Software Requirements Specification

for

ExpendiGo – Personal Expense Tracker

Version 1.0

Prepared by

Group Name: ExpendiGo

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Contents

Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0	Aaditya Rajesh, Aditya Dagli, Yuvraj Rasal	This revision is the first draft of the Software Requirements Specification for ExpendiGo	20/02/24

1 Introduction

Welcome to the ExpendiGo project! In this section, you'll find a brief overview of our innovative expense tracking solution designed to help users manage their expenditures effectively. We'll provide insights into the key features and functionalities that make ExpendiGo stand out in the market, along with an outline of what you can expect to find in the subsequent sections of this document. This Software Requirements Specification (SRS) document serves as a blueprint for the development team, outlining the functionalities, features, and constraints of the expense tracking system.

1.1 Document Purpose

The software requirements specified in this document pertain to the ExpendiGo, with the current revision or release number marked as 1.0. The scope of this product is focused on providing a user-friendly and efficient solution for individuals to manage their personal finances. This SRS comprehensively outlines the functional and non-functional requirements, ensuring a clear understanding of the features that will be developed to support expense tracking.

The purpose of this document is to act as a guide for the development team, detailing the specific functionalities and constraints that ExpendiGo should adhere to. It serves as a crucial reference for stakeholders, including developers, testers, and project managers, to ensure that the software aligns with the envisioned goals. This document is not limited to a single subsystem but covers the entire system, offering a holistic view of the features that users can expect from the Personal Expense Tracker.

1.2 Product Scope

The software being specified is ExpendiGo, a tool designed to assist individuals in managing their finances efficiently. The primary purpose of this software is to provide users with a user-friendly platform to track, categorize, and analyze their expenses. By leveraging this tool, users can gain insights into their spending patterns, set budgetary goals, and make informed financial decisions.

The scope of the ExpendiGo includes features such as expense categorization and tracking, budget management, and detailed financial reporting. Users can input their income and expenditures, categorize transactions, and visualize their financial data through intuitive graphs and charts. The benefits associated with this product include improved financial awareness, better budget management, and the ability to identify areas where users can optimize their spending. The overarching objectives and goals of ExpendiGo are to empower users with the tools they need to achieve financial stability and make informed decisions about their personal finances.

1.3 Intended Audience and Document Overview

Intended Audience Types:

1. Client: Primary stakeholders interested in project alignment with goals.

2. Professor (or Instructor): Evaluators ensuring document completeness and clarity.

3. Developers: Need detailed technical specifications for development.

4. Project Managers: Require comprehensive understanding of scope and timelines.

5. Testers: Responsible for ensuring software functionality and usability.

6. Documentation Writers: Need to accurately document software functionality.

End Users, Financial Planners: Project Managers, Developers, Documentation Writers.

Document Overview:

The Software Requirements Specification (SRS) for ExpendiGo is organized to provide a thorough understanding of the application's functionality, features, and usage. The document is structured as follows:

Organization:

The SRS begins with an overview and introduction, followed by detailed functional and non-functional requirements. It includes descriptions of user and system interfaces and may have appendices with references and glossaries.

Sequence:

1. Overview: Get a high-level understanding of the project.

2. Functional Requirements: Focus on specific features.

3. Non-Functional Requirements: Understand performance, security, and usability criteria.

4. Interfaces: Developers, testers, and documentation writers should pay attention here.

5. Appendices: Review any additional information provided.

1.4 Definitions, Acronyms and Abbreviations

API: Application Programming Interface - A set of rules and protocols for building and interacting with software applications.

SRS: Software Requirements Specification - A document that outlines the requirements for the development of a software solution.

UI: User Interface - The visual elements and controls through which users interact with a software application.

1.5 Document Conventions

Formatting Conventions –
Heading Font: Arial, Size: 18, Bold
Sub-Heading Font: Arial, Size: 14, Bold
Text Font: Arial, Size: 11

1.6 References and Acknowledgments

Srijan: Top 13 must-have features for your expense tracking app
Payhawk: The 12 Top Features Of A Business Expense Tracker Mobile App
Volopay: Features to Look for in Business Expense Tracker
SentricHR: Features to Look for in Expense Management Software
Cerdonis: How to Build An Expense Tracking App? -Features, Benefits, Cost, And Steps
GPay
Volopay
Splitwise

2 Overall Description

2.1 Product Perspective

ExpendiGo is a new, self-contained product designed to address the growing need for efficient and personalized expense tracking solutions in today's digital age. It is not a replacement for existing systems but rather fills a gap in the market for a comprehensive expense management tool that combines robust tracking features with personalized insights and user-friendly interfaces. ExpendiGo stands as an independent solution, offering users a seamless experience for managing their expenses across various categories and currencies.

The ExpendiGo system interacts with external APIs, databases, and user interfaces to provide a comprehensive expense tracking solution. At its core, ExpendiGo includes modules for user registration/authentication, expense tracking, budget management, data visualization, and personalized insights. It interfaces with external APIs for currency conversion and data fetching, as well as databases for data storage and retrieval. The system is accessible via web browsers and mobile devices, ensuring users can track their expenses anytime, anywhere.

2.2 Product Functionality

1. Seamless User Registration and Authentication: Join our platform effortlessly and securely, ensuring your financial data is always protected.

2. Expense Tracking: Take control of your spending with intuitive tools that help you monitor every dime, providing clarity on where your money goes.

3. Efficient Budget Management: Achieve your financial goals with ease by setting and managing budgets tailored to your unique needs and aspirations.

4. Dynamic Data Visualization: Gain valuable insights at a glance through visually stunning charts and graphs, making it simple to understand and analyze your financial patterns.

5. Real-Time Currency Conversion: Whether you're traveling or investing internationally, stay ahead of the curve with instant currency conversion at your fingertips.

6. Expense Sharing Made Easy: Simplify group finances effortlessly by splitting expenses with friends, family, or colleagues, ensuring fairness and transparency in every transaction.

Academic Year: 2023_24

7. Effortless Receipt Scanning: Say goodbye to paperwork clutter. Scan receipts effortlessly and let our platform organize your expenses seamlessly.

8. Streamlined Multiple Account Management: Manage all your accounts from one centralized hub, eliminating the hassle of juggling multiple platforms.

9. Empowering Financial Goal Setting: Turn dreams into achievable milestones with our goal-setting feature, guiding you towards financial success one step at a time.

10. Collaborative Budgeting Tools: Harness the power of teamwork with collaborative budgeting, enabling you and your loved ones to work together towards shared financial objectives.

11. Investment Tracking: Stay informed and in control of your investments with real-time tracking, ensuring your portfolio aligns with your long-term financial plans.

Data Flow Diagram:
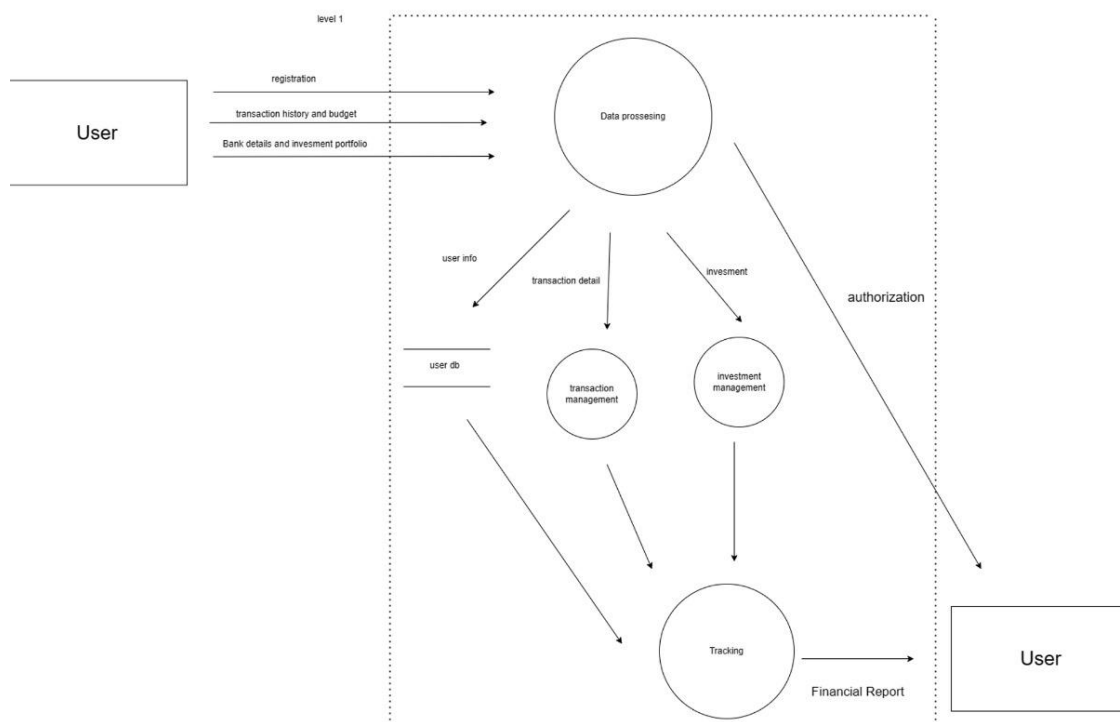
2.3 Users and Characteristics

1. Pertinent characteristics of each user:
- Individual Users:
  - Budget-conscious individuals
  - Tech-savvy users comfortable with digital tools
  - Goal-oriented individuals
  - Investors

- Group Users:
  - Families or households

- Friend groups or roommates

2. Most Important Users vs. Less Important Users:
- Most Important Users:
  - Individual budget-conscious users
  - Families or households for collaborative budgeting
  - Tech-savvy investors

- Less Important Users:
  - Frequent travelers
  - Casual users

2.4 Operating Environment

The financial management app operates within a diverse digital landscape, serving users with varying financial backgrounds and needs. It's designed to be accessible across multiple platforms, meaning you can access it conveniently whether you're using a smartphone, tablet, laptop, or desktop computer. This ensures that regardless of the device you prefer, you can seamlessly manage your finances on the go or from the comfort of your home. To ensure the security of your sensitive financial data, the app incorporates robust encryption and privacy measures, meeting industry standards to safeguard your information. It also requires a stable internet connection for real-time data synchronization and features like currency conversion. So, whether you're budgeting, tracking expenses, or managing investments, the app is tailored to provide a user-friendly experience across various platforms, ensuring you have the tools you need to achieve financial success.

Minimum Platform Requirements:
- Web Browser Compatibility: Support for Chrome, Firefox, Safari, and Edge.
- Mobile App: Compatible with iOS and Android.
- Desktop App (Optional): For Windows, macOS, and Linux]
- Internet Connection: Stable connection required.
- Hardware Optimization: Smooth performance on various devices.

2.5 Design and Implementation Constraints

1. Security Compliance: Adhering to strict security protocols to safeguard users' sensitive financial information, in compliance with industry standards like GDPR or PCI DSS.

2. Cross-Platform Compatibility: Overcoming challenges in ensuring seamless functionality and user experience across various devices and operating systems, including iOS, Android, Windows, macOS, and web browsers.

3. Integration Complexity: Managing the intricacies of integrating external APIs and services for features such as currency conversion, receipt scanning, and investment tracking, while maintaining data accuracy and reliability.

4. Scalability and Performance: Addressing potential bottlenecks in scaling the app to accommodate a growing user base and increasing data volume, while ensuring optimal performance and responsiveness.

5. User Experience Design: Balancing the inclusion of numerous features with maintaining an intuitive, user-friendly interface that prioritizes ease of use, navigation clarity, and visual

appeal, all while meeting the diverse needs of users across different demographics and levels of technological proficiency.

2.6 User Documentation

For the financial management software being developed, comprehensive user manuals and online help resources are essential to support users in effectively utilizing its features. This includes detailed guides on setting up accounts, tracking expenses, managing budgets, utilizing data visualization tools, and leveraging advanced functionalities such as currency conversion, expense sharing, receipt scanning, multiple account management, goal setting, collaborative budgeting, and investment tracking. Additionally, troubleshooting guides, FAQs, and video tutorials would be beneficial to address common user queries and provide assistance in navigating the software's interface. Interactive help features within the app, such as tooltips and contextual guides, can also enhance the user experience by providing on-demand assistance as users interact with different features and functionalities.

2.7 Assumptions and Dependencies

1. Assumption: Internet Connectivity: Users are assumed to have stable internet access for real-time synchronization and features like currency conversion.

2. Assumption: Access to Banking Services: Users are assumed to possess bank accounts for features like expense tracking and multiple account management.

3. Assumption: Device Compatibility: Users are assumed to have access to various devices, driving cross-platform compatibility.

4. Assumption: Basic Financial Literacy: Users are assumed to understand budgeting and financial concepts, simplifying interface design.

5. Assumption: Diverse User Base: The app caters to individuals, families, and small businesses with varied financial needs.

6. Assumption: Willingness to Adopt Technology: Users are assumed to be open to digital financial management solutions, guiding user-friendly design and onboarding processes.

7. Assumption: Integration with External Services: Users are assumed to expect seamless integration with external services for features like currency conversion and receipt scanning.

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

1. Welcome/Onboarding Screen: This screen would introduce new users to the app, providing information about its features and guiding them through the registration process.

2. Login/Authentication Screen: Users would enter their credentials here to access their accounts securely.

3. Dashboard: The dashboard would be the main screen users see upon logging in, displaying an overview of their financial status, including current expenses, budget progress, and investment performance. It may also feature data visualizations like charts and graphs.

4. Expense Tracking Screen: Here, users can add, categorize, and view their expenses. They can input details such as date, amount, category, and attach receipts through scanning.

5. Budget Management Screen: Users can set up and manage their budgets here, allocating funds to different expense categories and tracking their spending against budgeted amounts.

6. Currency Conversion Screen: This optional screen allows users to convert currencies for international transactions or investment tracking purposes.

7. Expense Sharing Screen: Users can split expenses and manage shared costs with friends, family, or roommates, ensuring transparency and fairness in financial transactions.

8. Multiple Account Management Screen: For users with multiple accounts, this screen allows them to view and manage all their accounts in one place, facilitating convenient financial management.

9. Goal Setting Screen: Users can set financial goals, such as saving for a vacation or paying off debt, and track their progress towards achieving them.

10. Collaborative Budgeting Screen: This screen enables users to collaborate with others, such as family members or partners, in setting and managing shared budgets and financial goals.

11. Investment Tracking Screen: Users can monitor their investments, track performance, and make informed decisions about their portfolios.
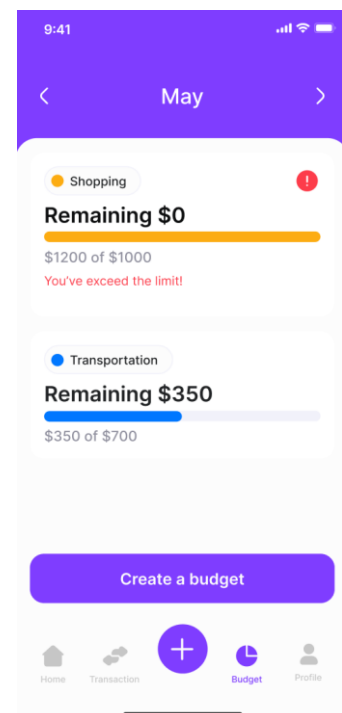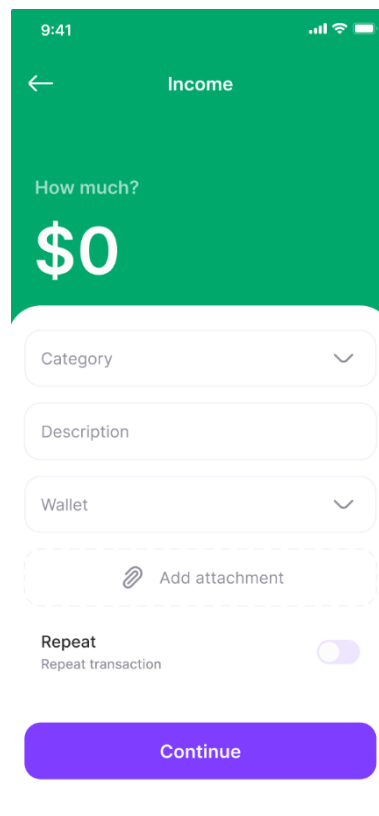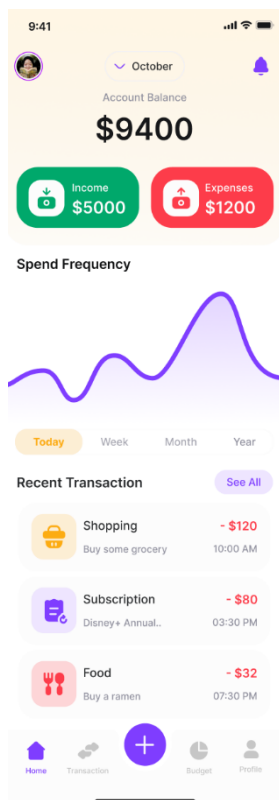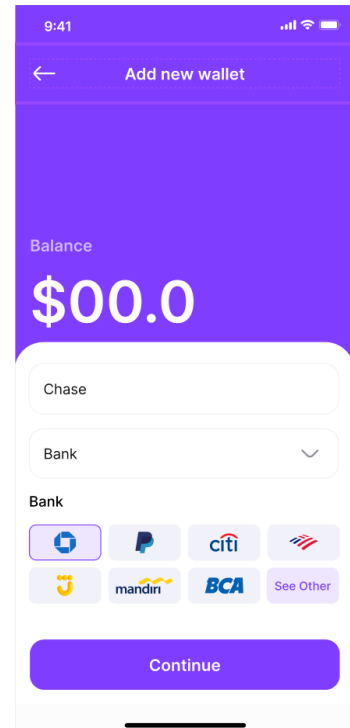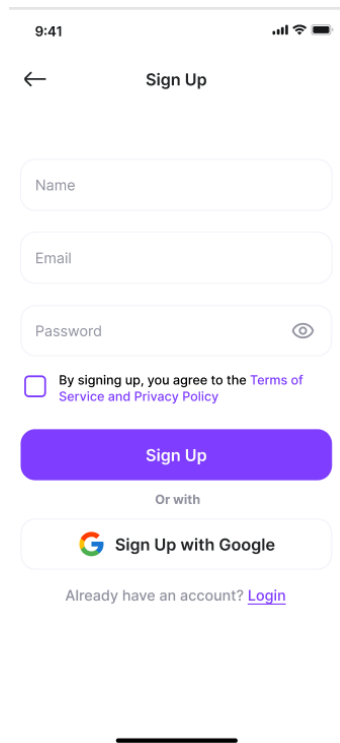
SHRI VILEPARLE KELAVANI MANDAL'S
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
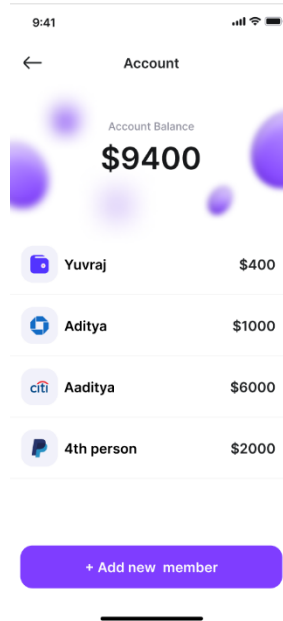NAAC ACCREDITED with "A" GRADE (CGPA : 3.18)

Academic Year: 2023_24

Interfaces:
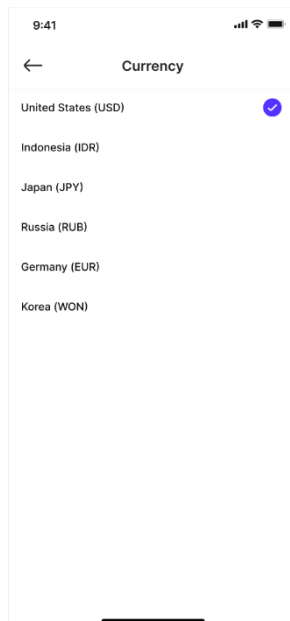
Bonus :

3.1.2 Hardware Interfaces

As a software-based financial management application, our product primarily interacts with standard hardware interfaces found on common consumer devices such as smartphones, tablets, laptops, and desktop computers. These hardware interfaces include touchscreens, keyboards, mice, and displays, which users utilize to navigate the application and input data.

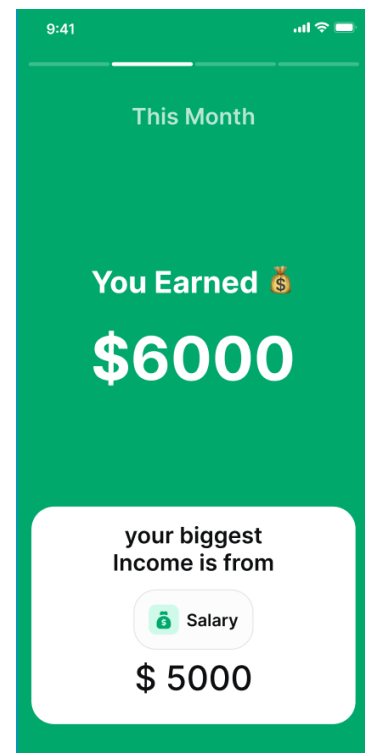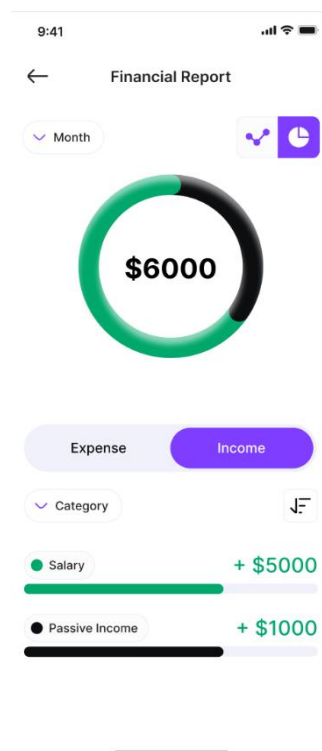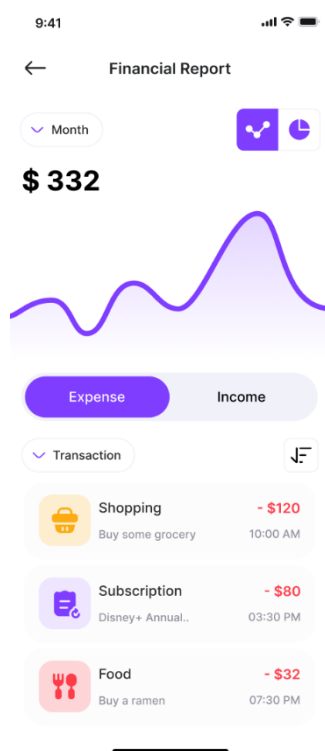Additionally, the app may integrate with external hardware interfaces for certain functionalities such as receipt scanning. In such cases, we may utilize special libraries or APIs provided by the hardware manufacturers to communicate with their devices effectively. For instance, if the app supports receipt scanning via a document scanner or mobile camera, we may utilize libraries such as OpenCV or specialized SDKs provided by scanner manufacturers to process and extract data from scanned receipts accurately.

Overall, while the primary hardware interfaces for our financial management app are standard input and output devices found on consumer devices, integration with external hardware may require specialized libraries or APIs to ensure seamless communication and functionality.

3.1.3 Software Interfaces

ExpendiGo primarily interfaces with the operating system to ensure seamless execution and utilization of its functionalities. The software is designed to be platform-independent, meaning it can operate on various operating systems such as Windows, Linux, and macOS.

Specifically, ExpendiGo interacts with the operating system's file management system to read and write data related to user transactions, preferences, and settings. This includes accessing files for storing user profiles, transaction histories, and any customized settings.

Furthermore, ExpendiGo may utilize system-level APIs (Application Programming Interfaces) provided by the operating system to handle tasks such as file I/O operations, memory management, and process synchronization. These APIs ensure efficient communication between the software application and the underlying operating system, facilitating tasks such as data retrieval, storage, and manipulation.

Overall, the interface with the operating system enables ExpendiGo to seamlessly integrate with the user's computing environment, providing a robust and user-friendly experience across different platforms.

3.1.4 Communications Interfaces

ExpendiGo relies on communication interfaces to facilitate interactions with external entities and services, enhancing its functionality and usability. The major communication standards considered for ExpendiGo include HTTP (Hypertext Transfer Protocol) and possibly HTTPS (HTTP Secure) for secure data transmission over the internet.Through HTTP/HTTPS protocols, ExpendiGo can communicate with web servers to fetch financial data updates, access online banking services, or synchronize user data across multiple devices. This enables users to stay up-to-date with their financial information and ensure consistency across platforms. Additionally, ExpendiGo may utilize email communication for notifications, alerts, or user authentication purposes. Although specific email protocols are not mentioned, standard email formats such as SMTP(Simple Mail Transfer Protocol) may be employed for sending transaction confirmations or reminders to users.Security and encryption play a crucial role in safeguarding sensitive financial information. While exact encryption standards are not specified, ExpendiGo may implement industry-standard encryption techniques such as SSL/TLS (Secure Sockets Layer/Transport Layer Security) to protect data during transmission over communication channels, ensuring confidentiality and integrity.

3.2 Functional Requirements

Functional requirements outline the specific behaviors and operations that ExpendiGo must perform to meet user needs effectively. These requirements are categorized into functional areas to provide a structured approach to understanding the system's capabilities.

1. User Authentication and Profile Management:
    - User Registration: Allow users to create an account by providing necessary information such as username, password, and email address.
    - User Login: Provide a secure login mechanism for registered users to access their accounts.
    - Password Reset: Enable users to reset their passwords through a secure verification process.

2. Expense Tracking and Management:
    - Expense Input: Allow users to manually input their expenses, including the date, amount, category, and description.
    - Automatic Expense Import: Provide functionality to automatically import expenses from linked bank accounts or credit cards.
    - Expense Categorization: Enable users to categorize expenses into predefined or custom categories for better organization.
    - Budget Setting: Allow users to set budget limits for different expense categories and track their spending against these budgets.
    - Expense Editing and Deletion: Enable users to edit or delete recorded expenses as needed.

3. Reporting and Analysis:
    - Financial Reports: Generate comprehensive reports summarizing users' spending patterns, budget adherence, and financial goals progress.
    - Graphical Representation: Provide visual representations such as charts and graphs to illustrate expense distributions and trends.
    - Data Export: Allow users to export their financial data in standard formats (e.g., CSV, PDF) for further analysis or record-keeping.

4. Notification and Alerts:
    - Transaction Alerts: Notify users of important financial transactions, such as low balance alerts or large expenses.
    - Budget Alerts: Alert users when they are approaching or exceeding budget limits in specific expense categories.
    -Reminder Notifications: Send reminders to users for upcoming bill payments or financial milestones.

5. Settings and Preferences:
    - Currency Selection: Allow users to choose their preferred currency for displaying financial amounts.
    - Notification Preferences: Provide options for users to customize their notification settings according to their preferences.
    - Language Settings: Support multiple languages to accommodate users from different regions.

6. Data Security and Privacy:

  - Encryption: Implement robust encryption techniques to secure users' sensitive financial data during transmission and storage.

  - Access Control: Ensure proper access control mechanisms to restrict unauthorized access to users' financial information.

  - Data Backup: Provide automated data backup functionalities to prevent data loss and ensure data integrity.

These functional requirements collectively define the core capabilities of ExpendiGo, aiming to streamline expense tracking and financial management for users.

3.3 Behaviour Requirements

3.3.1 Use Case View

Use Case Diagram:
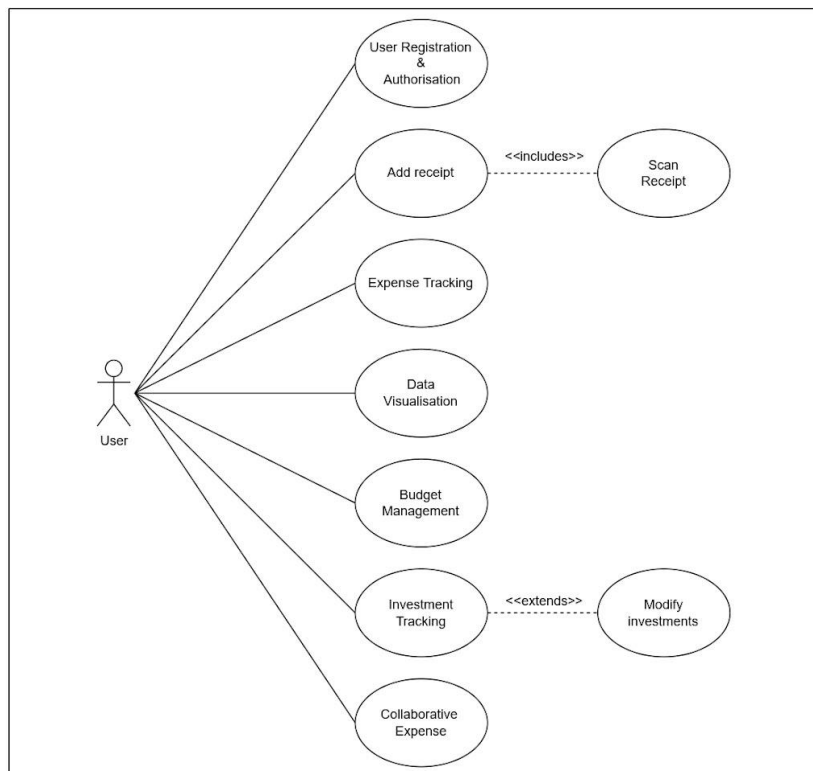
Description:

User: The primary actor who interacts with the Personal Expense Tracker, utilizing its various features to manage and analyze personal finances.

1. User Registration and Authorization: Enables new users to register by providing necessary information and undergoes an authentication process to access the Personal Expense Tracker.

2. Expense Tracking: Allows users to log and monitor individual expenses, facilitating the organization and analysis of their spending habits.
3. Budget Management: Permits users to set, monitor, and manage budgetary limits for various expense categories, aiding in financial planning.
4. Data Visualization: Generates graphical representations and reports to visually depict users' financial data, enhancing their understanding of spending patterns. This use case encompasses the actions taken by users to view and interpret financial data.
5. Expense Sharing: Allows users to share specific expense details with others, facilitating collaborative financial planning or expense tracking.
6. Receipt Scanning: Enables users to scan and upload images of receipts, enhancing documentation and providing a visual record of expenses.
7. Collaborative Budgeting: Facilitates collaborative budgeting by allowing multiple users to contribute, share, and manage a common budget.
8. Investment Tracking: Provides tools for users to record and monitor information related to their investments, aiding in portfolio management.

4 Other Non-functional Requirements

4.1 Performance Requirements

1. Transaction Processing Time:

   - Requirement: Any transaction inputted by the user should be processed and reflected in the system within 5 seconds.

   - Rationale: Users expect immediate feedback when inputting transactions to ensure smooth and efficient expense tracking. This requirement aims to enhance user experience by minimizing waiting time.

2. Reporting Generation Speed:

   - Requirement: Financial reports should be generated within 3 seconds of the user's request.

   - Rationale: Users rely on timely access to financial reports to make informed decisions about their expenses. Fast report generation ensures that users can quickly analyze their financial data without delays.

3. Notification Delivery Latency:

   - Requirement: Notifications, including transaction alerts and reminders, should be delivered to users within 1 minute of the triggering event.

   - Rationale: Timely notifications are crucial for users to stay informed about important financial activities and deadlines. Minimizing delivery latency ensures that users receive notifications promptly.

4. Data Import Time:

   - Requirement: Automatic importing of expenses from linked bank accounts or credit cards should occur within 10 seconds of initiating the import process.

   - Rationale: Users expect seamless integration with their financial accounts to streamline expense tracking. Fast data import ensures that users have up-to-date financial information available in ExpendiGo.

5. System Availability:

   - Requirement: ExpendiGo should have an uptime of at least 99.9% over a monthly period, excluding scheduled maintenance.

   - Rationale: Users rely on ExpendiGo for managing their finances on a daily basis. Ensuring high availability minimizes disruption to users' financial management activities and builds trust in the system's reliability.

4.2 Safety and Security Requirements

Safety Requirements:

1. Data Integrity Protection:

   - Requirement: ExpendiGo must implement measures to ensure the integrity of user data, preventing unauthorized modification or corruption.

   - Rationale: Protecting the integrity of user data is essential to prevent financial loss or inaccuracies in expense tracking, which could result in harm to users' financial management.

2. Backup and Recovery Mechanism:

   - Requirement: ExpendiGo should provide automated backup functionality to regularly backup user data and enable efficient recovery in the event of data loss or system failure.

   - Rationale: Having a robust backup and recovery mechanism minimizes the risk of permanent data loss due to unforeseen events such as hardware failures or software errors.

3. User Authentication Security:

- Requirement: ExpendiGo must enforce strong user authentication mechanisms, such as multi-factor authentication, to prevent unauthorized access to user accounts.

- Rationale: Strengthening user authentication helps mitigate the risk of unauthorized access to sensitive financial information, reducing the likelihood of fraudulent activities or data breaches.

Security Requirements:

- The client expects ExpendiGo to adhere to industry-standard security practices to safeguard user data and ensure privacy. Major security requirements include:

1. Encryption of sensitive data both in transit and at rest using industry-standard algorithms (e.g., AES-256).

2. Secure storage of user credentials using hashing algorithms with salt.

3. Implementation of role-based access control to restrict access to sensitive features and data based on user roles and permissions.

4. Regular security audits and vulnerability assessments to identify and mitigate potential security threats.

5. Compliance with relevant data protection regulations such as GDPR (General Data Protection Regulation) or CCPA (California Consumer Privacy Act).

6. Integration of security features such as SSL/TLS for secure communication and secure password policies (e.g., minimum length, complexity requirements) to enhance overall system security.

4.3 Software Quality Attributes

4.3.1 Reliability:

- Requirement: ExpendiGo shall have a reliability rate of at least 99.99%, measured as the percentage of successful transactions to total transactions over a monthly period.

- Rationale: Reliability is crucial for ensuring users can depend on ExpendiGo for accurate expense tracking and financial management. Achieving a high reliability rate reduces the risk of data loss or system downtime, enhancing user trust and satisfaction.

4.3.2 Usability:

- Requirement: ExpendiGo shall achieve a System Usability Scale (SUS) score of at least 80, as measured through user testing and surveys.

- Rationale: Usability plays a significant role in the adoption and satisfaction of software products. By ensuring a high SUS score, ExpendiGo aims to provide users with an intuitive and user-friendly interface, reducing the learning curve and enhancing overall user experience.

4.3.3 Maintainability:

- Requirement: ExpendiGo's codebase shall adhere to coding standards and best practices, with a code maintainability index (CMI) score of at least 70.

  -Rationale: Maintainability is essential for facilitating future enhancements and updates to the software. By maintaining a high CMI score, ExpendiGo aims to ensure that developers can easily understand and modify the codebase, reducing the time and effort required for maintenance tasks.

4.3.4 Testability:

- Requirement: ExpendiGo shall have a test coverage of at least 90% for critical functionalities, as measured through automated test suites.

  -Rationale: Testability is crucial for detecting and resolving software defects early in the development lifecycle. By achieving a high test coverage, ExpendiGo aims to improve software quality and reliability, leading to a more robust and stable product.

4.3.5 Flexibility:

- Requirement: ExpendiGo shall support customization of expense categories and budget settings to accommodate diverse user preferences and financial management needs.

  -Rationale: Flexibility allows ExpendiGo to adapt to varying user requirements and preferences, enhancing its usability and overall effectiveness. By supporting customization options, ExpendiGo aims to cater to a wider range of users and increase user satisfaction.

5 Other Requirements

Appendix A – Data Dictionary

Bottlenecks	Points in a system where flow is significantly impeded
Encryption	Process of converting information into a code to prevent unauthorized access
General Data Protection Regulation (GDPR)	Comprehensive data protection law enacted by the European Union
Interfaces	Points of interaction or communication between different components or systems
Modules	Discrete units or components of software performing specific functions
OpenCV	Open-source computer vision and machine learning software library
Rationale	Underlying reasons or justifications for a decision or action
Stakeholders	Individuals, groups, or organizations with an interest in a project or system
Tech-savvy	Describes individuals proficient in using and understanding technology

Appendix B - Group Log

<Please include here all the minutes from your group meetings, your group activities, and any other relevant information that will assist the Teaching Assistant to determine the effort put forth to produce this document>

07/02/24	Project topic and basic idea was finalised
10/02/24	Research and development of basic functionalities
14/02/24	Detail of functionalities and structure of project