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  
A diagram of a company

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\***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)  
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**\*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)  
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\***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**

5.1Wireframes (Balsamiq): 5 Main Screens

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

5.1.1 Login with password+OTP

A screen shot of a login screen

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5.1.2 Switch account

A screen shot of a cell phone

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5.2 Mockups (Figma): Main screens

A screen shot of a phone

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A screenshot of a cell phone

Description automatically generatedA cell phone with a screen and a login screen

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

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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  
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Appendix B: Sequence Diagrams  
A diagram of a software application

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Appendix C: Wireframes  
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Appendix D: Mockups  
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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