

```
Push notification activated  
P Received SHOW_SIDEBAR_APP action in content script  
P Received SHOW_SIDEBAR_APP action in content script
```

```
Live reload enabled.  
Service Worker registered with scope: http://127.0.0.1:5500/
```

http://127.0.0.1:5500/

Network requests [Update](#) [Unregister](#)

Source [service-worker.js](#)
Received 4/4/2024, 8:26:07 AM

Status ● #1116 activated and is stopped [start](#)

Push [Test push message from DevTools.](#) [Push](#)

Sync [test-tag-from-devtools](#) [Sync](#)

Periodic Sync [test-tag-from-devtools](#) [Periodic Sync](#)

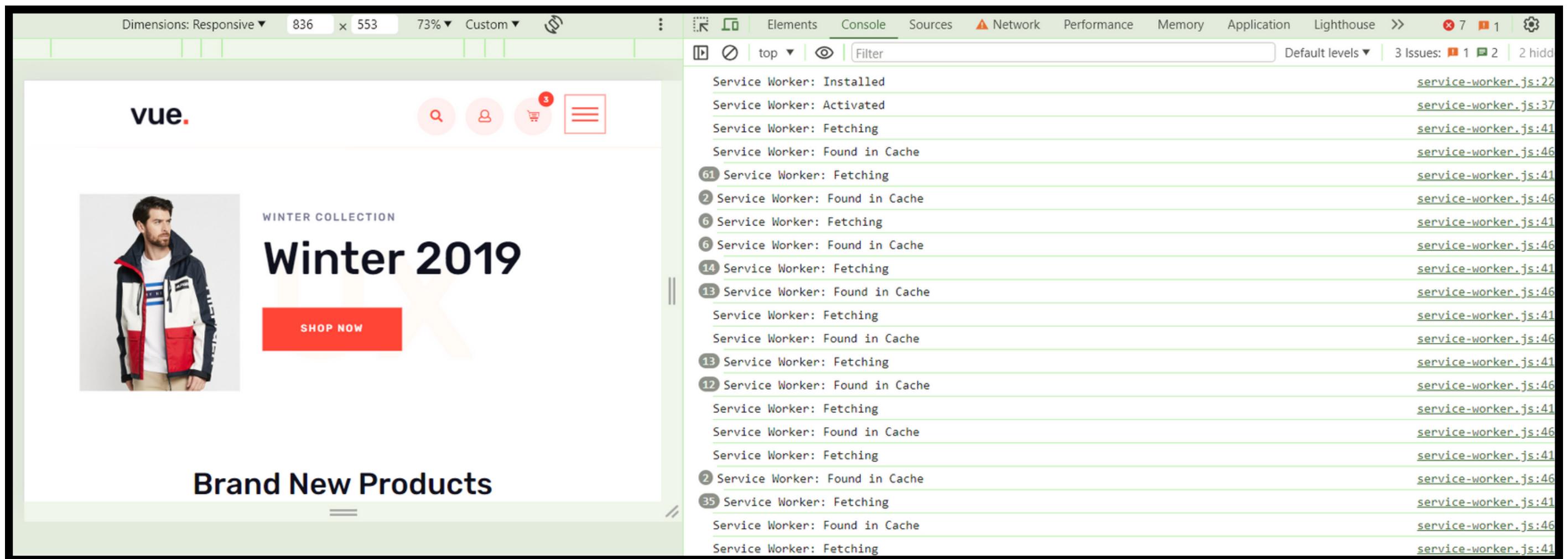
Update Cycle

Version	Update Activity	Timeline
▶ #1116	Install	1
▶ #1116	Wait	2
▶ #1116	Activate	3

#	Name	Respons...	Content...	Content-...	Time Cac...	Vary Hea...
0	/	basic	text/html	259,177	4/4/2024...	Origin
1	/about.html	basic	text/html	38,158	4/4/2024...	Origin
2	/blog.html	basic	text/html	46,595	4/4/2024...	Origin
3	/cart.html	basic	text/html	34,137	4/4/2024...	Origin
4	/index-2.html	basic	text/html	185,069	4/4/2024...	Origin
5	/index-3.html	basic	text/html	70,616	4/4/2024...	Origin
6	/index-4.html	basic	text/html	183,631	4/4/2024...	Origin
7	/index-5.html	basic	text/html	69,701	4/4/2024...	Origin
8	/index.html	basic	text/html	259,177	4/4/2024...	Origin
9	/login.html	basic	text/html	30,926	4/4/2024...	Origin

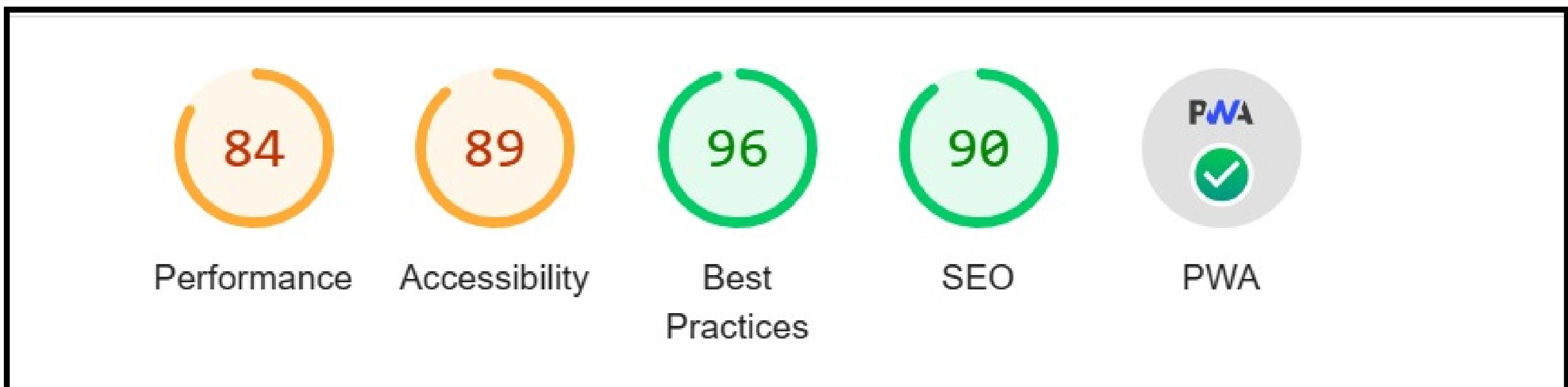
Implementation

PWA SERVICE WORKER:



Implementation

GOOGLE LIGHTHOUSE IMPLEMENTATION:



A 3D cartoon character with brown hair and a blue jacket, waving with one hand.

Thank You
