Software Requirements Specification

1. Introduction

1.1 Purpose

The purpose of this document is to provide a comprehensive Software Requirements Specification (SRS) for the Expense Tracking System. The system is designed to allow users to efficiently manage their personal and shared expenses by tracking, analyzing, and modifying their financial data. This document outlines the functional and non-functional requirements of the system to ensure that the final product meets the user's expectations and supports their financial decision-making.

1.2 Scope

The Expense Tracking System aims to offer a user-friendly platform for individuals to record, track, and analyze their expenses across various categories. Users will be able to create accounts, track their expenses with detailed information, access visual insights through graphs, and manage shared accounts. The system also provides features like sorting, filtering, and searching expense history, making it a comprehensive financial management tool. The primary users of this system will be individuals or groups seeking to maintain control over their expenses and analyze financial habits.

This document details the system's requirements and functionalities, including user-level and system-level requirements, as well as constraints and validation processes.

1.3 Overview

This SRS document is structured as follows:

Overall Description: A detailed explanation of the system's features, target audience, and operating environment.
Functional Requirements: Specific functional behaviors expected from the system, such as expense tracking, account management, graphical insights, and data filtering.
System-Level Requirements: Outlines the security, authorization, authentication, and validation requirements needed to ensure data integrity and user privacy.

Non-Functional Requirements: Specifications related to system performance, usability, and reliability to ensure the system is efficient and scalable.

2. Overall Description

2.1 Product Functions

The Expense Tracking System provides several key functions to assist users in managing their finances effectively:

- **Track User-Defined Expenses**: Users can add new expenses by specifying the category, amount, date, time, and description. The system ensures that all mandatory fields are filled in correctly.
- **Modify Expenses**: Users can edit existing expenses by updating any of the fields related to their financial transactions.
- **Expense History Display**: Users can view a detailed history of their expenses, including categories, amounts, dates, and descriptions.
- **Graphical Insights**: The system provides users with the ability to visualize their spending patterns through bar charts, line charts, and pie charts, enabling them to analyze their spending by category or time period.
- **Sorting and Filtering**: Users can organize their expenses based on different criteria such as category, date, and amount. The system also allows filtering by custom time frames.
- **Search Functionality**: The system includes a search option that allows users to find specific expenses by searching keywords or dates.
- **Shared Accounts**: The system supports multiple users accessing the same account, enabling collaborative expense tracking, with the primary account holder managing permissions and access control.
- **User Authentication**: Secure user login is facilitated through email and password authentication to ensure data privacy and user identity validation.

These features provide users with an intuitive interface to manage their finances, offering flexibility and control over how their data is presented and analyzed.

2.2 User Community

The primary user base for the Expense Tracking System includes:

- **Individual Users**: Individuals who wish to keep track of their personal expenses, manage their budget, and gain insights into their spending habits.
- **Groups with Shared Expenses**: This group includes families, friends, or roommates who share financial responsibilities, such as household bills or group purchases. The shared account feature allows multiple users to collaboratively manage expenses, with defined access controls.
- **Small Business Owners or Freelancers**: Entrepreneurs or freelancers who manage small-scale financial transactions can use this system to track and categorize their expenses for better financial planning and reporting.
- **Financially Conscious Users**: People looking to be more financially aware and responsible by maintaining detailed records of their spending and reviewing it over time.

The system is designed to cater to a diverse set of users with different financial management needs, offering both individual and group functionalities to accommodate various scenarios.

3. Functional Requirements

3.1 User-Level Requirements

3.1.1 Track User Defined Expenses

3.1.1.1 The system shall allow the user to add an expense by entering the following details: category, amount, date, time, and description.

3.1.1.2 The system shall allow the user to modify existing expenses by updating any of the details mentioned above.

3.1.1.3 The system shall notify the user if any mandatory field is empty or contains invalid data.

3.1.2 Display Detailed Expense History

3.1.2.1 The system shall provide a list of the user's expense history.

3.1.2.2 The system shall include category, amount, date, time, and description in the expense history.

3.1.2.3 The system shall allow the user to filter the expense history by a user-defined time frame.

3.1.3 Maintain Client Account

3.1.3.1 The system shall allow the user to create an account by providing full name, email, and user-defined password.
3.1.3.2 The system shall notify the user if the provided email is invalid or already in use.
3.1.3.3 The system shall notify the user if the password chosen goes against restrictions.

3.1.4 Provide Graphical Insight

3.1.4.1 The system shall allow the user to select a graph style to represent the expense analysis.
3.1.4.2 The system shall display the expense amount per category if bar chart is selected.
3.1.4.3 The system shall display expenses over time if line chart is selected.
3.1.4.4 The system shall display the percentage distribution of expenses if pie chart is selected.

3.1.5 Provide Sort and Filter Functions

3.1.5.1 The system shall allow the user to sort expenses by amount, category, date, and time in ascending or descending order.

3.1.6 Provide Search Functionality

3.1.6.1 The system shall allow the user to search the expense history using keywords, such as category names or specific dates.

3.1.7 Allow Multiple Clients Access to a Shared Account

3.1.7.1 The system shall allow multiple users to access the same account.
3.1.7.2 The system shall allow the primary account owner to manage permissions and access to the account.

3.2 System-Level Requirements

3.2.1 Authorization and Authentication

3.2.1.1 The system shall authenticate users through email and password.

3.2.2 Validation of Expense Entry

3.2.2.1 The system shall validate all mandatory fields (amount, category, date, and time) are filled in the correct format before adding the entry to the database.

4. Non-Functional Requirements

4.1 User-Level Requirements

4.1.1 Usability

4.1.1.1 The system shall be intuitive and easy to use, even for non-technical users.
4.1.1.2 The system shall have a clean, responsive design allowing users to navigate the software easily on desktop.
4.1.1.3 The system shall maintain input validation and include descriptive error messages to guide users through interactions.

3.2 System-Level Requirements

4.2.1 Performance

4.2.1.1 The system shall load within 2 seconds for most users, even when there is a large amount of expense data to be loaded.

4.2.2 Scalability

4.2.2.1 The system shall adapt to handle a growing user base and increasing data volumes.
4.2.2.2 The system shall scale both vertically (increased resources) and horizontally (load balancing).

4.2.3 Reliability

4.2.3.1 The system shall have proper backup and recovery procedures to prevent data loss.

4.2.4 Cross-Browser Compatibility

4.2.4.1 The system shall work correctly across major browsers (Chrome, Firefox, Safari, and Edge).