

Requirements for the Budget Buddy Application

A user-friendly mobile application designed for Android users to help manage personal finances effectively.

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1. Introduction

In this era of swift and convenient transactions, people can effortlessly conduct financial transactions anywhere, anytime. While this convenience enhances our lives, it also poses the risk of uncontrolled spending on unnecessary items. Numerous research highlights the positive impact of tracking and budgeting on fostering mindful spending habits. By keeping tabs on our expenditures, individuals gain better control over their financial resources. Budget Buddy offers the user a host of features to monitor income, expenses, and savings seamlessly. The user can establish budget goals, access detailed expense reports, and receive tailored financial tips, empowering them to make well-informed decisions about their finances. Designed with simplicity and intuitiveness in mind, the app caters to users of all levels of financial literacy.

In addition to fostering financial mindfulness, another significant advantage of maintaining control over our finances is the enhanced capacity to strategize for future financial goals. Whether saving for a dream vacation, a major purchase, or long-term investments, Budget Buddy serves as a valuable aid by visually presenting our progress in savings. Having a clear overview of our financial health equips us with the foresight needed to navigate our financial journey successfully.

This document outlines the fundamental requirements for Budget Buddy, our proposed application designed to help the user in personal finance management. Certain areas of these requirements may be preliminary, necessitating further refinement through consultations with key stakeholders to derive more detailed specifications for the system.

1.1. System Overview

The purpose of the system is to offer the user a convenient and efficient way of tracking and managing their income and expenses. It aims to simplify financial management and provide the user with insights into their spending patterns.

Upon creating an account, Budget Buddy offers a diverse range of features:

1. *Add Category*: The user can customize categories for their income or expenses.
2. *Add Account*: The application supports the creation and categorization of expenses or income in multiple accounts, for example, bank accounts, cash accounts, investment accounts, etc.
3. *Add Transaction*: The user can input new transactions, providing details such as name, date, amount, pick category and account.
4. *Manage Accounts*: The user can add, edit, and delete financial accounts.
5. *Categorize and Edit Transactions*: The user can assign categories to transactions and edit transactions as needed.
6. *Add and Edit Budget*: The user can create and update budgets to track their expenses, with the progress prominently displayed using budget progress.

7. *Set Up and Configure Accounts and Categories:* The user can customize their financial setup by setting up and configuring accounts and categories. This includes the option to delete existing accounts or categories.
8. *Insights and Analytics:* The application offers the user insights and analytics on their spending habits and overall financial health, providing the user with a comprehensive overview of their monetary transactions.
9. *Security:* The user can turn on biometric authentication when launching the app, ensuring confidentiality each time they access the app.

1.2. System Users

Three types of the user may make use of the Budget Buddy app:

1. *General User.* Budget Buddy serves as an indispensable tool for individuals seeking effective personal financial management. With features such as expense and income tracking, personalized budget goals, and insightful analytics, general users can gain a comprehensive understanding of their financial habits. The added security feature of biometric authentication ensures the confidentiality of their financial data, enhancing overall privacy.
2. *Entrepreneurs.* Budget Buddy proves essential for entrepreneurs, especially in startups and small businesses, and offers easy tracking of income and expenses, real-time financial insights, and effective budgeting for disciplined cash flow management. The app's comprehensive analytics aid strategic decision-making, while its multiple accounts management simplifies categorization across various business accounts.
3. *Small Business Owner.* For small business owners, Budget Buddy streamlines financial processes by allowing the management of various business accounts and detailed categorization of transactions. The app empowers business owners to create and edit budgets, facilitating effective financial planning. Comprehensive analytics provide valuable insights into business spending patterns, aiding in informed decision-making.

1.3. System Usability

Budget Buddy, designed for the general user and small business owners, places a strong emphasis on system usability to ensure general user acceptance and effectiveness. The app boasts a user-friendly interface, ensuring ease of use for individuals with varying levels of technical expertise. For the general user, the interface is intuitive, promoting quick learning and minimal effort during financial management. Small business owners benefit from streamlined processes, clear categorization, and accurate analysis, contributing to efficient financial operations. The commitment to a user-friendly design positions Budget Buddy as a valuable tool for enhancing financial literacy and empowering the user, regardless of their technical proficiency, to manage their finances with ease.

1.4. Operational Constraints

The following operational constraints shall apply to the Budget Buddy app:

1. Budget Buddy is designed to run on smartphones with the Android operating system. The user must ensure that their Android devices meet the minimum requirements for compatibility and receive regular updates to maintain optimal performance.
2. Budget Buddy is equipped with an offline mode, allowing the user to manage their finances without a continuous internet connection. While offline, the user can add, edit, and view transactions, as well as perform other essential functions.
3. The security feature of biometric authentication is dependent on the capabilities of user's devices. The availability of fingerprint authentication on the user's device is necessary for utilizing this security measure. If not available, the authentication will use the device registered PIN instead.
4. The user is encouraged to keep the Budget Buddy app updated to the latest version to ensure access to new features, bug fixes, and security enhancements. Failure to update the application may result in reduced functionality or security vulnerabilities.
5. Budget Buddy provides insights and tools, but the user must exercise judgment and diligence in their financial management practices. The app does not replace the user's responsibility for making informed financial decisions.

2. System Requirements

Budget Buddy is a user-friendly mobile application that helps the user manage their personal finances effectively. The app allows the user to track their income, expenses, and budget effortlessly, providing insights into their financial health. The user can set budget goals, view detailed expense and income analysis to make informed decisions. The app is designed to be simple and intuitive, making it suitable for the user of all financial literacy levels. The following are Budget Buddy's general requirements that apply to the system as a whole:

1. The app shall help the user manage their personal finances effectively.
2. The user shall track their income, expenses, and budgets effortlessly, providing insights to the user's financial matters.
3. Budget Buddy shall have the ability to set budget goals, view detailed expense and income analysis.
4. Budget Buddy shall be suitable for the user of all financial literacy levels.
5. The financial management application shall ensure a secure and reliable user authentication mechanism.
6. Budget Buddy shall not store or manipulate the user data and adhere to effective privacy policies.

2.1. Availability Requirements

- 2.1.1. Budget Buddy shall strive to achieve a minimum of 99.9% system availability, ensuring that the user can access the application almost continuously without significant downtime.
- 2.1.2. The user shall have 24/7 access to their financial data, allowing them to manage their personal finances at any time that suits their convenience.

2.2. Response Requirements

Response requirements focus on ensuring that the Budget Buddy application responds promptly and efficiently to the user interactions and system events.

- 2.2.1. The Budget Buddy the user interface shall respond to the user interactions within 1 second, providing a seamless and responsive experience for the user navigating through the application.
- 2.2.2. Detailed expense and income reports shall load quickly, with a maximum response time of 1 second. This ensures that the user can access and analyze their financial data without experiencing delays.
- 2.2.3. The user authentication mechanism shall respond swiftly, allowing the user to log in securely within 2 seconds. This ensures a seamless and efficient login experience for the user.

3. User Requirements

3.1. General User Requirements

- 3.1.1. The user should be able to create, update, and manage their financial records, including income, expenses, and budget progress.
- 3.1.2. The user should have the ability to create, edit, and delete budget plans to track and control their spending. The system shall allow the user to categorize and allocate funds for various expenses.
- 3.1.3. The user must be able to input and edit financial transactions, providing details such as date and amount. The system shall support categorization of transactions for better financial analysis.
- 3.1.4. The user should have the capability to add, edit, and delete financial accounts, including bank accounts, cash accounts, and investment accounts.
- 3.1.5. The system shall provide insights and analytics on spending habits and overall financial health. The user should have access to comprehensive statistics on income, expenses, and budgets progress.
- 3.1.6. The user should have the option to enable biometric authentication for added confidentiality when accessing the app.

3.2. Entrepreneur Requirements

- 3.2.1. Entrepreneurs should be able to track business income and expenses. The system shall support multiple business accounts for accurate financial management.
- 3.2.2. Entrepreneurs should have the capability to create, edit, and manage budgets for their business operations. The system shall provide insights into business spending patterns.
- 3.2.3. The system shall offer real-time financial insights to aid in strategic decision-making for business operations. Entrepreneurs should have access to statistics on income and expenses.
- 3.2.4. Non-specific requirements are the same with general users.

3.3. Small Business Owner Requirements

- 3.3.1. Small business owners should be able to manage various business accounts and categorize transactions for streamlined financial processes. The system shall facilitate easy creation and editing of budgets for effective financial planning.
- 3.3.2. The system shall provide comprehensive analytics on business spending patterns, enabling small business owners to make informed decisions. The user should have access to statistics on business income, expenses, and financial health.
- 3.3.3. Non-specific requirements are the same with general users.

4. Safety Requirements

Safety requirements for a financial management application like Budget Buddy primarily focus on ensuring the security and privacy of the user data.

- 4.1 Budget Buddy shall implement secure user authentication mechanisms, which is biometric authentication, to prevent unauthorized access to the user accounts.
- 4.2 Budget Buddy shall comply with relevant data protection regulations, such as EU's General Data Protection Regulation (GDPR) and Indonesia's Personal Data Protection law, ensuring that the user data is processed lawfully and transparently. The application shall provide features for the user to manage their data preferences.

5. Security and Privacy Requirements

Security and Privacy assume significant importance in Budget Buddy's non-functional landscape. Application to safeguarding the user data and transactions is reflected in the embedded security features meticulously integrated into the app upon its initiation by the user. Budget Buddy prioritizes the deliberate prioritization of the user's privacy, exemplified through the provision of customizable settings affording the user the latitude to tailor their experience in accordance with individual privacy opportunities.

5.1. UU PDP Law

UU PDP, or Undang-Undang Perlindungan Data Pribadi (Personal Data Protection Law), is Indonesia's comprehensive regulation governing the processing and protection of personal data. In compliance with UU PDP, Budget Buddy meticulously safeguards the user privacy by adopting stringent data security measures, including secure authentication processes, encryption, and adherence to Android's data protect guidelines. The application prioritizes transparency, providing the user with control over their data through explicit consent mechanisms, and clear reporting, ensuring that Budget Buddy aligns with the principles outlined in UU PDP for responsible and secure handling of personal financial information.

- 5.1.1. Data Security and Processing: The user data is not collected and processed solely for providing financial management services, complying with Indonesia's UU PDP regulations.
- 5.1.2. Authentication and Privacy: Secure the user authentication through biometric is employed, ensuring protection of the user data and restricting access to sensitive financial information.
- 5.1.3. Transparency and Consent: The user is informed and consent to the processing of financial data for Budget Buddy's intended purposes.
- 5.1.4. Offline Functionality and Sync: Budget Buddy allows offline input of transactions, securely storing data on the device, which syncs seamlessly upon reconnection to the internet.
- 5.1.5. Transparent Reporting: The app generates clear financial reports with intuitive charts, providing the user insights into income, expenses, and savings.
- 5.1.6. Cross-Device Compatibility: Budget Buddy is designed to work seamlessly across various Android devices with different specifications and resolutions.
- 5.1.7. Continuous Compliance Monitoring: Commitment to continuous monitoring and updates to ensure ongoing compliance with Indonesia's UU PDP and relevant data protection regulations.

Should the event of any system requirement here being in conflict with the UU PDP laws, the conflict must be resolved so that the legal provisions are maintained.

5.2. Security Requirement

The application's security measures are fundamental to safeguarding the user data and transactions. To achieve this, embedded security features are incorporated directly within the app upon download. This strategic implementation ensures that the app's security is not contingent on external factors such as Wi-Fi or online authentication. Furthermore, Budget Buddy features a Biometric System, which is an advanced security mechanism utilizing unique biological characteristics such as fingerprints, facial recognition, or iris scans to authenticate and grant access to the application, enhancing overall the user data and transaction protection by providing a personalized and resilient layer of defense that is independent of external factors like Wi-Fi connectivity or online authentication, thereby fortifying the application's security measures and ensuring a robust safeguarding of the user information and financial transactions from potential threats or unauthorized access.

- 5.2.1. Budget Buddy shall incorporate embedded security features directly within the app upon download.

- 5.2.2. Budget Buddy's security features shall ensure that the app's security is not contingent on external factors such as Wi-Fi or online authentication
- 5.2.3. Budget Buddy shall rely on embedded security features to establish a biometric system.
- 5.2.4. The design choice of relying on embedded security features shall enhance the app's resilience against potential security threats.
- 5.2.5. Budget Buddy's Biometric System should recognize the user's biometrics upon input.
- 5.2.6. The app shall prioritize the user safety by eliminating requirements such as entering credentials or external authentication methods.
- 5.2.7. The elimination of certain authentication requirements shall simplify the user experience without compromising security.
- 5.2.8. By minimizing points of entry, Budget Buddy shall effectively reduce potential vulnerabilities.
- 5.2.9. The fortification of the app's security posture shall allow the user to engage with Budget Buddy confidently.

5.3. Privacy Requirement

Budget Buddy places a high emphasis on the user's privacy, offering a level of customization through in-phone settings that empowers the user to tailor their privacy preferences. This unique feature sets Budget Buddy apart, allowing the user to modify privacy settings directly within the app. By doing so, the user can align the app's privacy protocols with their individual comfort levels and requirements. This flexibility ensures that the user maintains control over their personal information, striking a balance between personalized usage and stringent privacy protection.

In alignment with its commitment to the user's privacy, Budget Buddy adopts a no-email-login policy. By eliminating the need for email logins or external authentication, the app mitigates potential risks associated with unauthorized access or data breaches. This user-friendly approach not only simplifies the onboarding process but also reinforces the user's confidence in the app's privacy measures. Budget Buddy's dedication to the user privacy extends beyond conventional practices, offering a tailored and secure experience that respects the user preferences while upholding the highest standards of privacy.

- 5.3.1. Budget Buddy shall place a high emphasis on the user privacy
- 5.3.2. The app shall encourage the user to tailor their privacy preferences
- 5.3.3. In commitment to the user privacy, Budget Buddy shall adopt a no-credential-authentication policy
- 5.3.4. The user shall have the capability to align the app's privacy protocols with their individual comfort levels and requirements

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- 5.3.5. The app shall mitigate potential risks associated with unauthorized access or data breaches by eliminating the need for credential logins or external authentication
- 5.3.6. Budget Buddy shall follow a user-friendly approach, simplifying the onboarding process and reinforcing the user confidence in the app's privacy measures
- 5.3.7. The dedication to the user privacy shall extend beyond conventional practices, offering a tailored and secure experience that respects the user preferences

6. System Design

6.1. Use Case Diagram

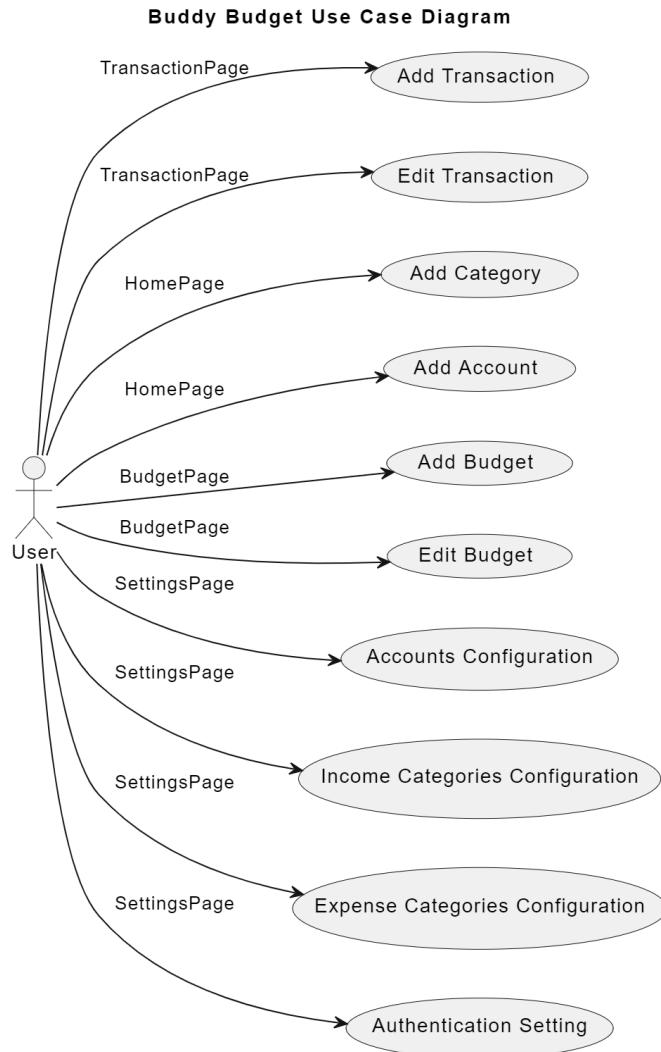


Figure 1: Budget Buddy Use Case Diagram

6.1.1 Add Transaction

Use Case: Add Transaction
ID: BUB001
Brief Description: The system allows the user to add a new financial transaction
Actor: The user

Precondition:
Main Flow: a. The use case starts when the user opens the application b. The user stays on the home page or selects the transaction page c. The user taps the plus (+) button d. The user enters transaction details e. The user confirms by tapping the “Add” button
Post Condition: Transaction is added to the user's financial records and can be viewed and edited later
Alternative Flow: The user cancels the transaction at any point and makes any corrections before confirmation

6.1.2 Edit Transaction

Use Case: Edit Transaction
ID: BUB002
Brief Description: The user can edit an existing financial transaction
Actor: The user
Precondition: The user has transactions recorded
Main Flow: a. The use case starts when the user chooses a transaction to edit b. The system displays the transaction details c. The user makes changes to the transaction details d. The user confirms by tapping the “Save” button
Post Condition: Transaction details are updated in the user's transaction list
Alternative Flow: The user cancels the edit operation to revert the transaction details.

6.1.3 Add Category

Use Case: Add Category
ID: BUB003
Brief Description: A user can add a new spending category to their transaction
Actor: The user

Precondition:
Main Flow: a. The use case starts when the user opens the application b. The app shows the home page c. The user taps on the “New Category” button d. The user enters the category details e. The user confirms by tapping the “Add” button
Post Condition: A new category is added to the user’s spending categories list
Alternative Flow: The user can cancel the process at any point

6.1.4 Add Account

Use Case: Add Account
ID: BUB004
Brief Description: A user can add a new financial account
Actor: The user
Precondition:
Main Flow: a. The use case starts when the user opens the application b. The app shows the home page c. The user taps on the “New Account” button d. The user enters the account details e. The user confirms by tapping the “Add” button
Post Condition: A new account is added to the user’s spending categories list. The user can track transactions and balance of the selected account.
Alternative Flow: The user can cancel the process at any point

6.1.5 Add Budget

Use Case: Add Budget
ID: BUB005
Brief Description: A user can create a new budget

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Actor: The user
Precondition:
Main Flow: <ol style="list-style-type: none">The use case starts when the the user opens the applicationThe app shows the budget pageThe the user taps on the “Add New Budget” buttonThe the user enters the budget detailsThe the user confirms by tapping the “Add” button
Post Condition: A new budget is added to the user’s budget list. The user can track their budget balance.
Alternative Flow: The the user can cancel the process at any point

6.1.6 Edit Budget

Use Case: Edit Budget
ID: BUB006
Brief Description: A the user can edit an existing budget
Actor: The user
Precondition: The the user has budgets recorded
Main Flow: <ol style="list-style-type: none">The use case starts when the the user chooses a budget to editThe system displays the selected budget detailsThe the user makes changes to the budget detailsThe the user confirms by tapping the “Save” button
Post Condition: Budget details are updated in the user’s budget list.
Alternative Flow: The the user can cancel the process at any point

6.1.7 Accounts Configuration

Use Case: Accounts Configuration
ID: BUB007
Brief Description: The the user can configure the accounts

Actor: The user
Precondition: The the user has accounts recorded
Main Flow: <ul style="list-style-type: none">a. The use case starts when the the user opens the settings pageb. The the user chooses the configure accountsc. The the user can delete specific accounts
Post Condition: The selected account is deleted and it reflects to the system
Alternative Flow: The user did not delete any accounts.

6.1.8 Expense Categories Configuration

Use Case: Expense Categories Configuration
ID: BUB008
Brief Description: The the user can configure the expense categories
Actor: The user
Precondition: The the user has expense categories recorded
Main Flow: <ul style="list-style-type: none">d. The use case starts when the the user opens the settings pagee. The the user chooses the configure expense categoriesf. The the user can delete specific expense categories
Post Condition: The selected expense category is deleted and it reflects to the system
Alternative Flow: The the user did not delete any expense categories.

6.1.9 Income Categories Configuration

Use Case: Income Categories Configuration
ID: BUB009
Brief Description: The the user can configure the income categories
Actor: The user
Precondition: The the user has income categories recorded

Main Flow:
g. The use case starts when the user opens the settings page
h. The user chooses the configure income categories
i. The user can delete specific income categories
Post Condition: The selected income category is deleted and it reflects to the system
Alternative Flow: The user did not delete any income categories

6.1.10 Authentication Setting

Use Case: Authentication Setting
ID: BUB010
Brief Description: The user can turn on biometric authentication for the application
Actor: The user
Precondition:
Main Flow:
e. The use case starts when the user opens the settings page
f. The system displays the biometrics setting
g. The user taps on the turn-on button
Post Condition: The app authentication is turned on
Alternative Flow:

6.2. Sequence Diagram

6.2.1. Add Transaction Sequence

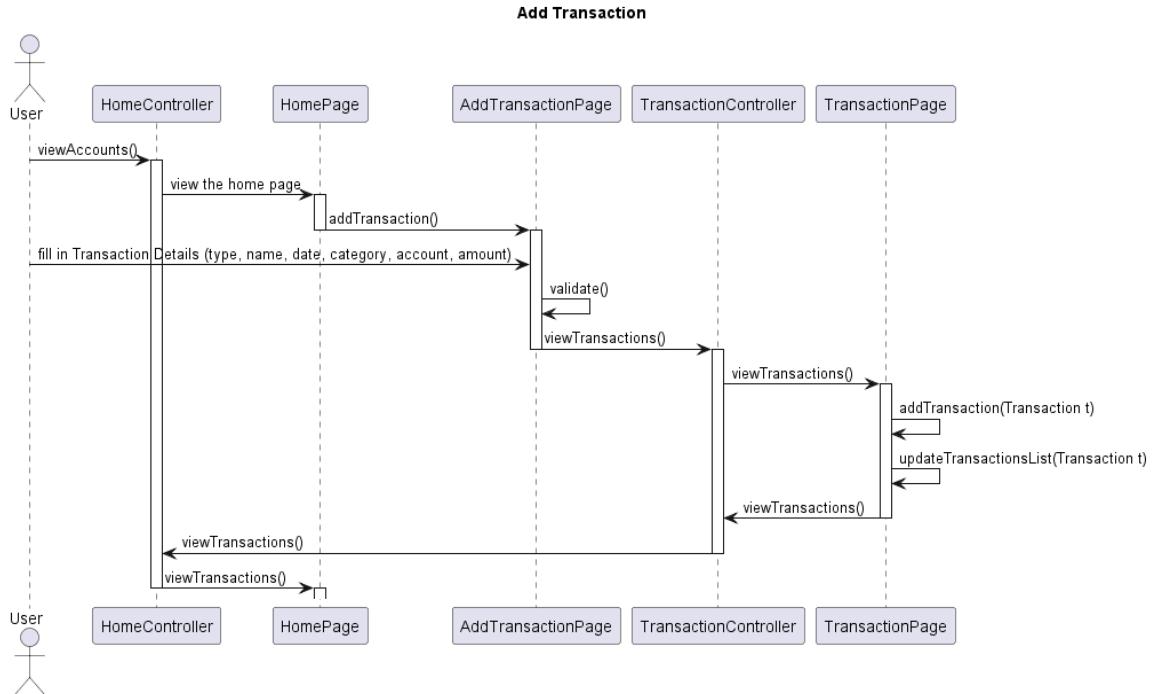


Figure 2: Add Transaction Sequence Diagram

6.2.2. Edit Transaction

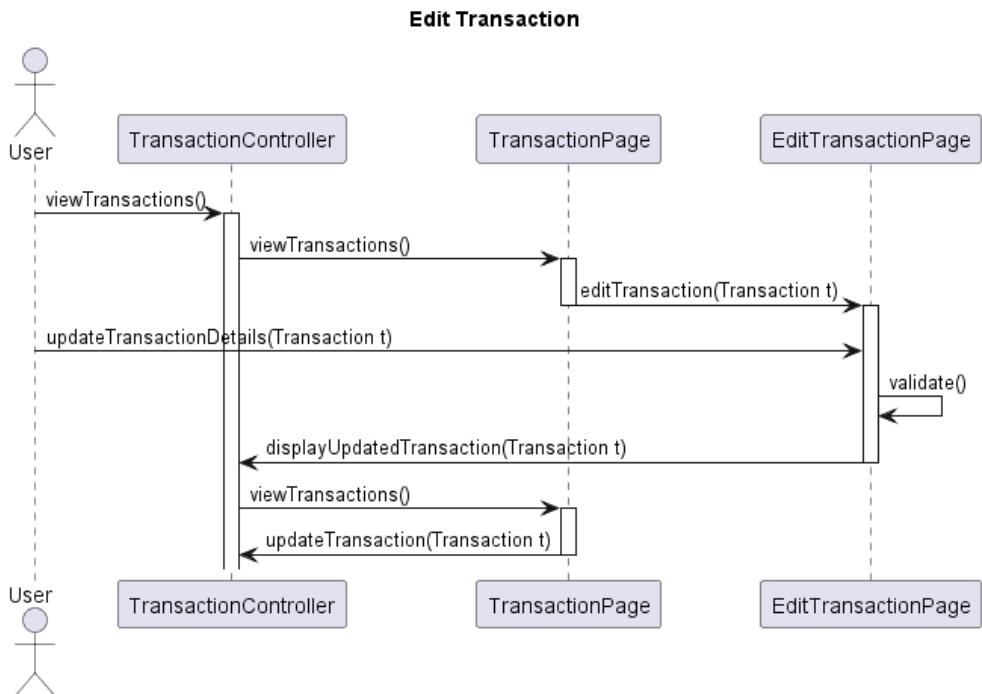


Figure 3: Edit Transaction Sequence Diagram

6.2.3. Add Category

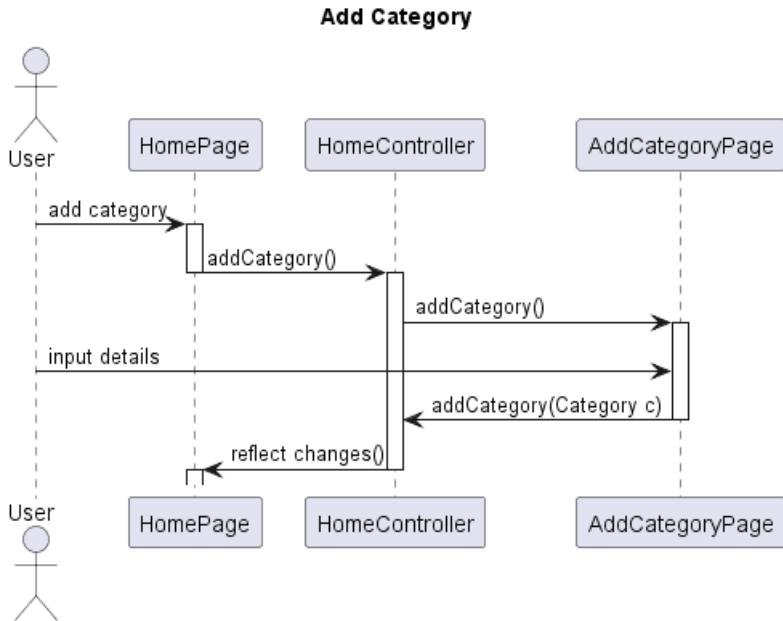


Figure 4: Add Category Sequence Diagram

6.2.4. Add Account

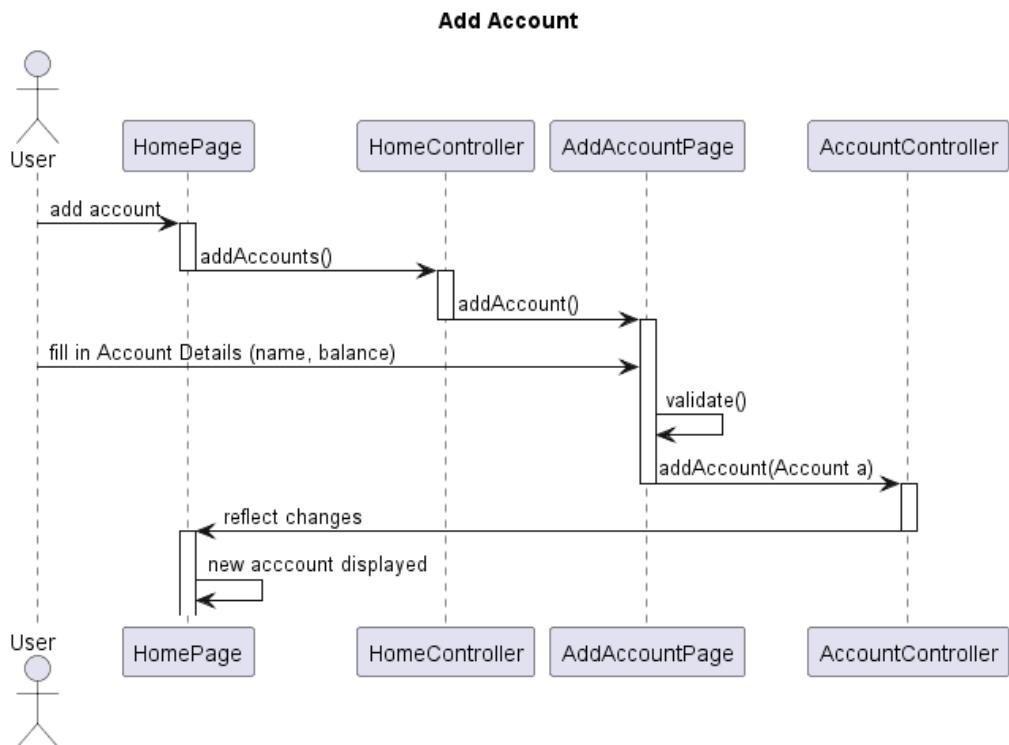


Figure 5: Add Account Sequence Diagram

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6.2.5. Add Budget

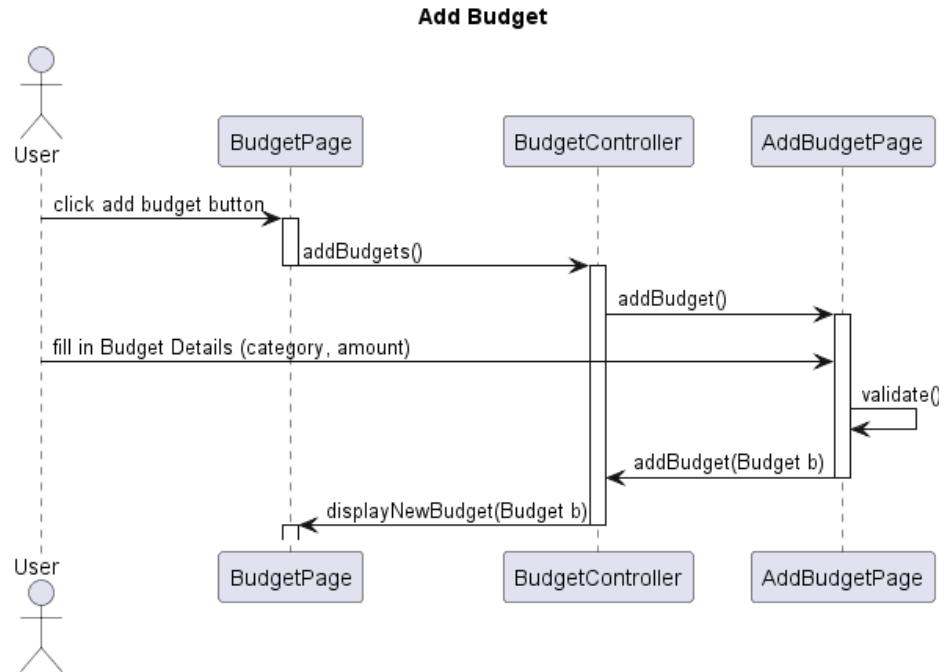


Figure 6: Add Budget Sequence Diagram

6.2.6. Edit Budget

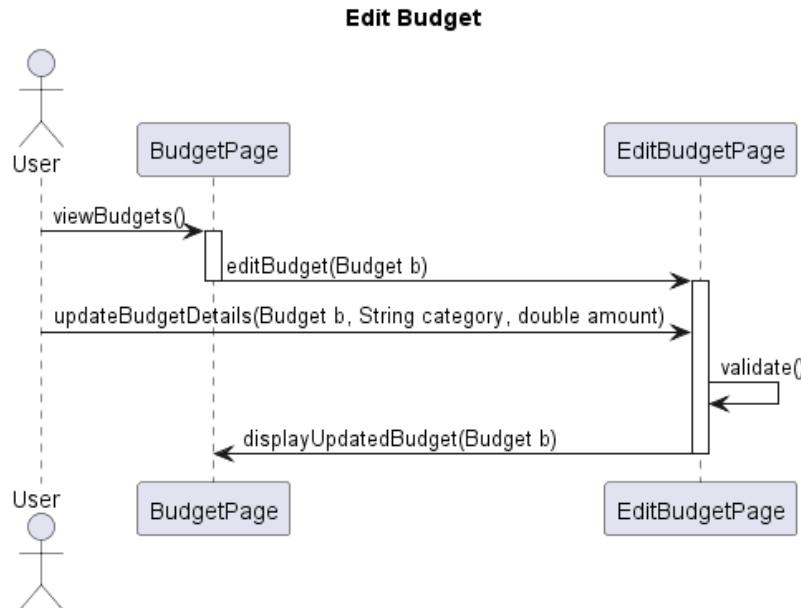


Figure 7: Edit Budget Sequence Diagram

6.2.7. Accounts Configuration

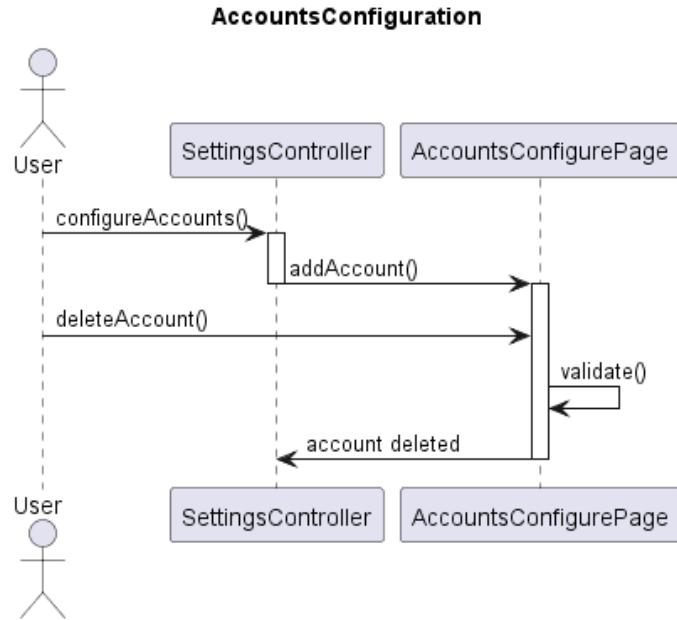


Figure 8: Accounts Configuration Sequence Diagram

6.2.8. Income Categories Configuration

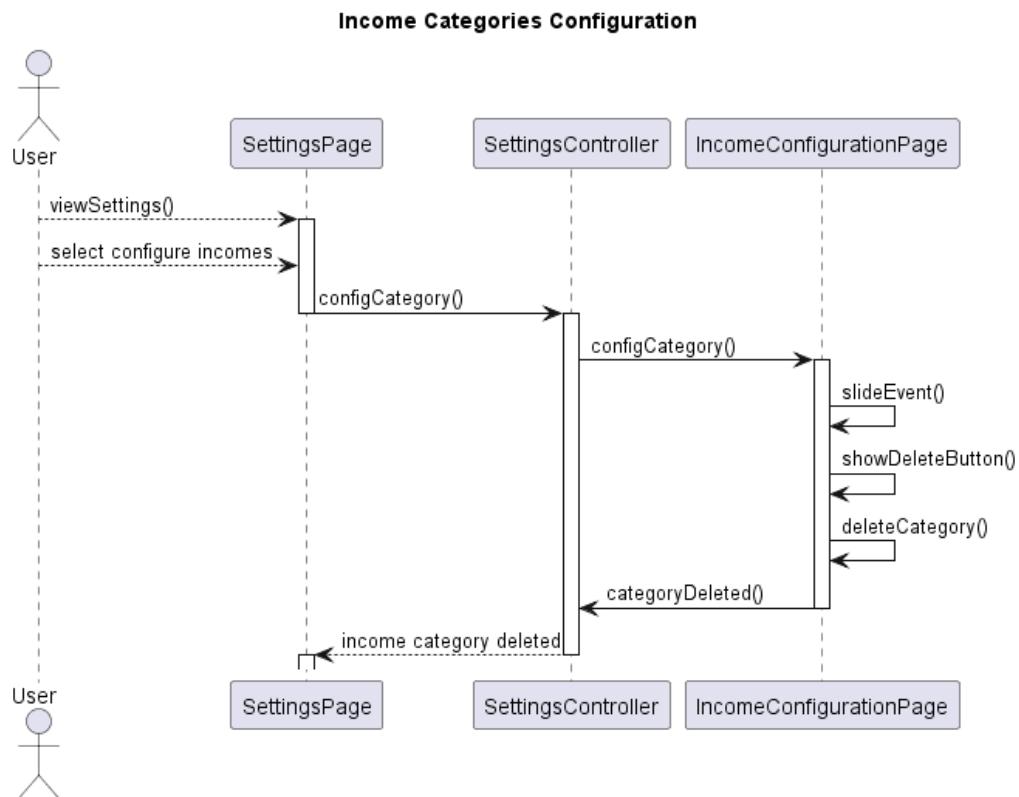


Figure 9: Income Categories Configuration Sequence Diagram

6.2.9. Expense Categories Configuration

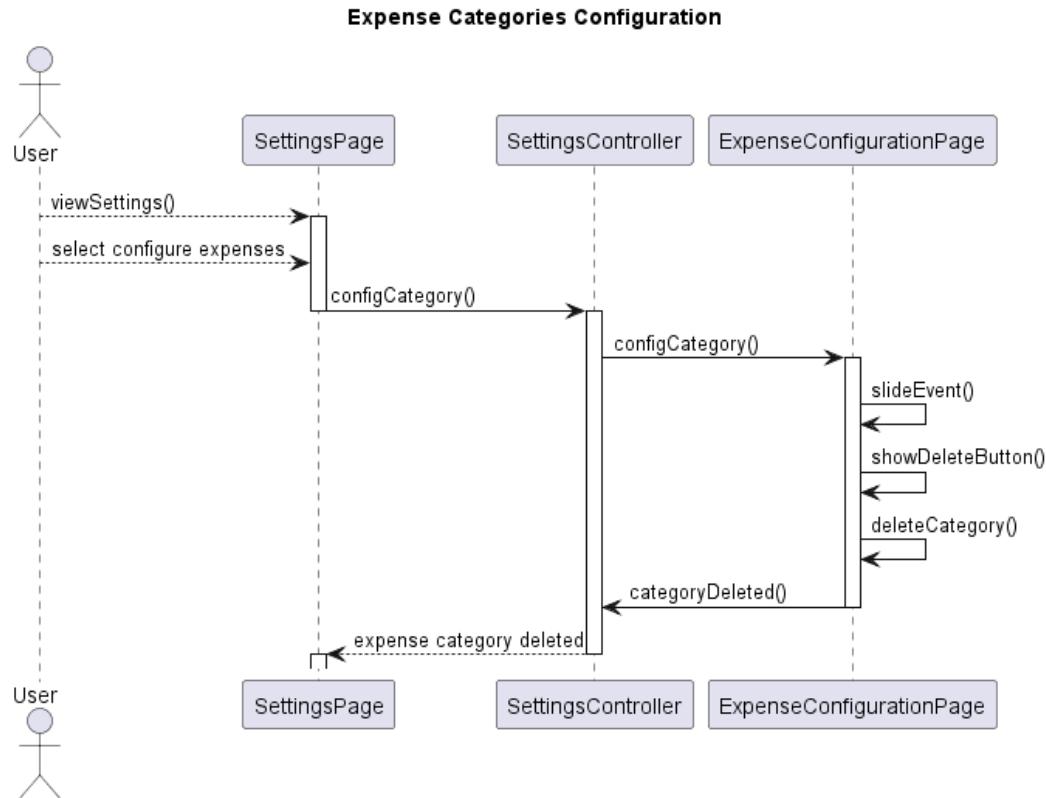


Figure 10: Expense Categories Configuration Sequence Diagram

6.2.10. Authentication Setting

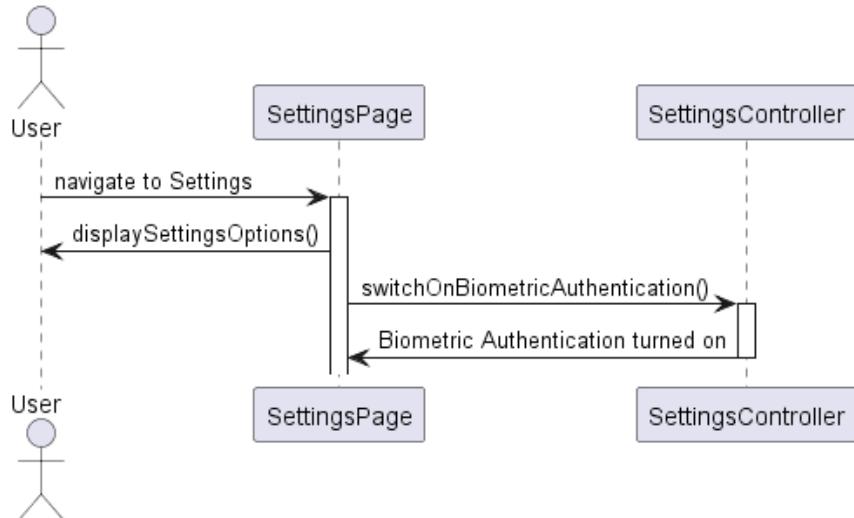


Figure 11: Authentication Setting Sequence Diagram

6.3. Class Diagram

Budget Buddy Class Diagram

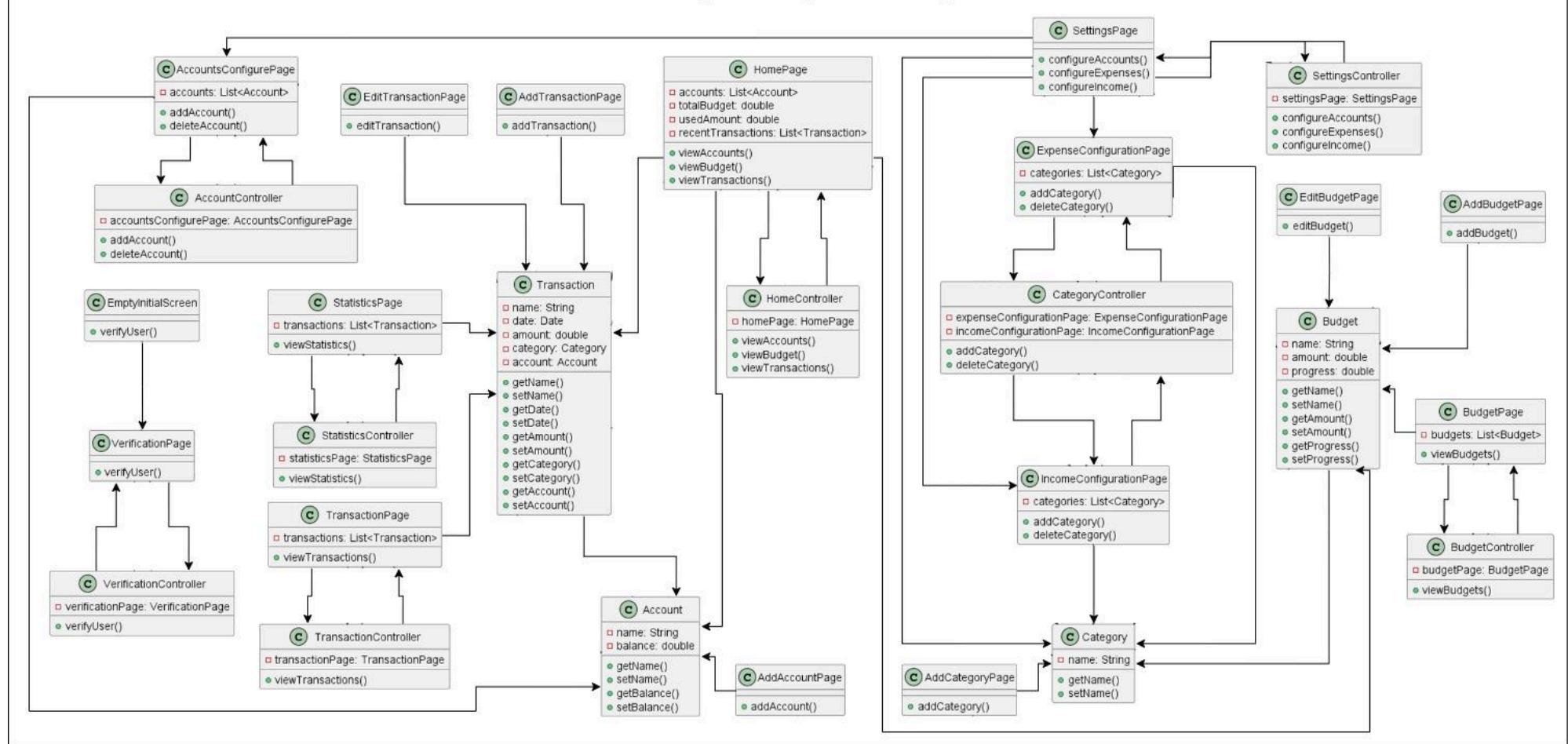


Figure 12: Budget Buddy Class Diagram

6.4. Software Architecture (MVC Pattern)

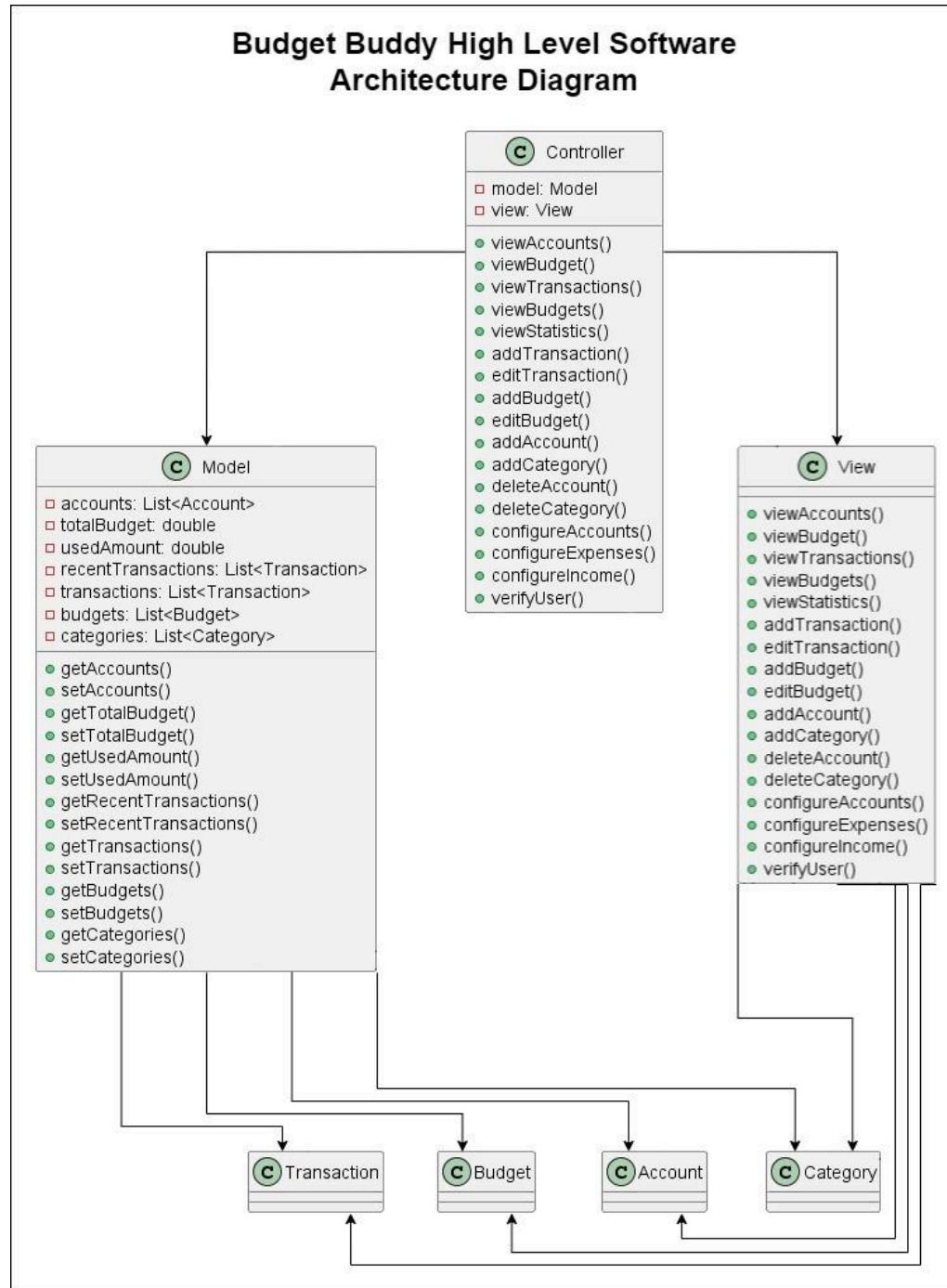


Figure 13: Budget Buddy Software Architecture

7. Appendices

7.1. Appendix A - The user Interface

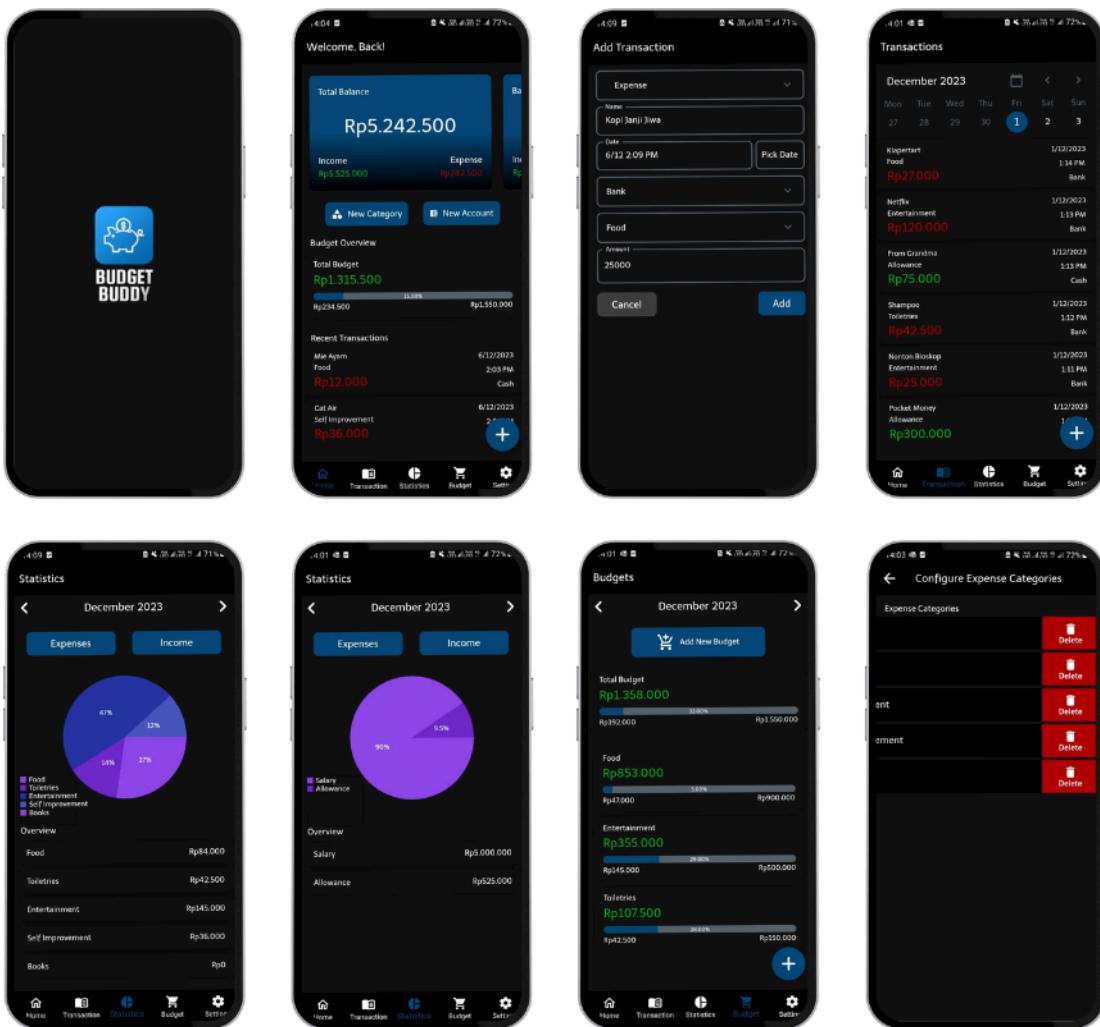


Figure 14: Budget Buddy The user Interface

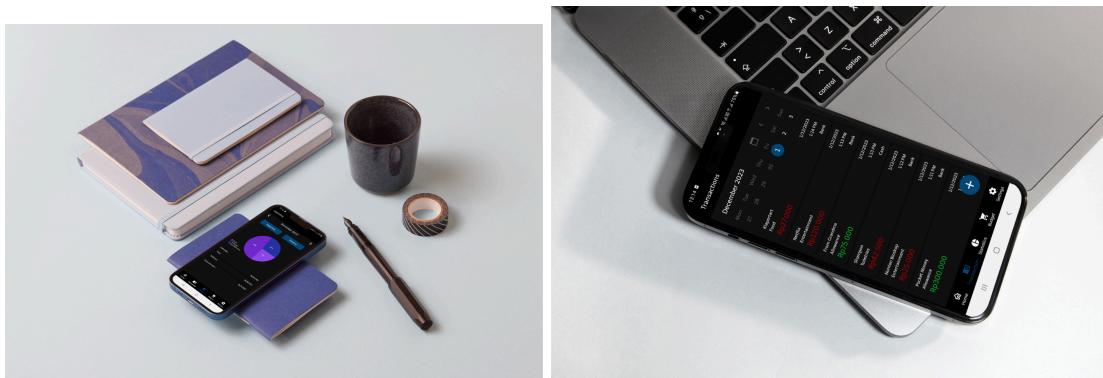


Figure 15: Budget Buddy Mockup



Figure 16: Budget Buddy Mockup 2

7.2. Appendix B - Tools and Technologies

1. Flutter for Android Development

Budget Buddy leverages the Flutter framework for Android app development. Flutter is a UI toolkit developed by Google that provides a streamlined approach to cross-platform development. Its single codebase ensures compatibility with both Android and iOS platforms. The use of Flutter allows for rapid development due to its extensive widget library and hot-reload feature, enhancing the overall development efficiency.

2. Figma for Design and Prototyping

Figma serves as Budget Buddy's primary design and prototyping tool. This collaborative interface design tool allows the design team to create, share, and iterate on the app's user interface. Figma's real-time collaboration features streamline the design process, ensuring a cohesive and visually appealing user experience.

3. Microsoft Teams

Online communication within the Budget Buddy development team is facilitated through Microsoft Teams. This collaborative platform is a centralized hub for communication, file sharing, and project updates. With dedicated channels for

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different project aspects, Microsoft Teams enhances team coordination, fostering efficient collaboration throughout the development lifecycle.

4. Android Studio

Android Studio is chosen as the primary development tool for Budget Buddy due to its comprehensive feature set, excellent Android device compatibility, and continuous Android team updates. The IDE's robust tools contribute to the app development process's efficiency, reliability, and overall success.