

Techcombank Online Banking App – Login & Switch Account Enhancement

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Tools: Draw.io, Balsamiq, Figma, Word

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1. Project Overview

Goal: Improve user experience in authentication and account management.

Scope:

- Login with Password + OTP
- Login with Biometric (FaceID/Fingerprint)
- Switch Account (without logout/login)

Target Users: Mobile banking users with multiple accounts.

Reason for choosing Techcombank: Techcombank is one of the leading banks in Vietnam with a large user base. Enhancing authentication and account switching aligns with real-world needs.

2. Problem Analysis

Pain Points Identified:

- Users had to log out completely to switch accounts → time-consuming.
- OTP login flow was unclear and not user-friendly.
- Password login required repetitive typing, reducing convenience.
- Biometric login was not fully integrated in older versions.

3. Requirement Analysis

3.1 Functional Requirements

- FR1: The system shall allow login with password and OTP.
- FR2: The system shall allow biometric authentication (FaceID/Fingerprint).
- FR3: The system shall provide the ability to switch between saved accounts without logout.
- FR4: The system shall request OTP for high-security scenarios.
- FR5: The system shall display saved accounts on device for quick switching.

3.2 Non-Functional Requirements

- NFR1: Login response time should be less than 3 seconds.
- NFR2: Biometric data must comply with security standards.
- NFR3: The app must support both Android and iOS platforms.
- NFR4: The system should ensure 99.9% uptime for authentication services.

3.3 User Stories

As a user, I want to log in with my password so that I can access my account securely.

As a user, I want to receive an OTP when logging in so that my account is protected from unauthorized access.

As a user, I want to log in using FaceID so that I don't need to type my password every time.

As a user, I want to log in using my fingerprint for faster access.

As a user, I want to switch to another saved account without logging out, so that I can manage multiple accounts easily.

As a user, I want the app to remember my saved accounts so that I can switch quickly.

As a user, I want to see a confirmation message when switching accounts to ensure the switch was successful.

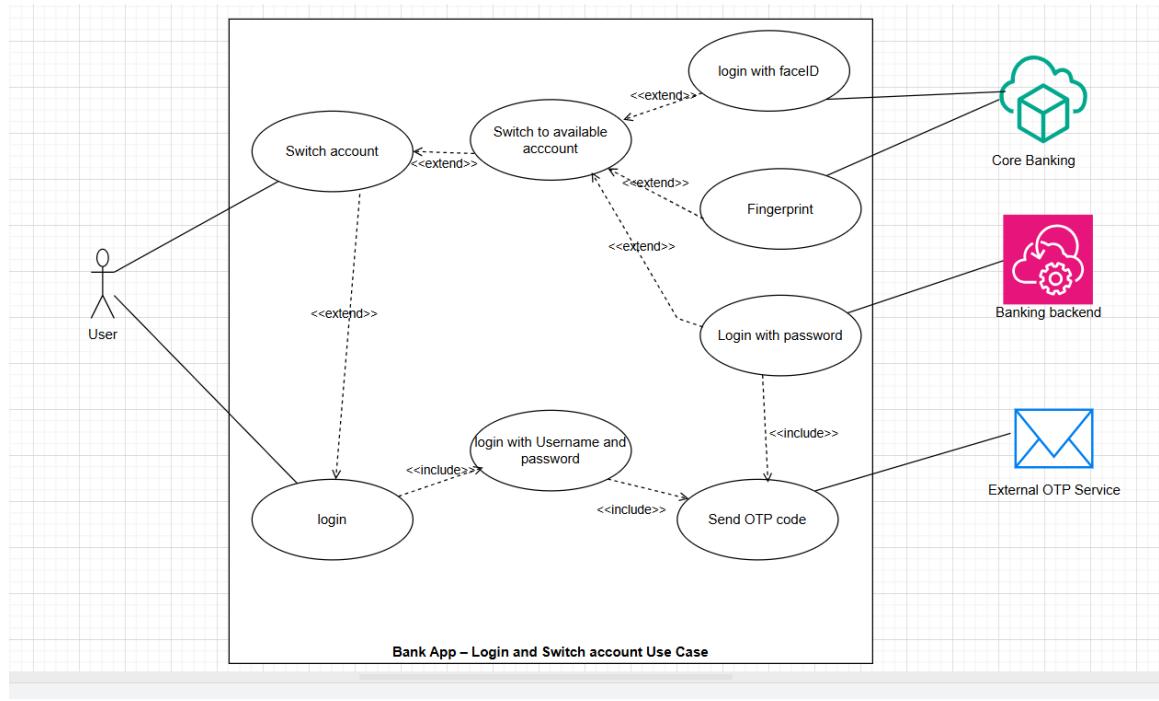
As a user, I want the system to block login after 3 failed attempts so that my account remains safe.

As a user, I want OTPs to expire within 60 seconds so that they cannot be reused.

As a user, I want to log out manually when needed so that I can secure my session.

4. UML Diagrams

4.1 Use Case Diagram



***Title:** Use Case Diagram – Login & Switch Account

***Description:**

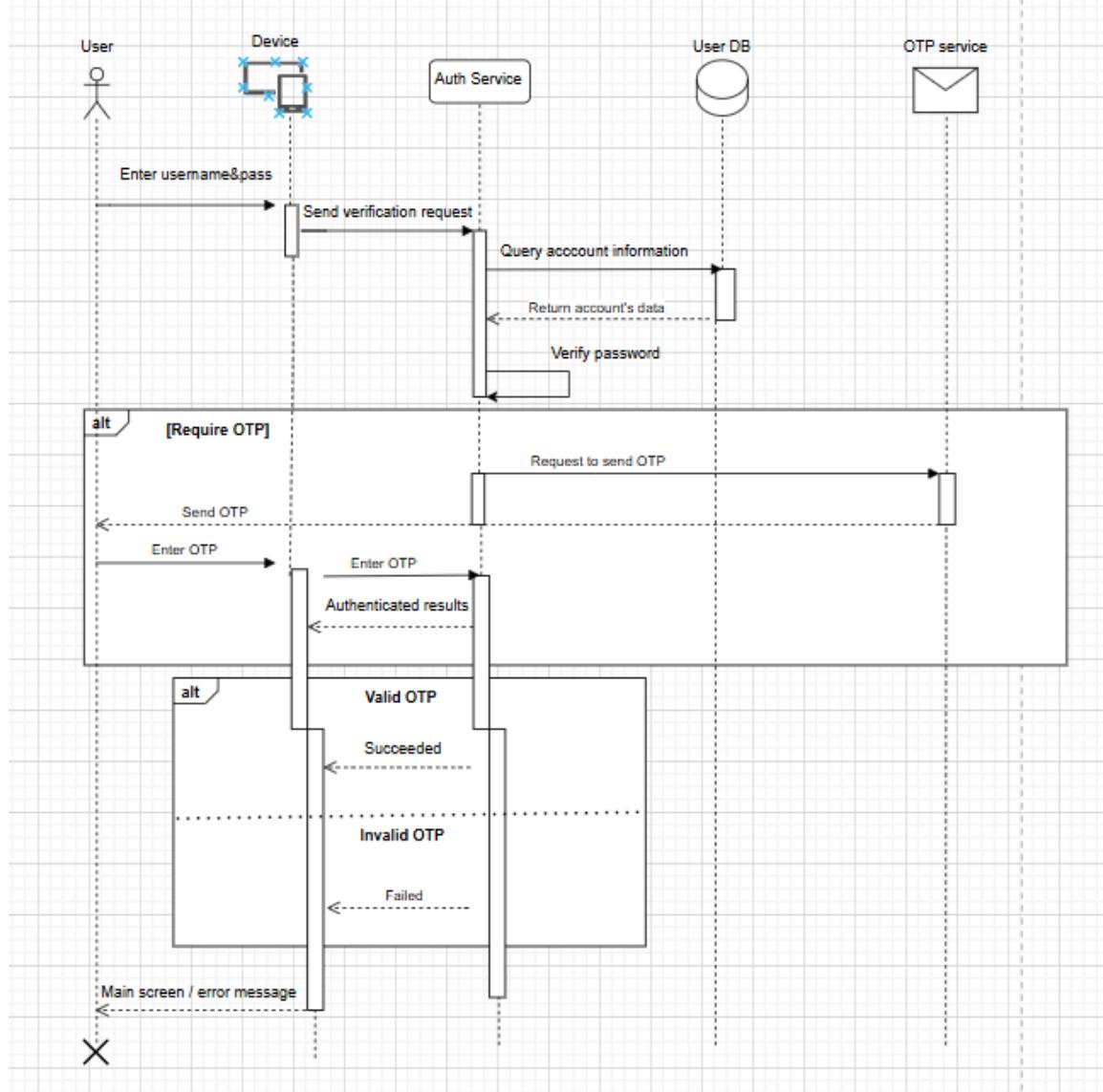
Actors: User, OTP Service, Banking Backend.

Use cases: Login with Password/OTP, Login with Biometric, Switch Account.

Relationships: *Login with Password* → <<include>> *Send OTP*.

* **Significance:** The diagram illustrates how users interact with the system and related services to perform login and account switching functions.

4.2 Sequence Diagram (Login with Password + OTP)



***Title:** Sequence Diagram – Login with Password + OTP

***Description:**

Step 1: The user enters username and password into the app.

Step 2: The app sends the credentials to the backend for verification.

Step 3: The backend validates the password and requests an OTP from the OTP Service.

Step 4: The OTP Service generates and sends the OTP to the user.

Step 5: The user enters the received OTP into the app.

Step 6: The app sends the OTP to the backend for verification.

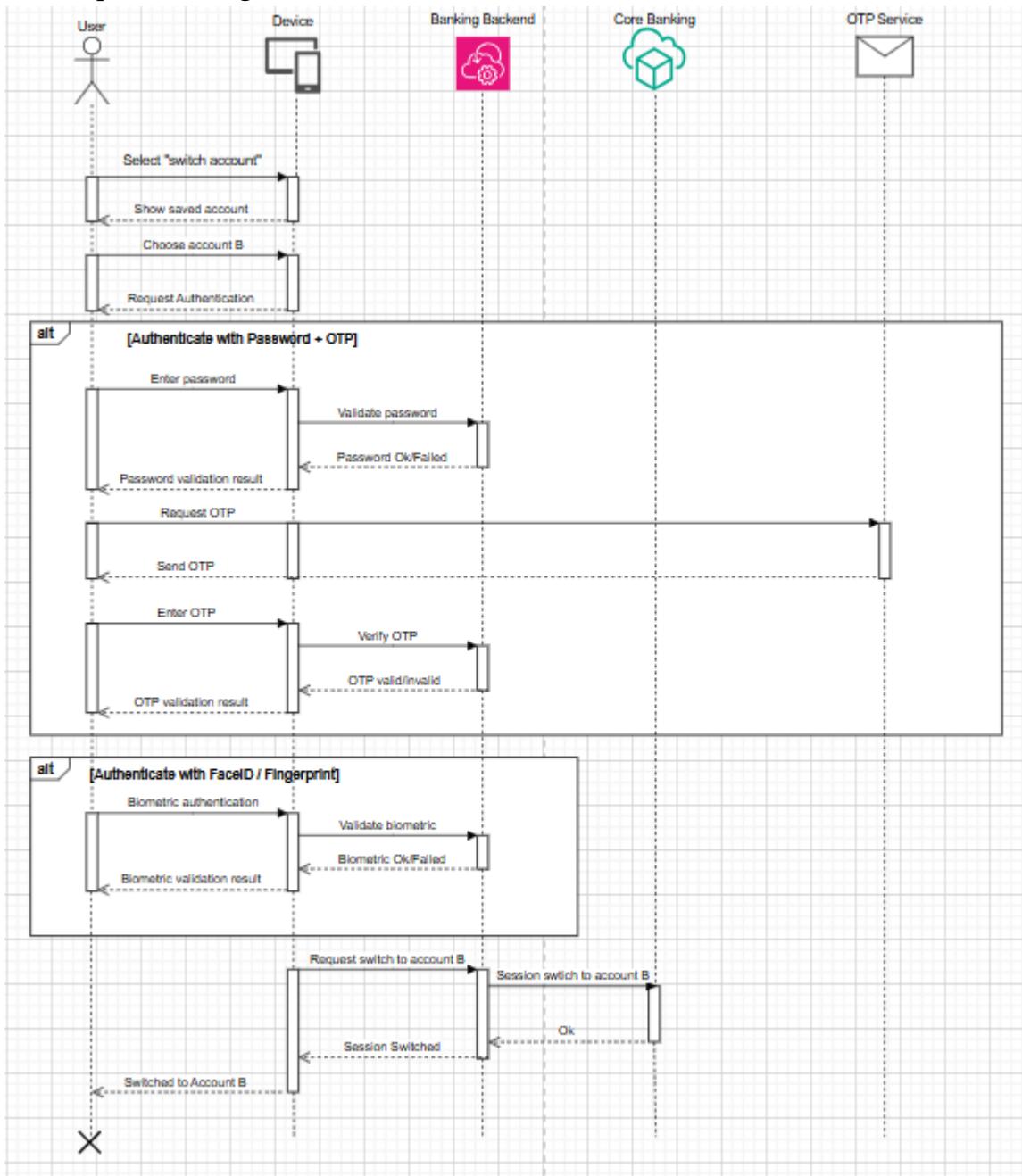
Step 7: The backend verifies the OTP and creates a valid session with the Core Banking system.

Step 8: The app notifies the user of successful login and displays the dashboard.

***Significance:**

This diagram shows the secure two-factor login flow, combining password verification and OTP validation to protect against unauthorized access.

4.3 Sequence Diagram (Switch Account)



***Title:** *Sequence Diagram – Switch Account*

***Description:**

Step 1: The user selects “Switch Account” → The app displays a list of saved accounts.

Step 2: The user selects Account B → The app requests authentication.

Step 3: If Password + OTP is chosen → flow of sending/entering OTP is triggered. If Biometric is chosen → The app sends biometric data for validation.

Step 4: The backend verifies and switches the session to Account B.

Step 5: The app notifies the user of success.

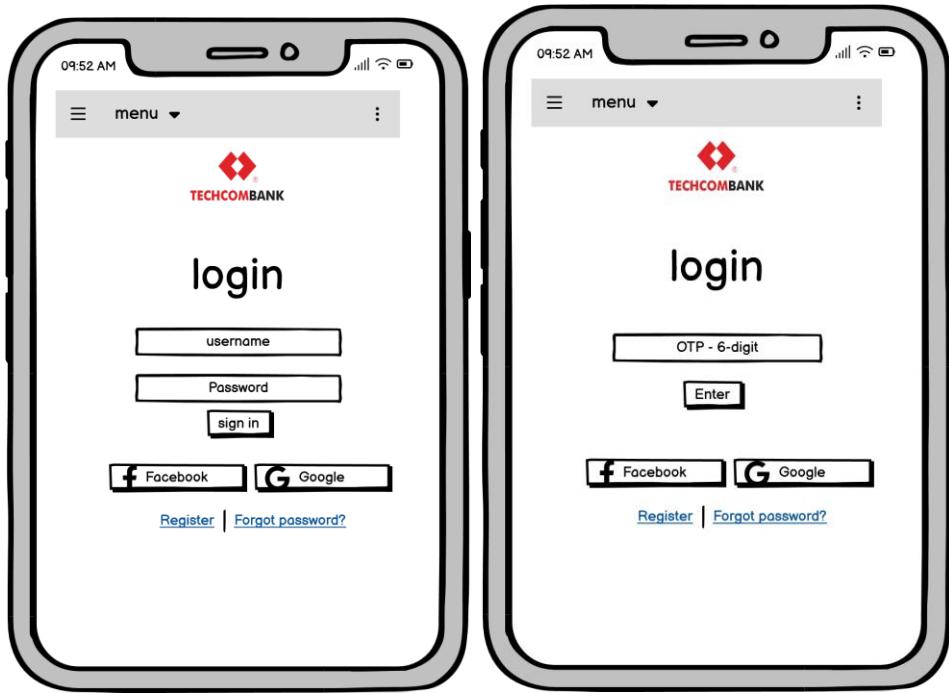
***Significance:** The diagram demonstrates the exact order of messages, activation bars, and reply messages, ensuring system design accuracy.

5. Design Process

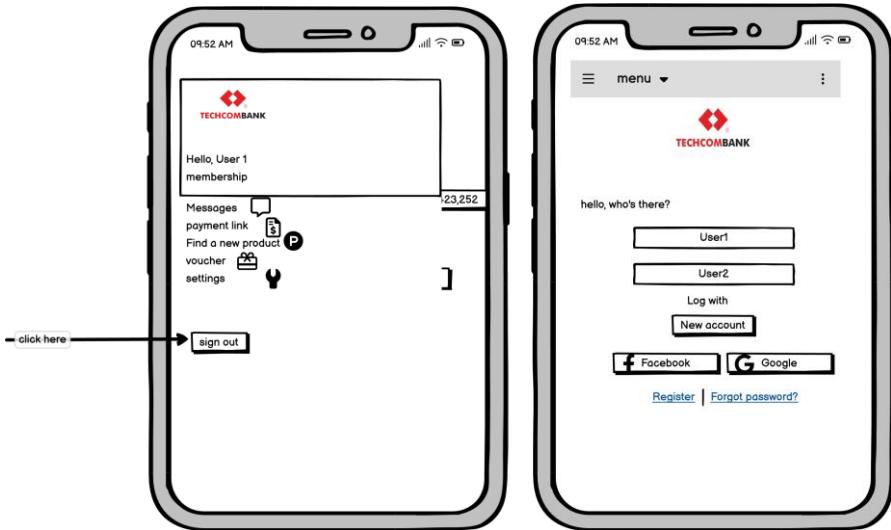
5.1 Wireframes (Balsamiq): 5 Main Screens

Show how to log in with password+OTP and switch account

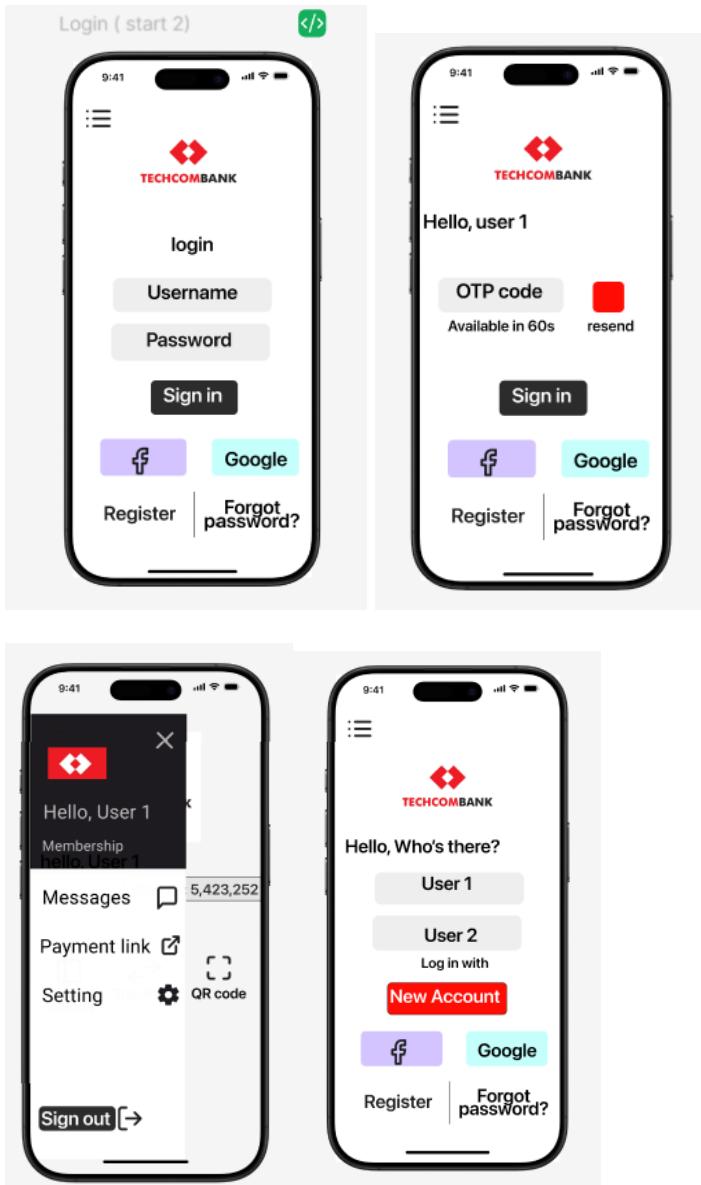
5.1.1 Login with password+OTP



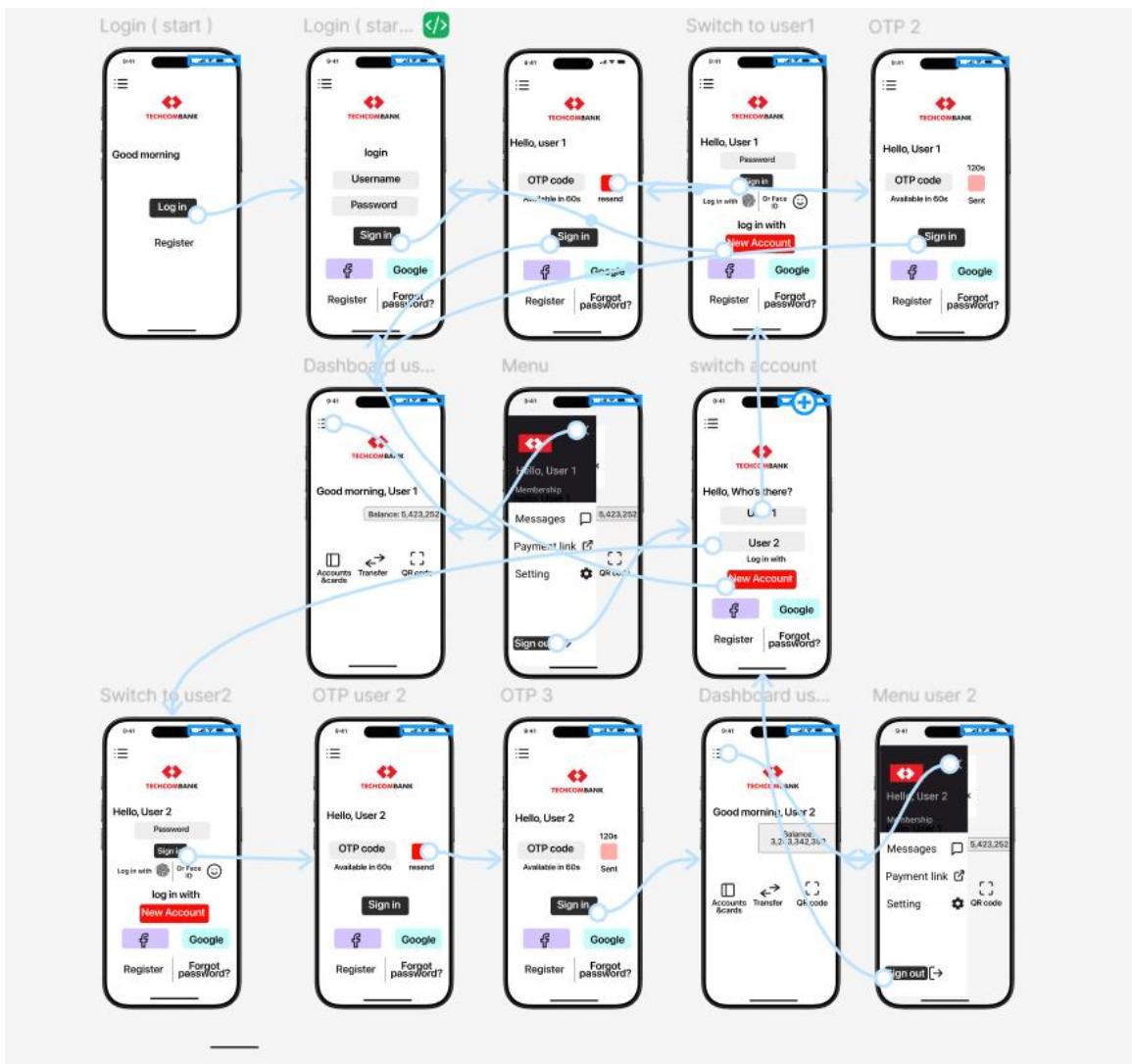
5.1.2 Switch account



5.2 Mockups (Figma): Main screens



5.3 Prototype (Figma): Interactive demo linking login → OTP → switch account.



LINK:

<https://www.figma.com/proto/zhUbVMzt4xlw4xpIuaXXh5/Techcombank-Online-Banking-v4.0?page-id=0%3A1&node-id=18-6796&p=f&viewport=726%2C552%2C0.2&t=0vbdK3Jx7gc7PgJq-1&scaling=min-zoom&content-scaling=fixed>

Or see in appendix below

6. Documentation

The Software Requirements Specification (SRS) was created to detail requirements for the login and switch account features. It included functional requirements, non-functional requirements, use case descriptions, and system constraints.

Key Highlights from SRS:

- Detailed functional requirements for authentication flows.
- Use case descriptions for login and switch account.
- Sequence diagrams for illustrating user interaction flows.
- Appendix with issues list and open points.

(See my full SRS version in Github link below)

7. Outcome & Reflection

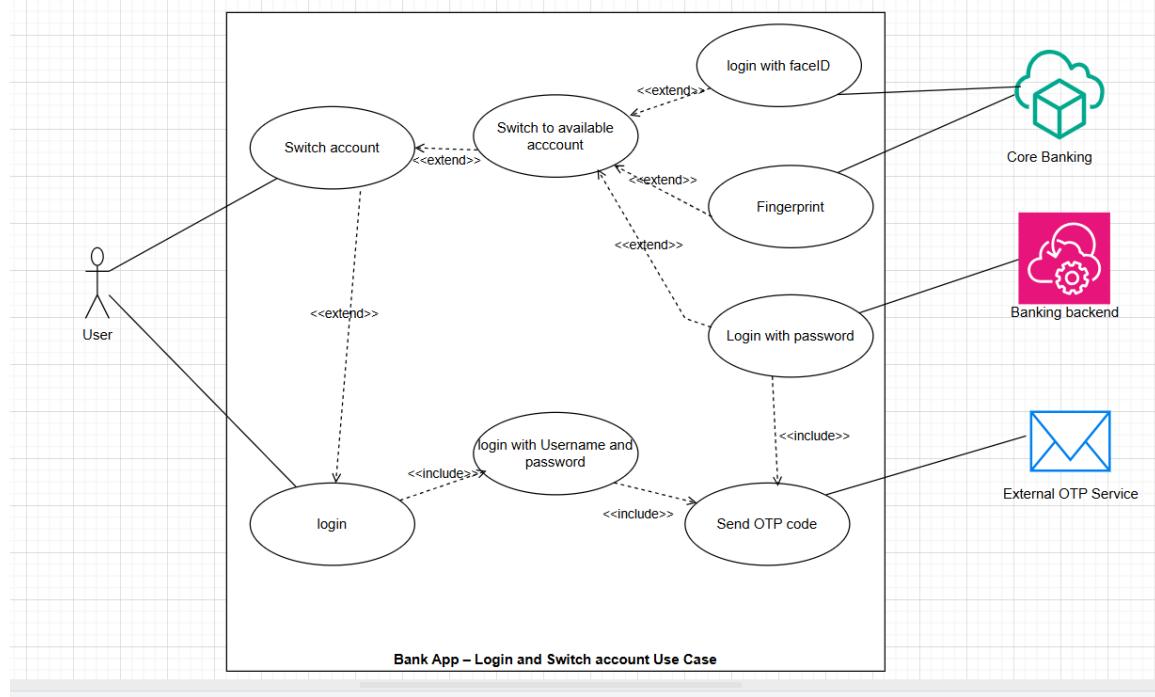
- Simplified login & account switching process.
- Applied full BA workflow: requirement analysis → UML → wireframing → prototyping.
- Gained hands-on experience with Figma, Balsamiq, UML diagrams, and SRS writing.
- Strengthened skills in documenting requirements and presenting a project as a case study.

Future Improvements:

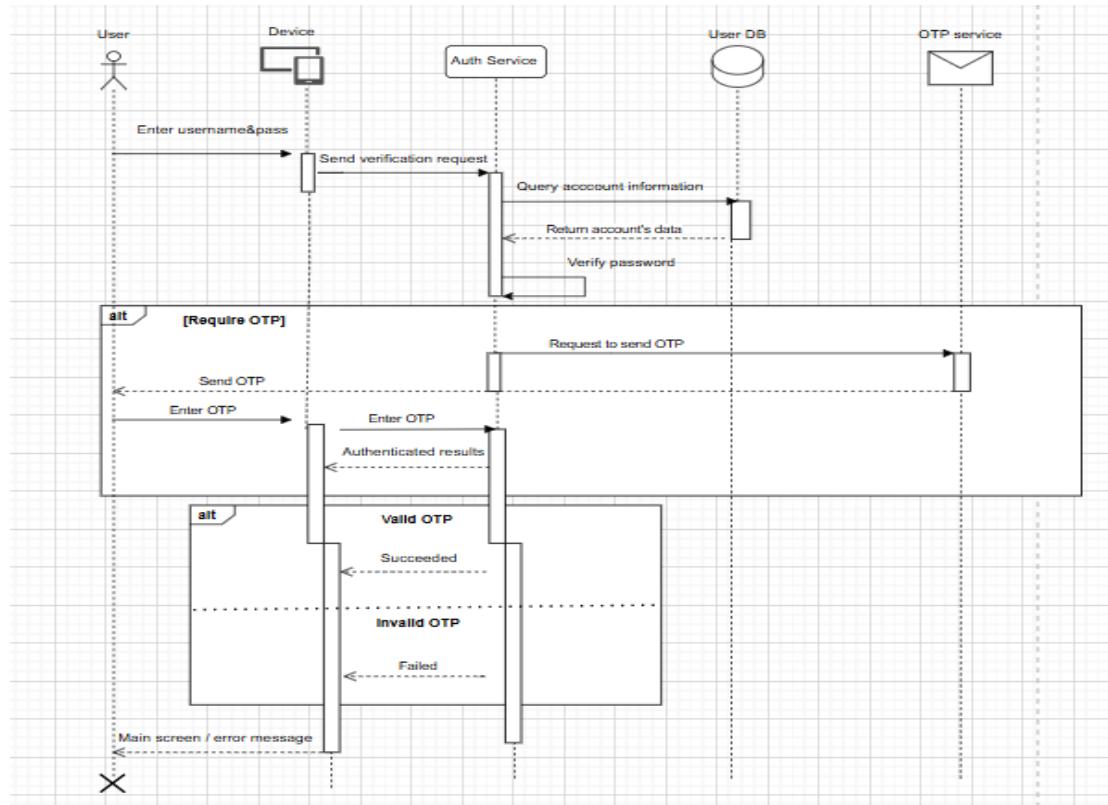
- Add transaction history screens.
- Support for scheduled payments.
- Expand to more advanced authentication methods

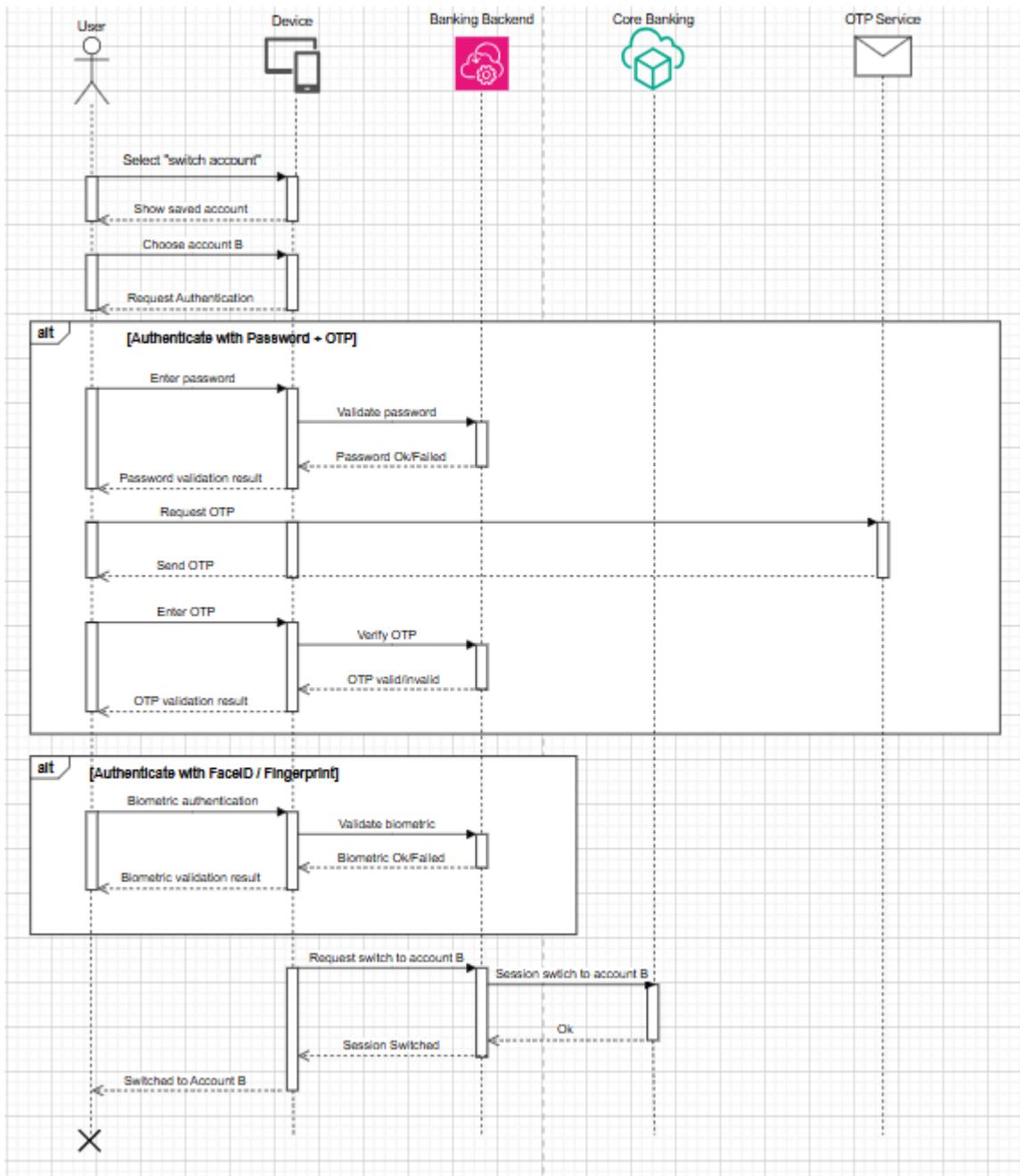
8. Appendices

Appendix A: Full Use Case Diagram

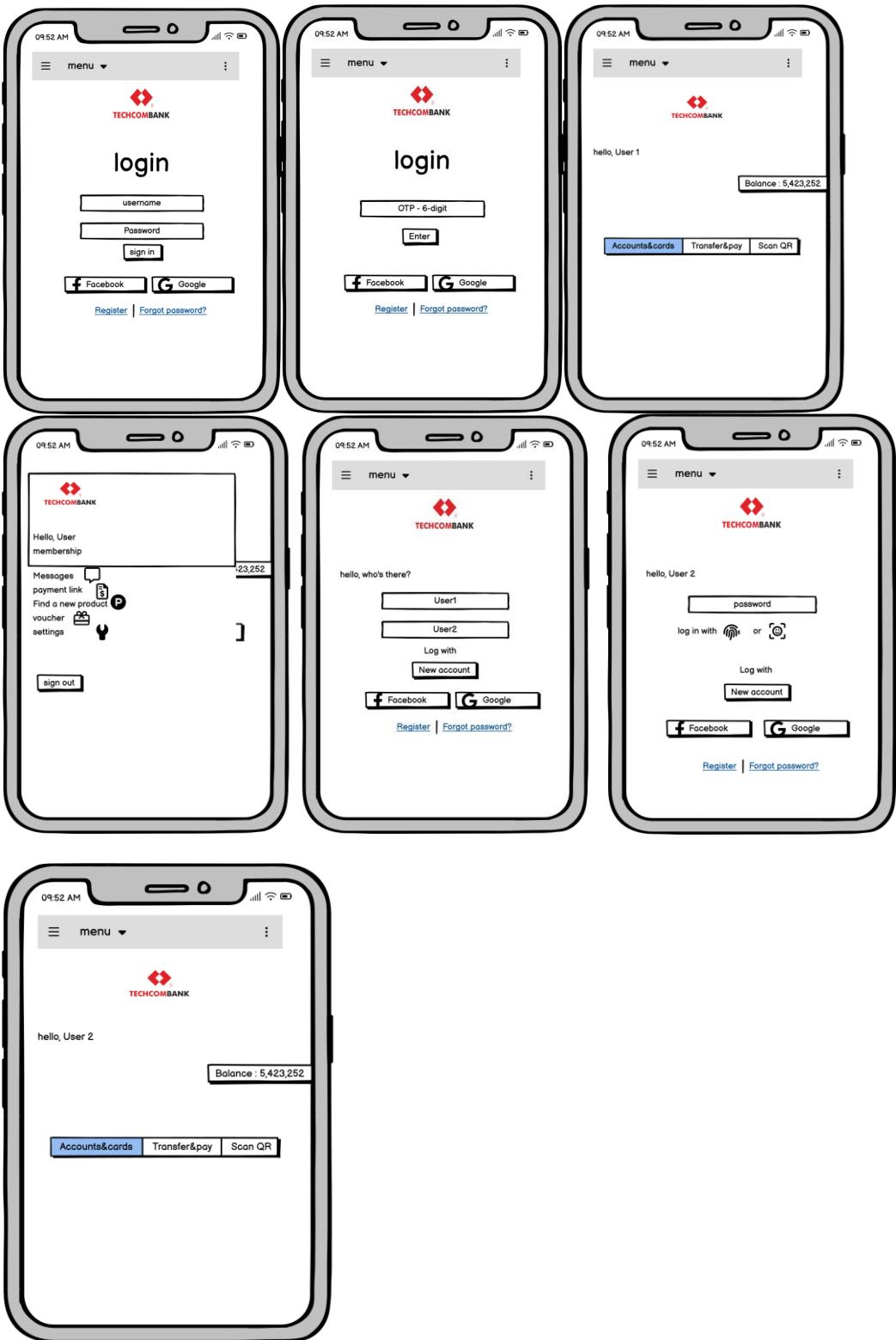


Appendix B: Sequence Diagrams

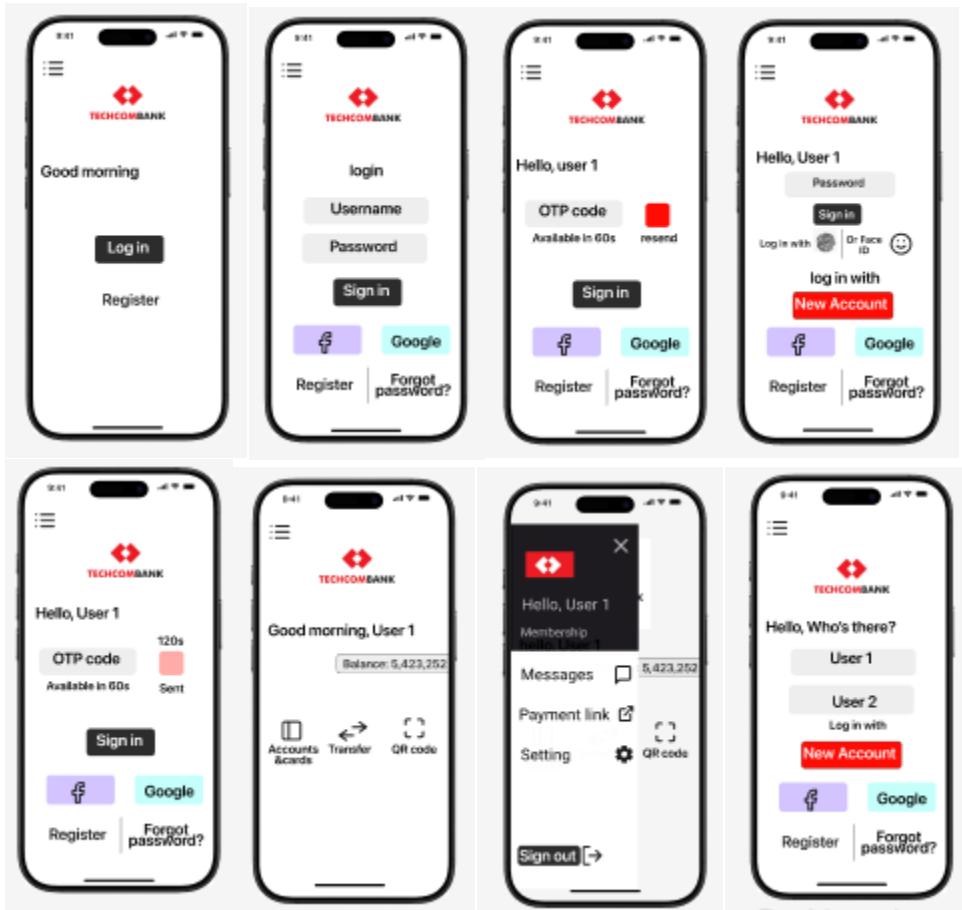


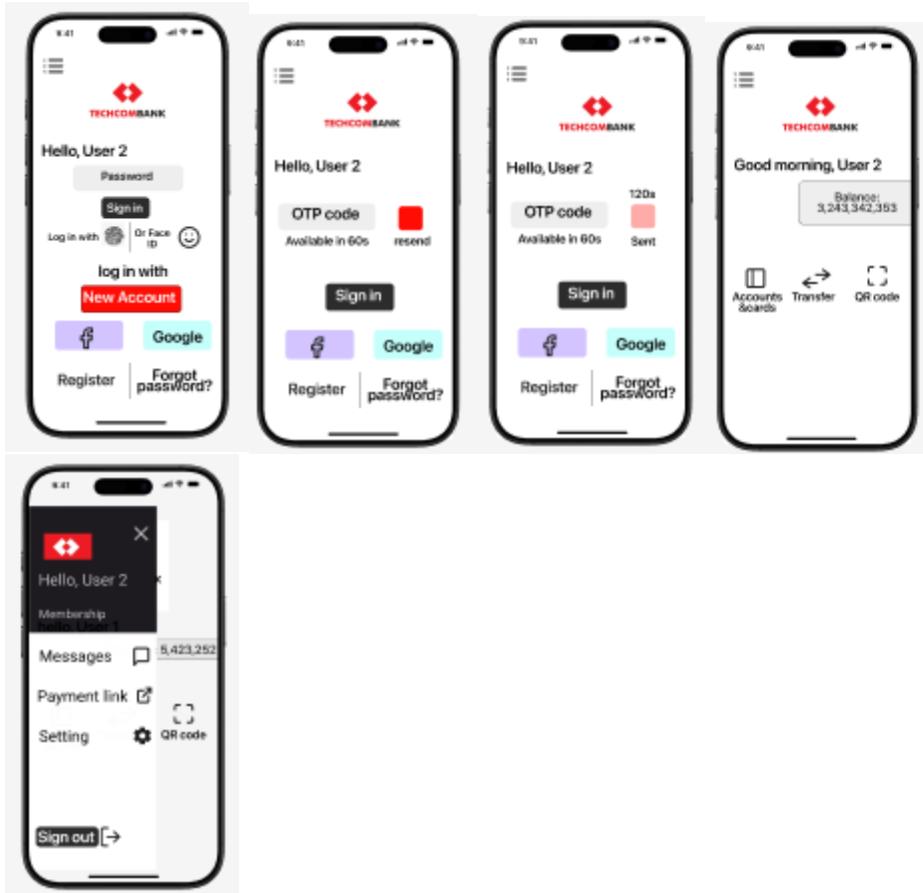


Appendix C: Wireframes



Appendix D: Mockups





Appendix E: Prototype Link

<https://www.figma.com/proto/zhUbVMzt4xlw4xpIuaXXh5/Techcombank-Online-Banking-v4.0?page-id=0%3A1&node-id=18-6796&p=f&viewport=726%2C552%2C0.2&t=0vbdK3Jx7gc7PgJq-1&scaling=min-zoom&content-scaling=fixed>

Appendix F: SRS Document Reference

Full SRS document available on Github link:

<https://github.com/hoagba73/Techcombank-Online-Banking>