Project Report

Dhirubhai Ambani Institute of Information and Communication Technology.

M.Sc. (Information Technology)
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SpendWise : Personal expense Tracker

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ABSTRACT

This project is based on an expense and income tracking system. This project aims to create an easy, faster and smooth tracking system between the expense and the income. For the better expense tracking system, we developed our project that will help the users a lot. Most of the people cannot track their expenses and income one way they face a money crisis, in this case daily expense tracker can help the people to track income-expense day to day and making life tension free. Money is the most valuable portion of our daily life. So using the daily expense tracker application is important to load a happy family.

Daily expense tracker helps the user to avoid unexpected expenses and bad financial situations. This Project will save time and provide a responsible lifestyle. This system is made and supervised by the experts and satisfying by the user. Node.js, Express.js and MongoDB Atlas are used to develop the system. The system is tested by other users, and 80% of them found the system useful.

1. Introduction

Welcome to **SpendWise**, your personal finance companion that's here to make managing your money a breeze. In today's fast-paced world, keeping track of your expenses and sticking to a budget can feel overwhelming. That's where SpendWise steps in – to simplify your financial life and give you peace of mind.

SpendWise is more than just a finance app; it's like having a trusted friend who helps you stay on top of your finances. Whether you're a student juggling tight finances, a professional planning for the future, or a family managing multiple income streams, SpendWise is designed with you in mind.

With SpendWise, you can easily track your income and expenses, categorize your transactions, set budget goals, and gain insights into your spending habits. Our user-friendly interface and powerful features are designed to make managing your money simple and straightforward.

Think of SpendWise as your financial partner – always there to support you in making informed decisions about your money. Say goodbye to financial stress and hello to financial freedom with SpendWise by your side.

2. System Overview

SpendWise is a comprehensive personal finance management application designed to simplify the way individuals manage their finances. With its user-friendly interface and powerful features, SpendWise helps users track their income and expenses, set budget goals, and gain valuable insights into their spending habits.

2.1. Purpose

The purpose of SpendWise is to provide users with a convenient and efficient tool for managing their finances. By offering features such as expense tracking, budgeting, and financial analysis, SpendWise aims to empower users to make informed financial decisions and achieve their financial goals.

2.1.1. Key Features

- ➢ Expense Tracking: Users can easily track their expenses and categorize them for better organization.
- ➢ Budgeting: SpendWise allows users to set budget goals and track their progress towards these goals.
- ➢ Financial Analysis: Users can gain insights into their spending habits through graphical representations and reports.
- ➢ User-Friendly Interface: SpendWise features a simple and intuitive interface that makes it easy for users to navigate and use the application.

2.1.2. Target Audience

SpendWise is designed for individuals of all ages and financial backgrounds who want to take control of their finances. Whether you're a student, a working professional, or a retiree, SpendWise is tailored to suit your needs and help you achieve your financial goals.

2.2. Scope

Expense tracking web application designed to help users manage their finances effectively. With a user-friendly interface and robust features, the app aims to provide a comprehensive solution for individuals, families, and small businesses to track expenses, set budgets, and gain insights into their financial habits.

- **Expense Tracking**
  Users can easily track their expenses, including details such as amount, date, and category.
  Expenses can be categorized to provide users with a detailed overview of their spending habits.
- **Budget Management**
  SpendWise allows users to set budget goals for different categories, such as groceries, transportation, and entertainment.
  Users can track their spending against their budget goals to ensure they stay within their financial limits.
- **Financial Analysis**
  SpendWise provides users with graphical representations and reports to help them analyze their spending patterns.
  Users can gain insights into areas where they can cut back on expenses and save more money.
- **User-Friendly Interface**
  SpendWise features a simple and intuitive interface that makes it easy for users to navigate the application and access the information they need.
  The interface is designed to be visually appealing and engaging, encouraging users to actively manage their finances.

➢ **Customization Options**

SpendWise offers users the ability to customize their experience by setting their preferences for categories, budget goals, and reporting options.

Users can tailor SpendWise to suit their individual financial needs and goals.

➢ **Accessibility**

SpendWise is accessible across multiple devices, including smartphones, tablets, and desktop computers.

Users can access SpendWise anytime, anywhere, ensuring they always have their financial information at their fingertips.

➢ **Security**

SpendWise prioritizes the security and privacy of users' financial information.

The application uses encryption and other security measures to protect users' data from unauthorized access.

2.3. Goals

- **Simplify Expense Tracking:** The primary goal of the Expense Tracker system is to simplify the process of tracking expenses for individuals. By providing a user-friendly interface and intuitive features, the system aims to make expense tracking effortless and efficient.
- **Facilitate Budget Management:** Another key goal of the Expense Tracker system is to facilitate budget management for users. The system allows users to set budget limits for different expense categories and provides notifications when users exceed their budget limits.
- **Promote Financial Awareness:** The Expense Tracker system aims to promote financial awareness among users by providing insights into their spending habits. By analyzing spending patterns and providing visual representations, the system helps users make informed financial decisions.
- **Encourage Financial Planning:** The system encourages users to plan their finances better by setting financial goals. Users can set savings targets or debt repayment goals, and the system tracks their progress towards these goals.
- **Enhance User Experience:** One of the goals of the Expense Tracker system is to enhance the overall user experience. By providing a seamless and enjoyable experience, the system aims to encourage users to use the system regularly and achieve their financial goals.
- **Ensure Data Security:** The system prioritizes the security and privacy of users' financial information. By implementing robust security measures, the system ensures that users' data is protected from unauthorized access.
- **Enable Accessibility:** The Expense Tracker system is designed to be accessible across multiple devices, including smartphones, tablets, and desktop computers. This ensures that users can access their financial information anytime, anywhere.

3. System Architecture

3.1 Overview

The Expense Tracker system is designed as a web application following the client-server architecture. It consists of three main components: the frontend, backend, and database. The frontend is responsible for the user interface, the backend handles business logic and data processing, and the database stores all the application data.

3.2 Frontend

The frontend of the Expense Tracker system is built using HTML, CSS, & JavaScript for building user interfaces. JS provides a component-based architecture, allowing for the creation of reusable UI components. The frontend communicates with the backend through RESTful APIs to fetch and update data.

Technologies Used:

- ➢ HTML/CSS
- ➢ JavaScript

3.3 Backend

The backend of the Expense Tracker system is built using Node.js and Express.js. Node.js is a runtime environment that allows JavaScript to be used for server-side scripting, while Express.js is a web application framework for Node.js. The backend is responsible for handling requests from the frontend, processing data, and interacting with the database.

Technologies Used:

- ➢ Node.js
- ➢ Express.js

3.4 Database

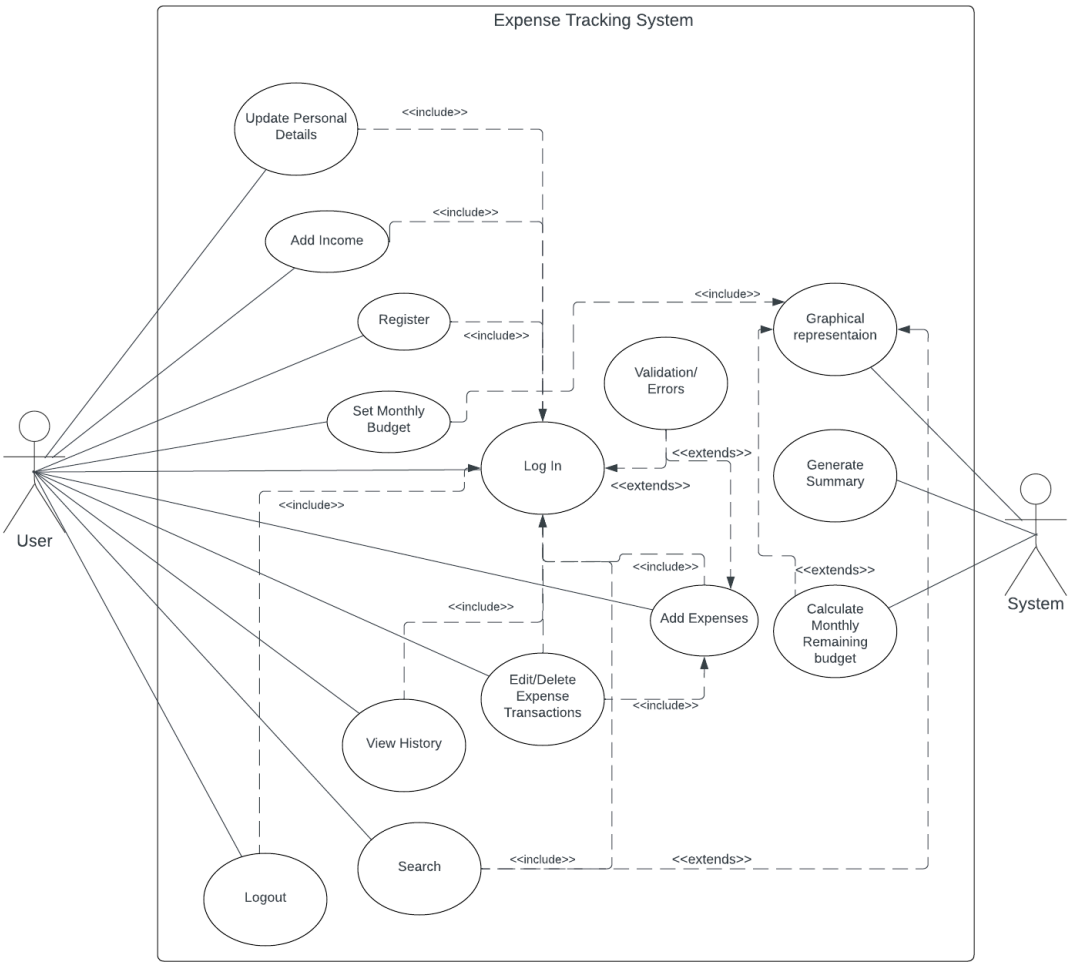
The Expense Tracker system uses MongoDB as its database to store all application data. MongoDB is a NoSQL database that provides flexibility and scalability, making it suitable for storing financial data such as transactions and budget information.

Technologies Used:

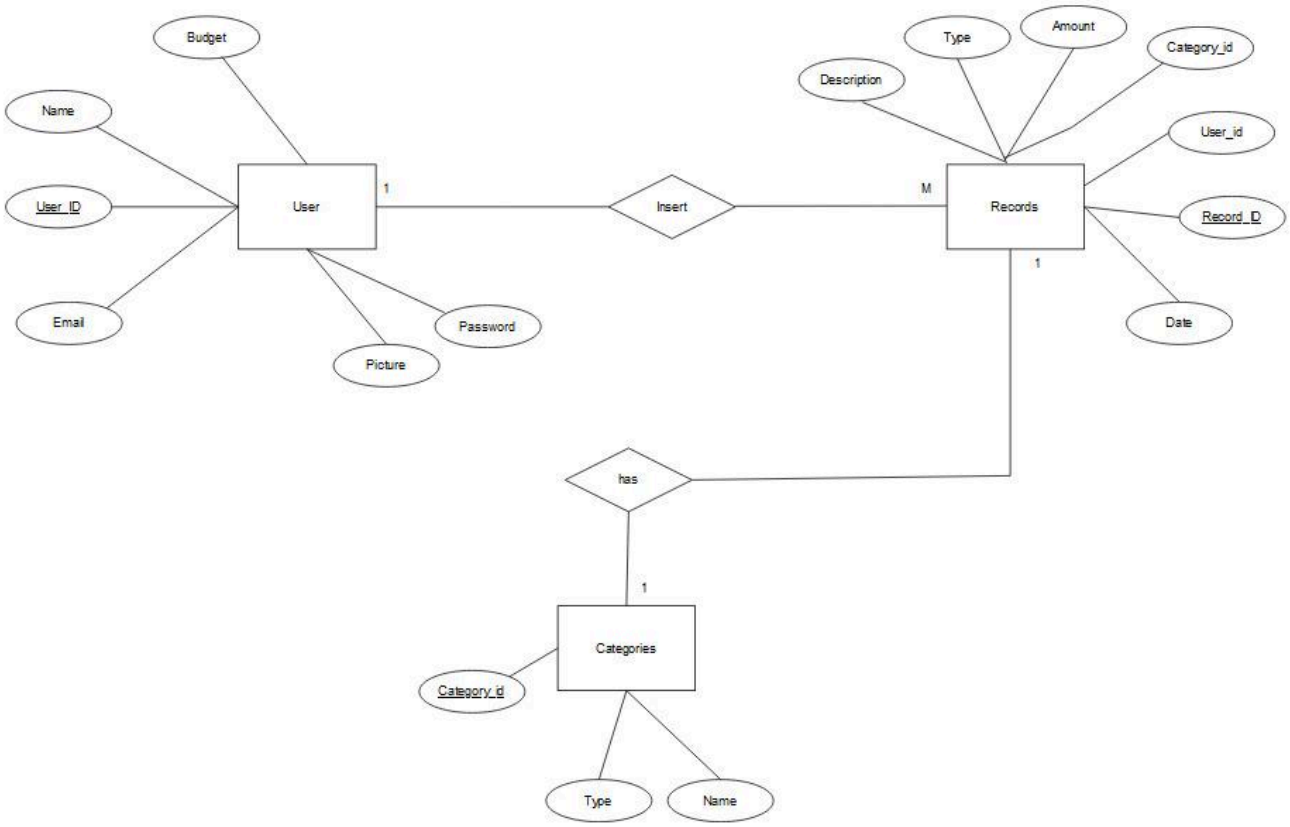
- ➢ MongoDB

4. System Design

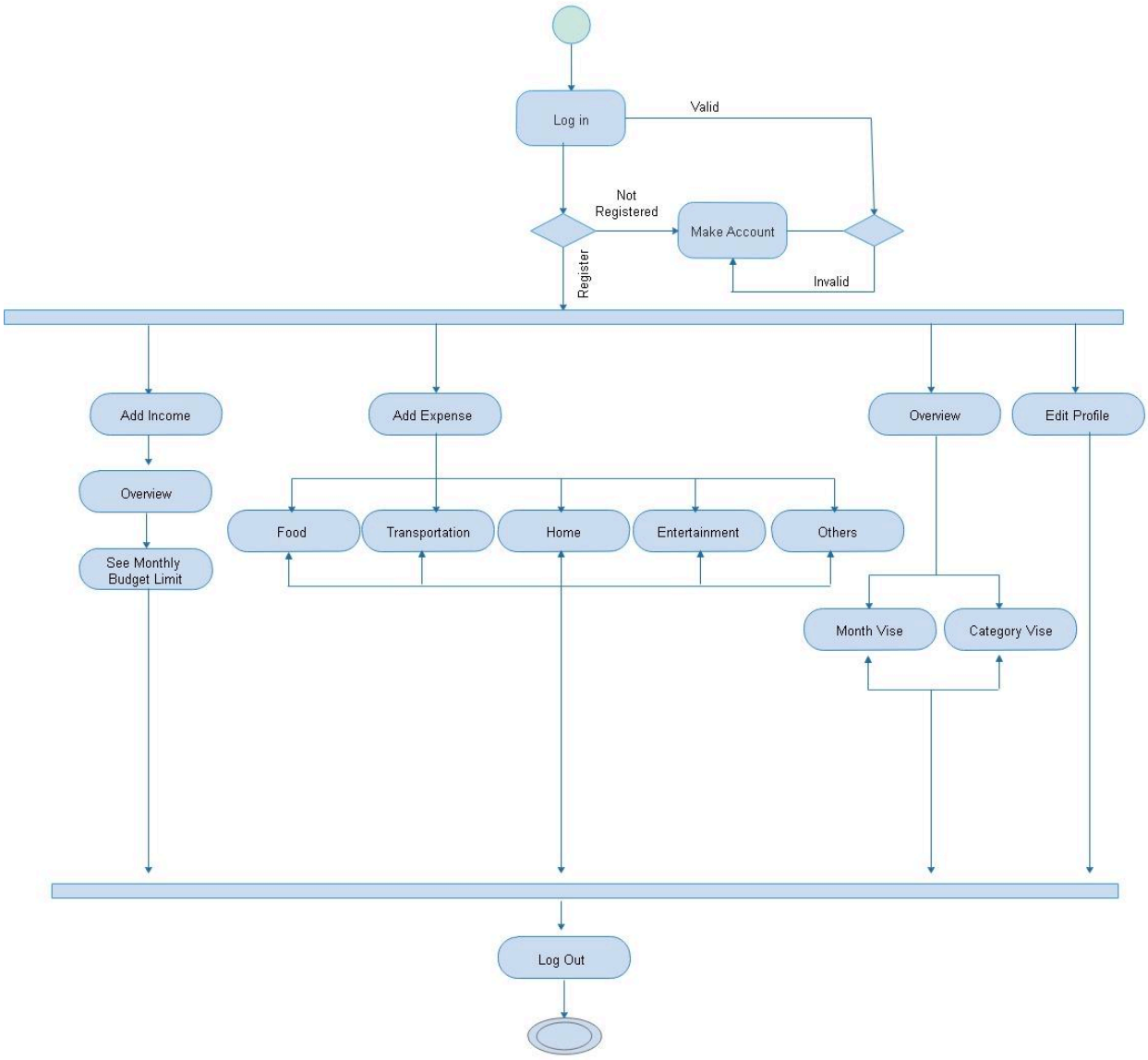
4.1. Use case diagram



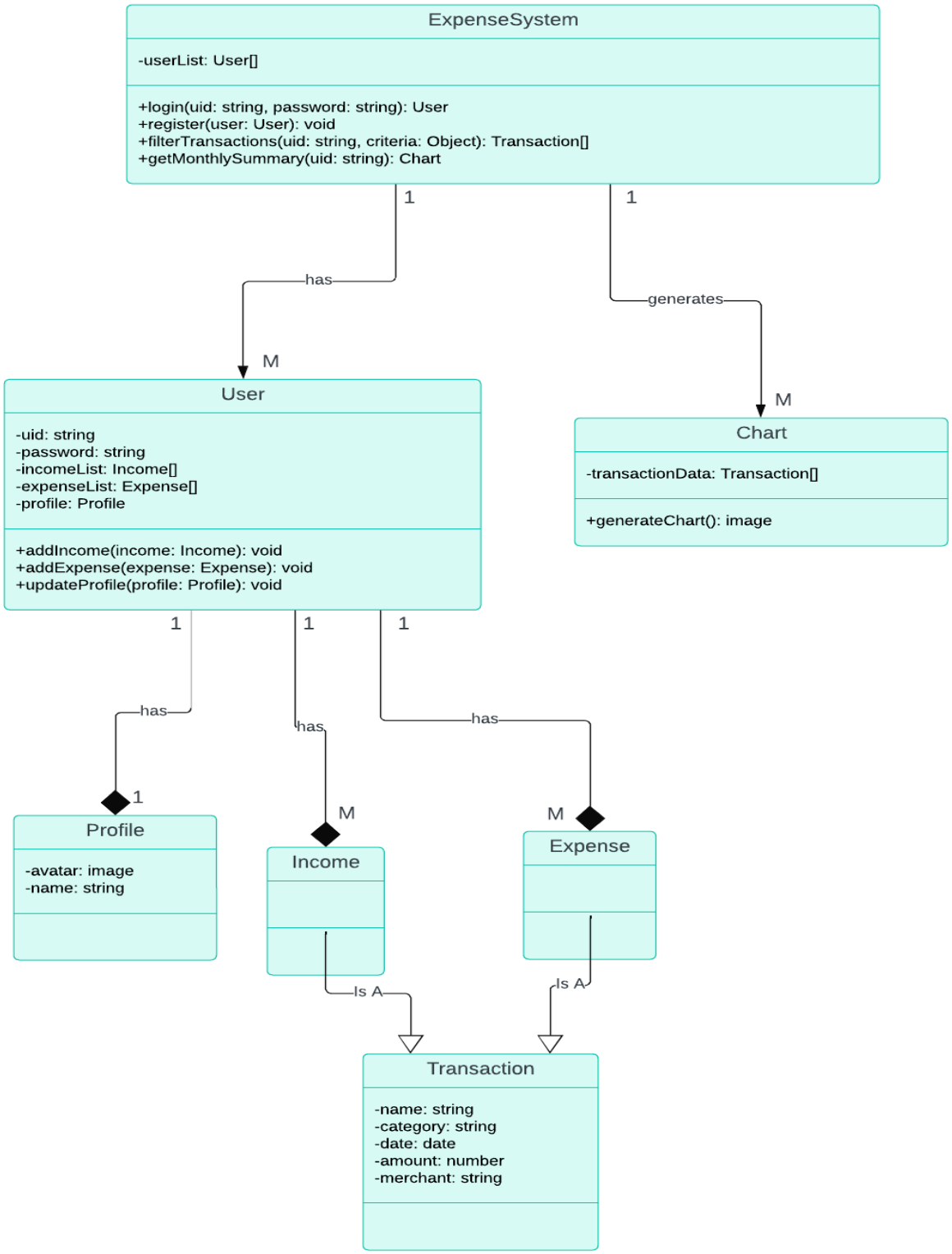
4.2. Entity-Relationship Diagram



4.3. Activity Diagram

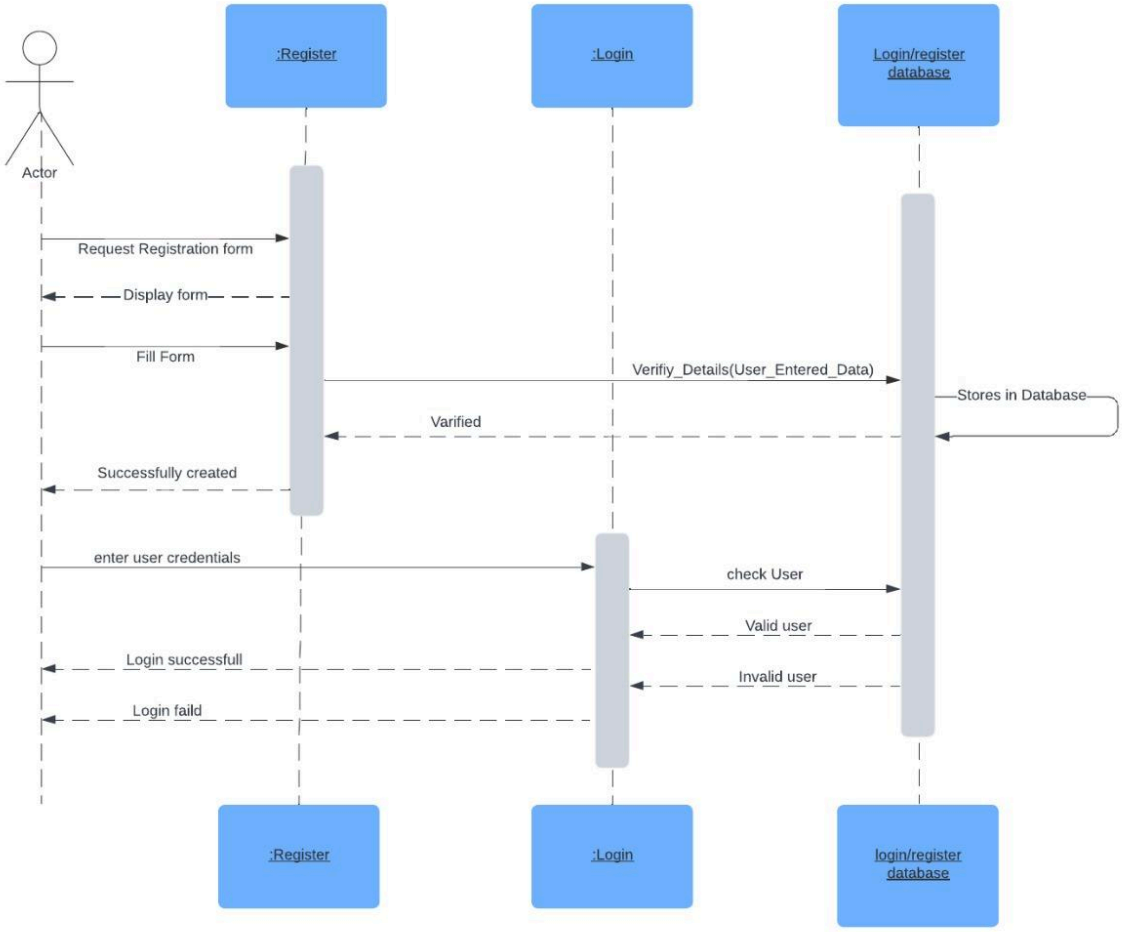


4.4. Class Diagram

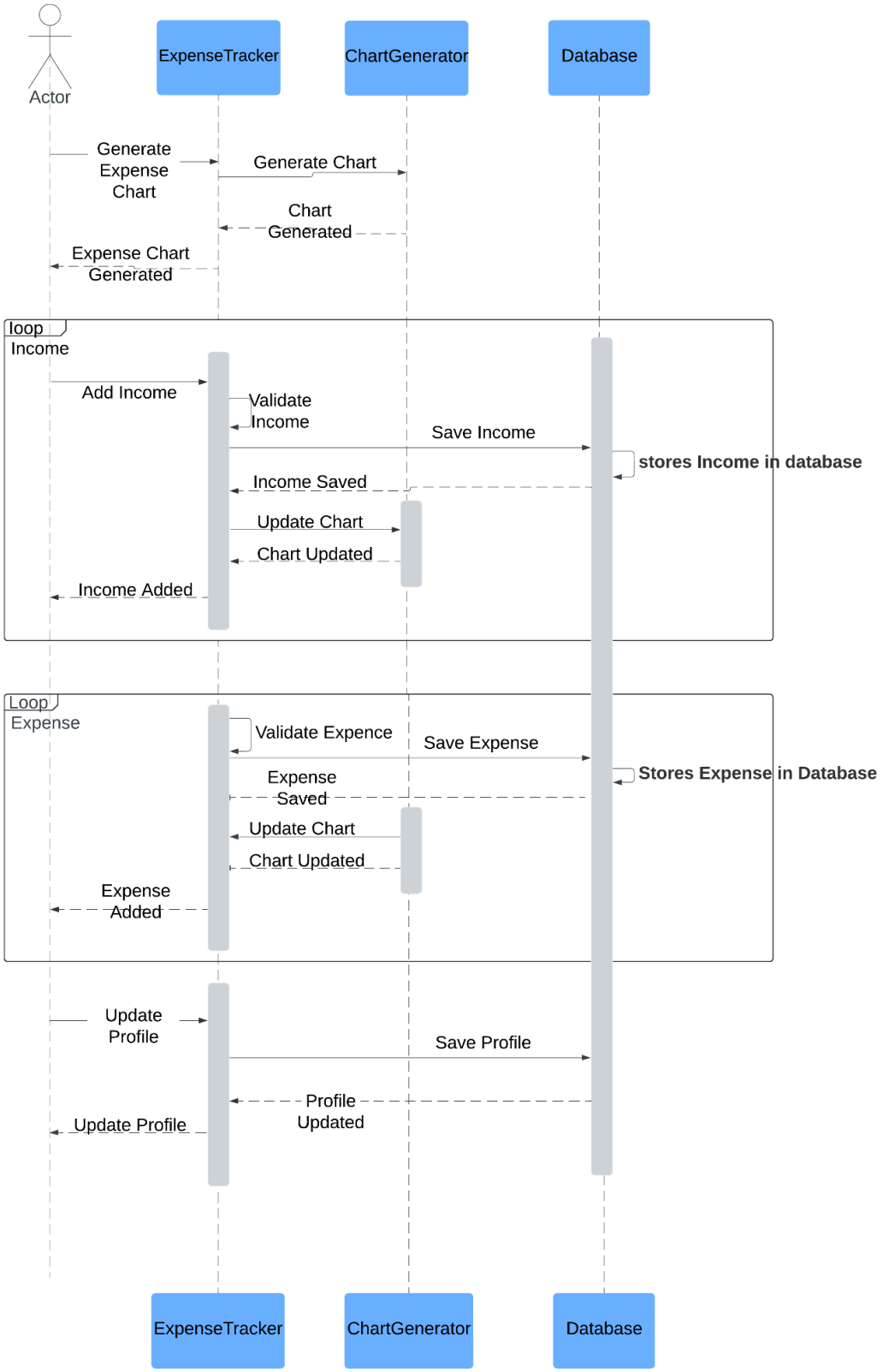


4.5. Sequence diagram

4.5.1. User Interactions with Login Functionality.

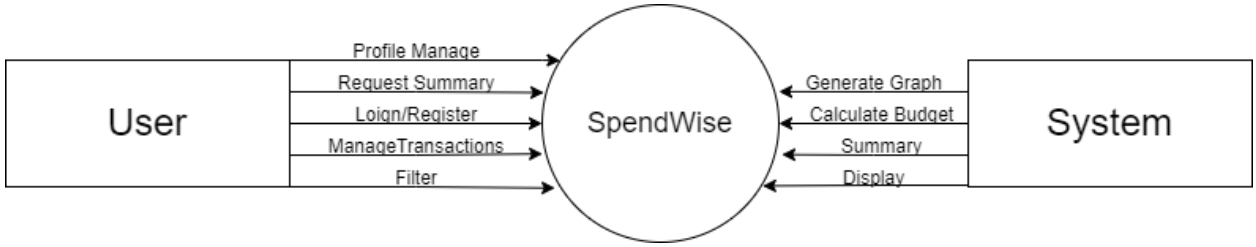


4.5.2. User Interactions with Login Functionality.

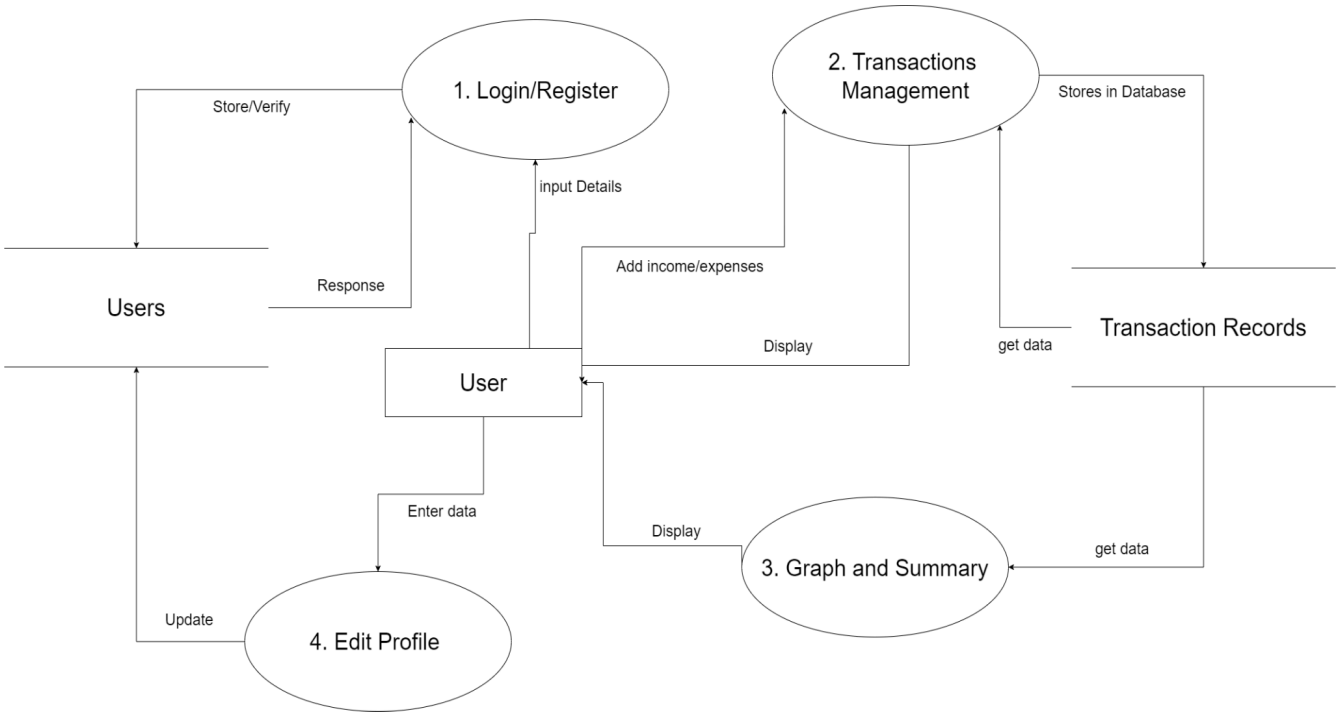


4.5. Data Flow Diagram

4.5.1. DFD Level 0



4.5.2. DFD Level 1



5. User Stories

Epic : User Registration and Authentication

User story 1 : As a user, I want to be able to create an account and log in securely so that I can access my expense tracking data.

1.1. As a new user, I want to access a registration form to create a new account.

1.2. As a user, I want to provide my email and password to register for an account.

1.3. As a registered user, I want to be able to log in using my email and password.

1.4. As a user, I want to see appropriate error messages if there are issues with registration or login.

Epic : Users can enter their income sources.

User Story 2 : As a user, I want to be able to input my income details so that I can track my total earnings.

2.1. As a user, I want to access a form to input my income details.

2.2. As a user, I want to specify the source and amount of my income.

2.3. As a user, I want the option to add additional notes or descriptions to my income entry.

Epic : User can add there expenses

User Story 3 : As a user, I want to be able to record my expenses with details such as date, amount, category, and description.

3.1. As a user, I want to access a form to input my expense details.

3.2. As a user, I want to specify the date, amount, category, and description of my expenses.

3.3. As a user, I want to select from predefined categories or add custom categories for my expenses.

Epic : View Transaction History

User Story 4 : As a user, I want to be able to see a comprehensive history of all my income and expenses transactions.

4.1. As a user, I want to access a page where I can view all my past income and expense transactions.

4.2. As a user, I want to see transactions sorted by date, with the latest transactions displayed first.

4.3. As a user, I want the ability to paginate or scroll through my transaction history if there are many entries.

Epic : Edit/Delete Transactions

User Story 6 : As a user, I want to be able to edit or delete any entry in my transaction history to correct mistakes or remove irrelevant data.

6.1. As a user, I want to be able to edit any details of a transaction, including date, amount, category, and description.

6.2. As a user, I want the option to delete any transaction entry if needed.

Epic : Graphical Representation of Expenses

User Story 7 : As a user, I want to see graphical representations (weekly and monthly of my expenses to understand spending patterns better.

7.1. As a user, I want to see a graphical representation of my weekly expenses in the form of a bar chart or line graph.

7.2. As a user, I want to see a graphical representation of my monthly expenses with the ability to switch between different months.

Epic : Update User Profile

User Story 8 : As a user, I want to be able to update my profile information such as name, email, password, etc., for accurate record-keeping.

8.1. As a user, I want to access a page where I can update my profile information.

8.2. As a user, I want to be able to change my name, email, password, and other relevant details.

8.3. As a user, I want the option to upload or change my profile picture.

Epic : Summary of Expense Types

User Story 9 : As a user, I want to see a summary breakdown of my expenses by category (e.g., food, entertainment, utilities) for better budgeting and analysis.

9.1. As a user, I want to see a summary breakdown of my expenses by category.

9.2. As a user, I want the summary to display the total amount spent in each Category.

Epic : Search Transactions

User Story 10 : As a user, I want to be able to search for specific transactions by date, category, amount, or description for quick reference.

10.1. As a user, I want to access a search feature where I can enter keywords or filters to find specific transactions.

10.2. As a user, I want the search results to update dynamically as I type or apply filters.

Epic : Log Out

User Story 11 : As a user, I want to be able to securely log out of my account to protect my privacy and data security.

11.1. As a user, I want to have a visible option to log out of my account from any page within the application.

11.2. As a user, I want to receive a confirmation prompt before logging out to prevent accidental logouts.

6. Functional Requirements:

User Management:

- ➢ User registration with email verification.
- ➢ Secure user authentication to ensure only authorized access.

Financial Data Management:

- ➢ inputting income details accurately and securely.
- ➢ Recording expenses with date, amount, category, and description. Uploading bill images or documents for expense transactions.
- ➢ Editing or deleting transaction entries for accuracy and organization.
- ➢ Updating user profile information as needed.

Transaction Tracking and Analysis:

- ➢ Viewing comprehensive transaction history sorted by date.
- ➢ Graphical representation of expenses on a weekly and monthly basis for better visualization.
- ➢ Summary breakdown of expenses by category to analyze spending habits.Search Functionality:
- ➢ Searching transactions by date, category, amount, or description for easy retrieval of specific transactions.

User Interaction:

- ➢ Secure logout option with confirmation prompt to ensure
- ➢ user data security and proper session termination.

7. Non-Functional Requirements:

Usability Requirement:

- ➢ The system shall provide a user-friendly and intuitive interface for seamless navigation.
- ➢ It should be accessible from various devices and modern web browsers.

Availability Requirement:

- ➢ The system shall be available 24 hours a day, 7 days a week, ensuring high availability for users.
- ➢ Users should be able to access the system at any time without interruptions.

Efficiency Requirement:

- ➢ The system should efficiently handle a large volume of transactions without performance degradation.

Accuracy:

- ➢ The system must accurately process and display real-time financial information.
- ➢ It should ensure 100% access reliability, considering various concurrency issues.

Performance Requirement:

- ➢ Response time for user requests should not exceed two seconds, with larger processing jobs allowed more time.
- ➢ Information should be refreshed promptly, with views appearing on the screen within 5 seconds.

Reliability Requirement:

- ➢ The system must be 100% reliable to prevent any potential
- ➢ damages caused by incorrect or incomplete financial data.
- ➢ It should operate continuously, 24 hours a day, 7 days a week.

Compatibility Requirement:

- ➢ The application should be compatible with modern web browsers
- ➢ and various devices, ensuring accessibility for all users.

Security Requirement:

- ➢ Robust data security measures must be implemented to protect
- ➢ user information from unauthorized access or breaches.

Accessibility Requirement:

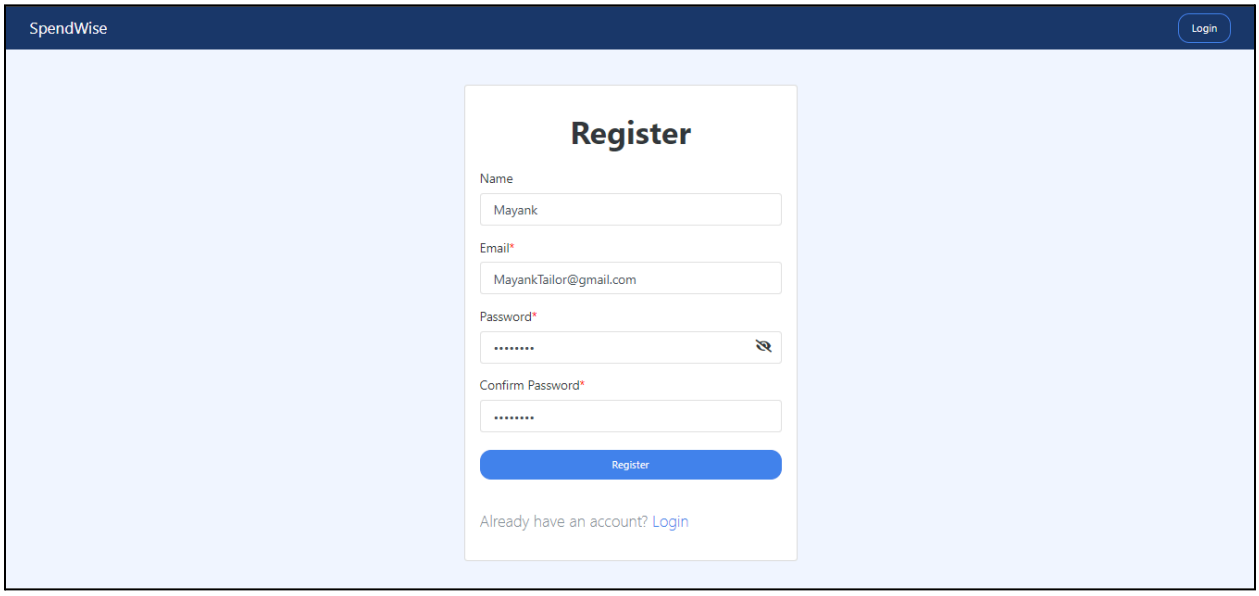
- ➢ The system should incorporate accessibility features to
- ➢ accommodate users with disabilities, ensuring inclusivity.

Compliance Requirement:

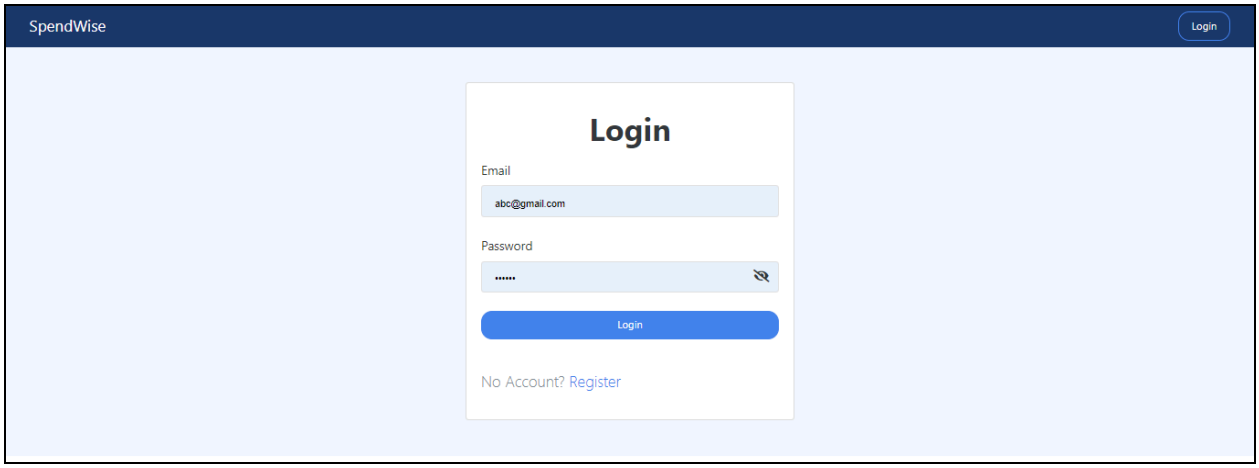
➢ The application must comply with relevant privacy regulations
➢ and standards to safeguard user data and privacy.

8. Project User - Interfaces

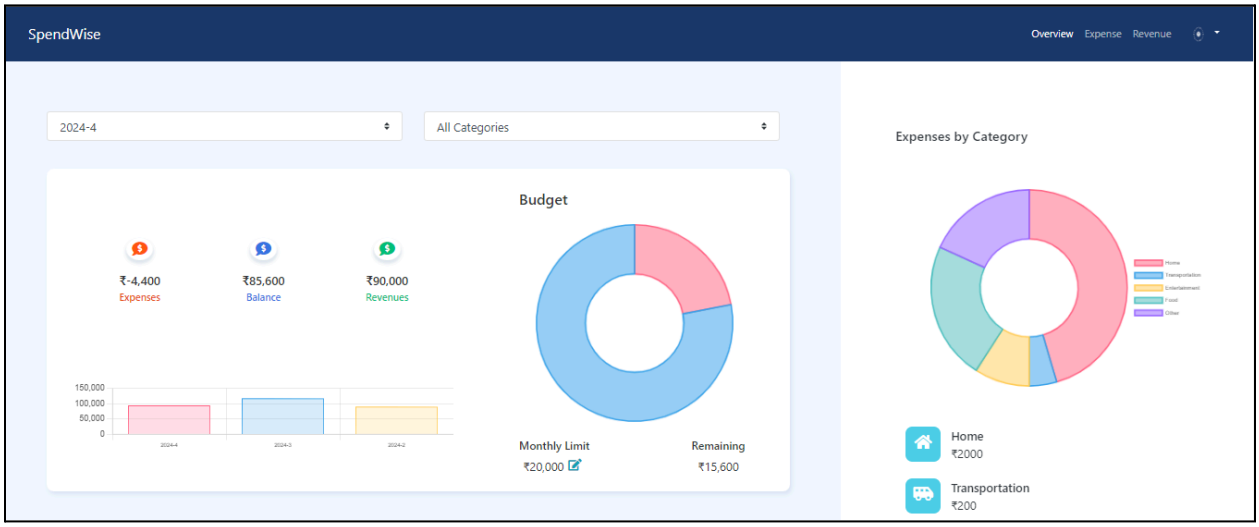
8.1. Registration UI



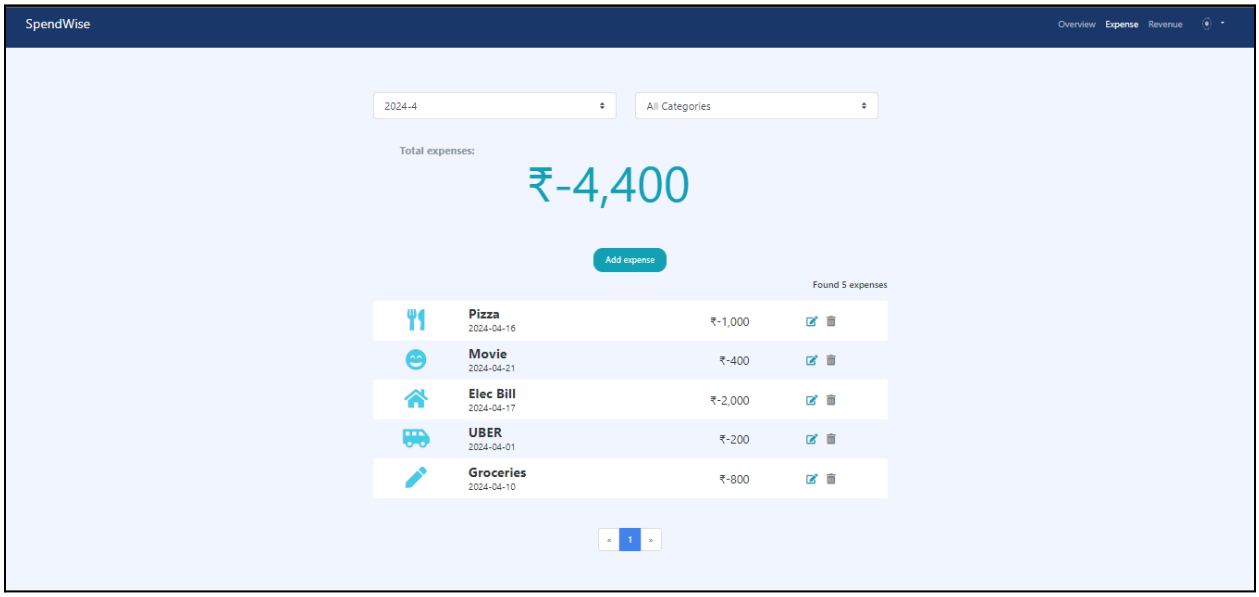
8.2. Login UI



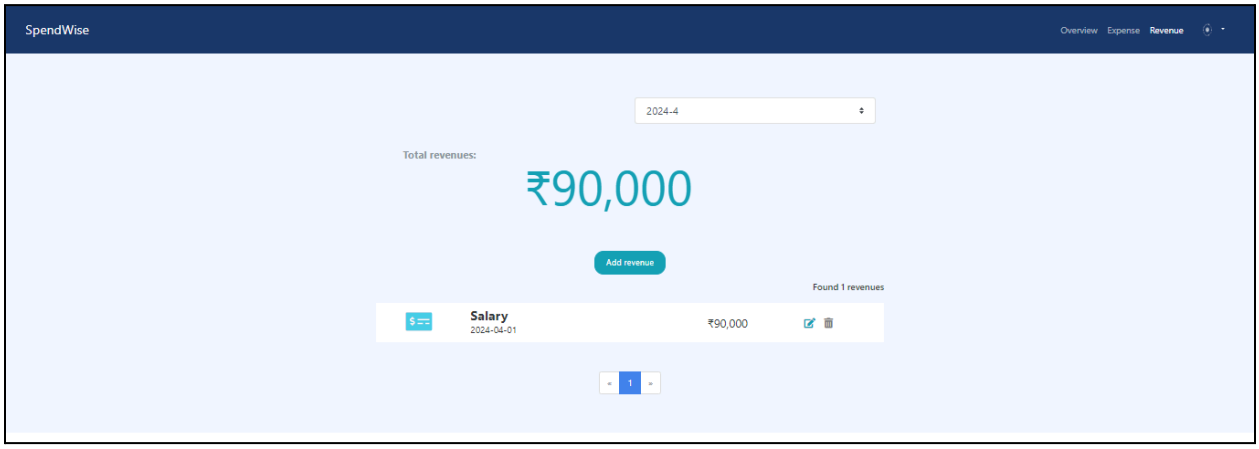
8.3. Dashboard



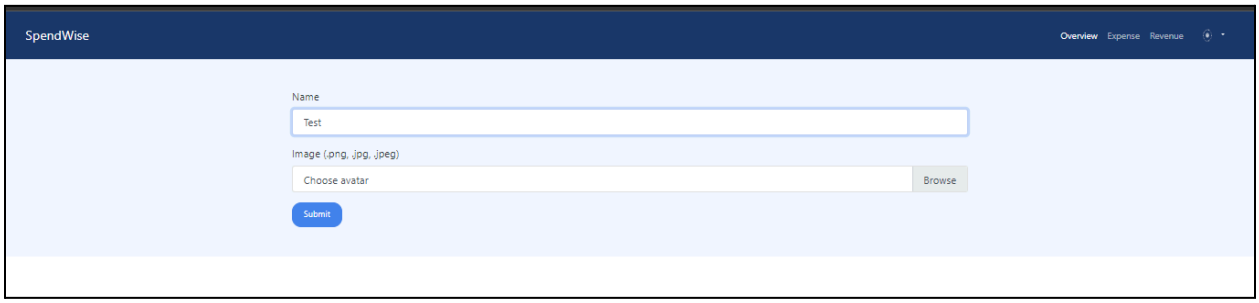
8.4. Expense UI

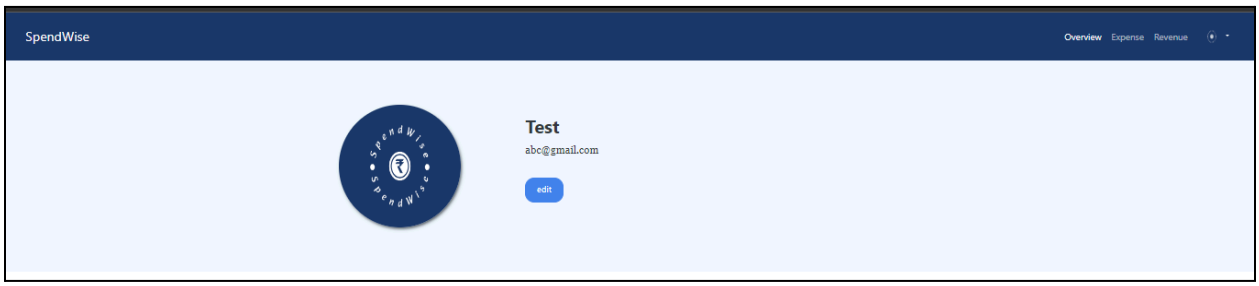


8.5. Income UI



8.6. User Profile UI





9. System Implementation

9.1 Technologies Used

The Expense Tracker system is implemented using the following technologies:
Frontend: HTML, CSS, JavaScript.
Backend: Node.js, Express.js
Database: MongoDB

8.2 System Setup

To set up the Expense Tracker system locally, follow these steps:
Clone the repository from GitHub: git clone https://github.com/tailormayank/SpendWise.git
Navigate to the project directory: cd expense-tracker
Install dependencies: npm install
Start the backend server: npm run server
Start the frontend development server: npm start

8.3 Key Components

The key components of the Expense Tracker system include:
Client-Side: The frontend of the application built using React, responsible for the user interface and user interactions.
Server-Side: The backend of the application built using Node.js and Express.js, responsible for handling requests, processing data, and interacting with the database.
Database: MongoDB database to store all application data, including user information, transactions, and budget details.

10. User Guide

10.1 Installation

To install the Expense Tracker system locally, follow these steps:

Prerequisites

- ➢ Node.js and npm installed on your machine
- ➢ MongoDB installed and running

Steps

- ➢ Navigate to the project directory:
  Command : cd expense-tracker

- ➢ Install dependencies:
  Command : npm install

- ➢ Run the .js app.
  Command : node app.js

11. Future Scope

11.1 Mobile Application

Develop a mobile application for Expense Tracker to allow users to track their expenses on-the-go. This will enhance the accessibility and convenience of the application.

11.2 Integration with Financial Institutions

Integrate Expense Tracker with financial institutions to allow for automatic syncing of transactions and account balances. This will streamline the expense tracking process for users.

11.3 Budget Recommendations

Use machine learning algorithms to provide personalized budget recommendations based on users' spending patterns and financial goals.

11.4 Multi-Language Support

Add support for multiple languages to make Expense Tracker accessible to users from different regions and language backgrounds.

11.5 Expense Sharing

Implement features that allow users to share expenses with family members or roommates, making it easier to track shared expenses and manage budgets collectively.

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Conclusion

In conclusion, the Expense Tracker system is a comprehensive solution designed to help individuals manage their finances effectively. By providing users with tools to track their expenses, set budget goals, and gain insights into their spending habits, Expense Tracker empowers users to take control of their financial future.

Throughout the development process, we have focused on creating a user-friendly interface, implementing robust features, and ensuring the security and privacy of users' financial information. We believe that Expense Tracker has the potential to make a positive impact on the financial well-being of our users.

Looking ahead, we envision expanding Expense Tracker's functionality to include mobile applications, advanced reporting features, and integration with financial institutions. We are committed to continuously improving Expense Tracker to meet the evolving needs of our users and provide them with a reliable tool for managing their finances.

We would like to express our gratitude to all those who have contributed to the development of Expense Tracker and to our users for their support and feedback. We are excited about the future of Expense Tracker and are confident that it will continue to be a valuable asset for individuals seeking to achieve financial stability and success.