EXPENSE TRACKER PROJECT

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GITHUB REPOSITORY:

https://github.com/siyon2003/expense-tracker

EXPENSE TRACKER PROJECT

INTRODUCTION

The Expense Tracker project is a web-based application designed to simplify and enhance the process of managing personal and business expenses. With a user-friendly interface, it allows users to effortlessly record, categorize, and analyze their expenditures. Key features include the ability to generate detailed reports for insights into spending patterns, and store transaction history. Whether used by individuals striving for better financial management or businesses aiming to track operational costs, the Expense Tracker offers a comprehensive solution. By promoting mindful spending and facilitating informed financial decisions, this project aims to empower users towards financial stability and success. In an era where financial management plays a pivotal role in personal and professional success, the need for efficient expense tracking has never been more pronounced. The Expense Tracker project aims to provide a seamless solution for individuals and businesses alike to meticulously monitor their expenditures. With its user-friendly interface and robust functionality, it empowers users to effortlessly record, categorize, and analyze their spending patterns. Whether it's keeping tabs on monthly budgets, identifying areas for savings, or generating insightful reports, the Expense Tracker stands as a valuable companion in the quest for financial well-being. By offering clarity and control over one's finances, this project endeavors to simplify the complexities of money management, fostering a path towards informed financial decisions.

PROJECT OBJECTIVE

The main objective of the Expense Tracker project is to provide users with a user-friendly platform for managing their finances efficiently. Upon logging in, users will be greeted with a personalized panel displaying today's date along with any recorded income and expenses for that day. The key features are:

Date-Specific Dashboard: Upon login, users will see a dashboard displaying today's date along with any income and expenses recorded for that day.

Add Income/Expenses: Users can easily add new income or expenses with a dedicated button, streamlining the process of recording financial activities.

Category Selection: The platform will allow users to select categories for each income or expense entry.

Date Navigation: Users will have the flexibility to navigate to different dates to view and add their income and expenses, enabling retrospective tracking.

User-specific Data: Each user's login will display only their recorded income and expenses, maintaining privacy and personalized financial tracking.

Category List from Database: Categories for income and expenses will be dynamically retrieved from the database.

Analysis Reports: The platform will offer analysis reports to users, showing the expenses and income for each category over a selected month, aiding in budgeting and financial planning.

Edit Income/Expense Details: Users will have the ability to edit income and expense details as needed, providing flexibility and accuracy in their financial records.

TECHNOLOGY STACK

The Expense Tracker project leverages the MERN stack along with Redux Toolkit to create a robust and efficient web-based application for seamless financial management.

1. MongoDB:

MongoDB serves as the project's database solution, providing a flexible and scalable NoSQL database to store user information, income, expenses, and categories. Its document-oriented structure allows for easy data manipulation and retrieval.

2. Express.js:

Express.js is utilized as the backend framework, enabling the creation of RESTful APIs for handling CRUD operations. It simplifies routing, middleware integration, and request handling, ensuring smooth communication between the frontend and backend.

3. React.js:

React.js is the frontend library of choice for building the user interface of the Expense Tracker. Its component-based architecture facilitates the creation of dynamic and interactive user interfaces, ensuring a responsive and engaging user experience.

4. Node.js:

Node.js powers the backend server, allowing for asynchronous event-driven JavaScript runtime. It enables the execution of server-side logic, such as authentication, data processing, and API integrations, providing a fast and scalable backend environment.

5. Redux Toolkit:

Redux Toolkit is employed for state management in the frontend, offering a simplified and efficient way to manage application state. It provides a predictable state container, enabling components to access and update state uniformly across the application.

ADDITIONAL LIBRARIES AND TOOLS

React Router: React Router is utilized for client-side routing, enabling navigation between different components and pages within the application.

Material-UI: Material-UI frameworks are used for responsive design and UI components, ensuring a modern and visually appealing user interface.

JWT Authentication: JSON Web Token (JWT) authentication is implemented for secure user authentication.

Mongoose: Mongoose is used as an elegant MongoDB object modeling tool, providing schema-based solutions and validation for data handling.

Chart.js: Chart.js is integrated into the project to provide dynamic and interactive data visualization capabilities. This powerful charting library offers various chart types, including line charts, bar charts, and pie charts, allowing users to gain insightful perspectives on their financial data. With Chart.js, users can visually track their spending patterns, income trends, and category distributions, facilitating informed decision-making and budget planning.

React-Material-UI-Carousel: React-Material-UI-Carousel is employed to create engaging and responsive carousels within the application. This library, built on top of Material-UI components, enables the display of multiple images or content in an interactive and visually appealing manner.

DATABASE SCHEMA

USER SCHEMA:

Fields:

- username: String (required, unique)
- email: String (required, unique, lowercase, validated for email format)
- password: String (required)
- transactions: Array of ObjectIds (references Transactions)

Description:

- Stores user details such as username, email, and password.
- Ensures each user has a unique identity and login credentials.
- Maintains an array of transactions associated with the user, facilitating personalized tracking.

TRANSACTIONS SCHEMA:

Fields:

- expense: Boolean (required)
- category: ObjectId (required, references Category)
- description: String (default: '')
- amount: Number (required)
- month: Number (required)
- date: Number (required)
- year: Number (required)
- user: ObjectId (required, references User)

Description:

- Represents individual financial transactions (expenses or incomes) made by users.
- Captures details such as expense type, category (linked to Category schema), description, amount, and date.
- Includes references to the user who initiated the transaction and the category to which it belongs.

CATEGORY SCHEMA:

Fields:

- name: String (required, unique)
- expense: Boolean (required)

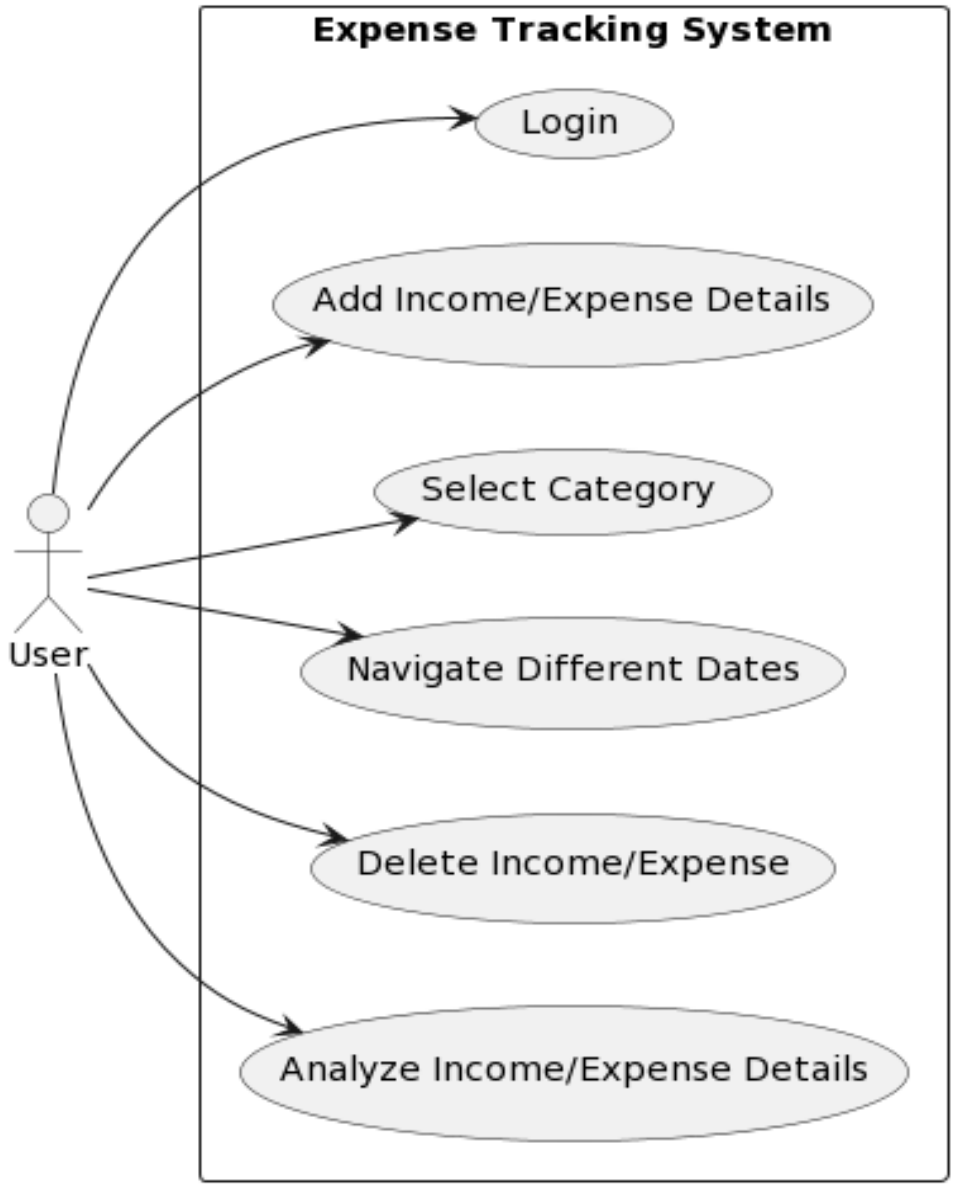
Description:

- Defines categories to classify transactions as expenses or incomes.
- Each category has a unique name and a flag indicating whether it's an expense or income category.
- Ensures consistency in categorizing transactions for effective financial tracking and reporting.

The Expense Tracker project's database schema comprises: User, Transactions, and Category schema. The User schema stores user credentials and maintains an array of their transactions. Transactions schema records individual financial activities, including type, category, amount, and date, with references to the user and category. Category schema defines distinct categories for expenses or incomes. This structured schema design facilitates organized and efficient data storage, retrieval, and analysis within the application, empowering users to manage their finances effectively.

SYSTEM DESIGN

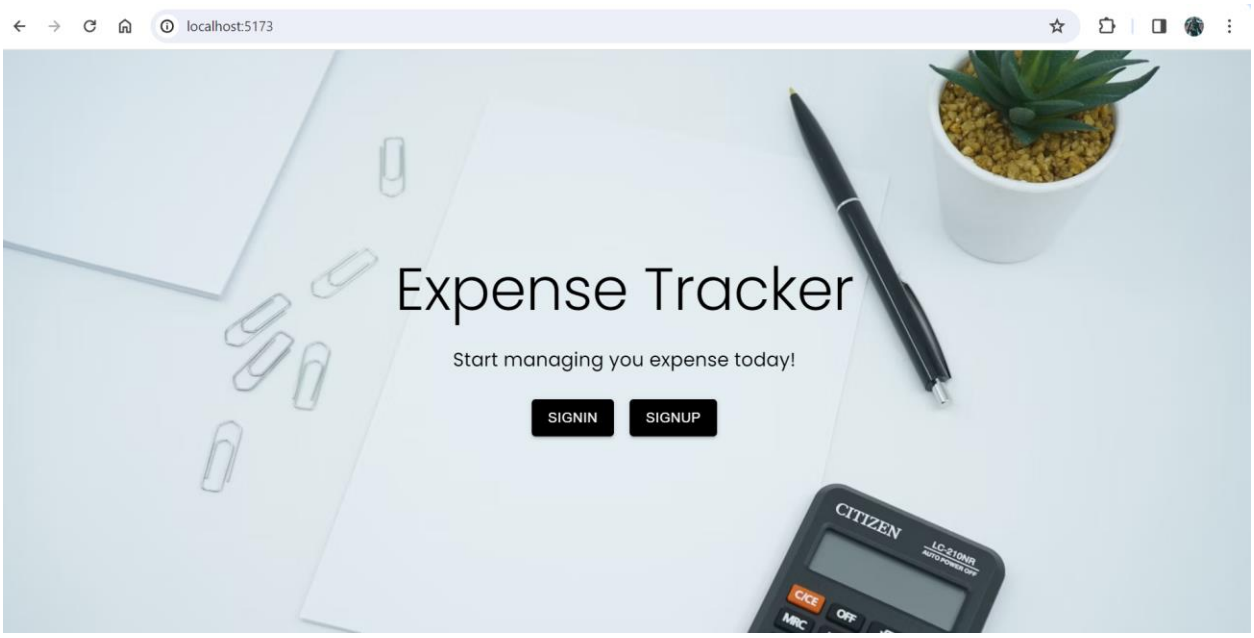
USECASE DIAGRAM



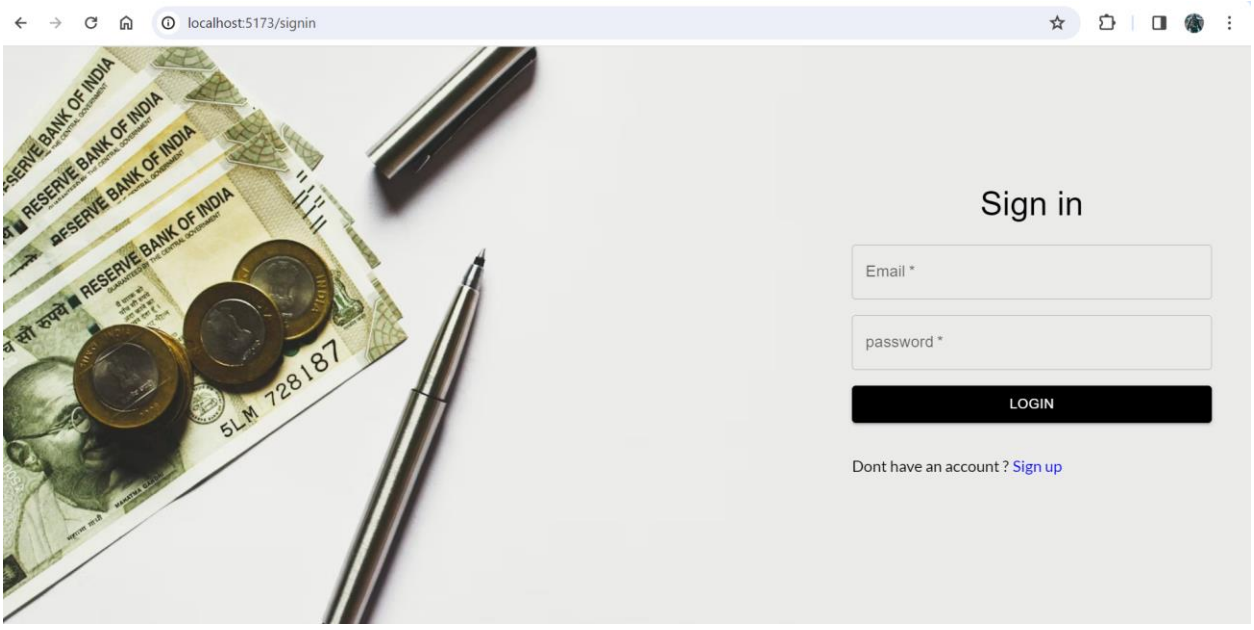
ENTITY-RELATIONSHIP DIAGRAM

RESULTS AND DISCUSSIONS

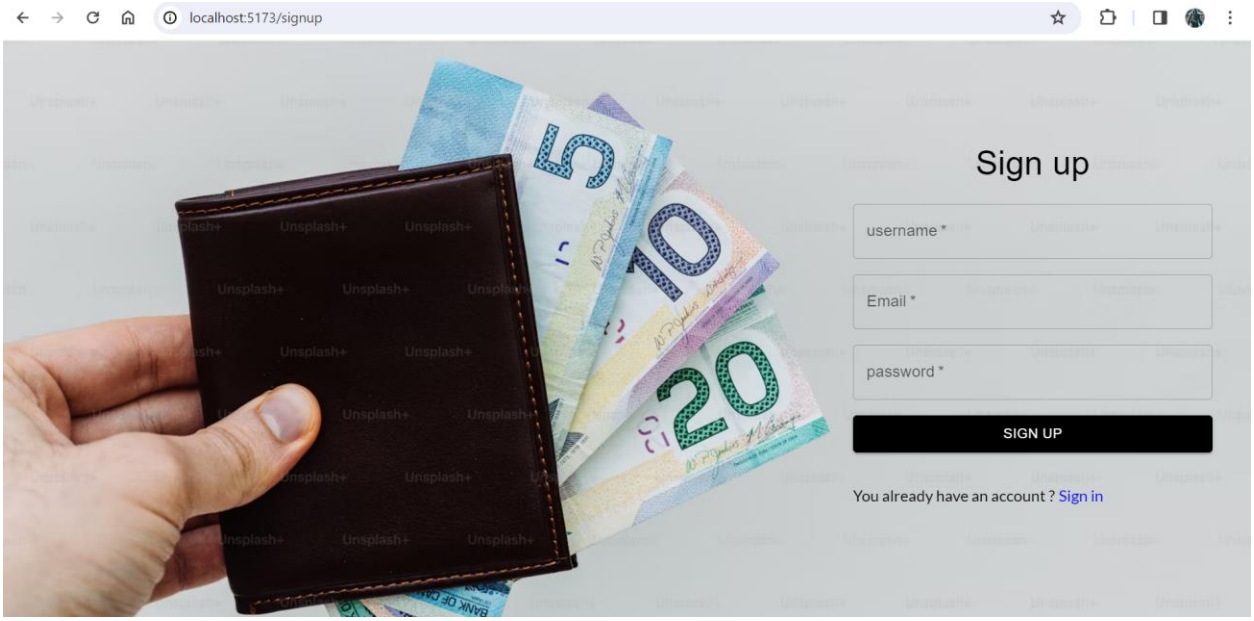
LANDING PAGE:



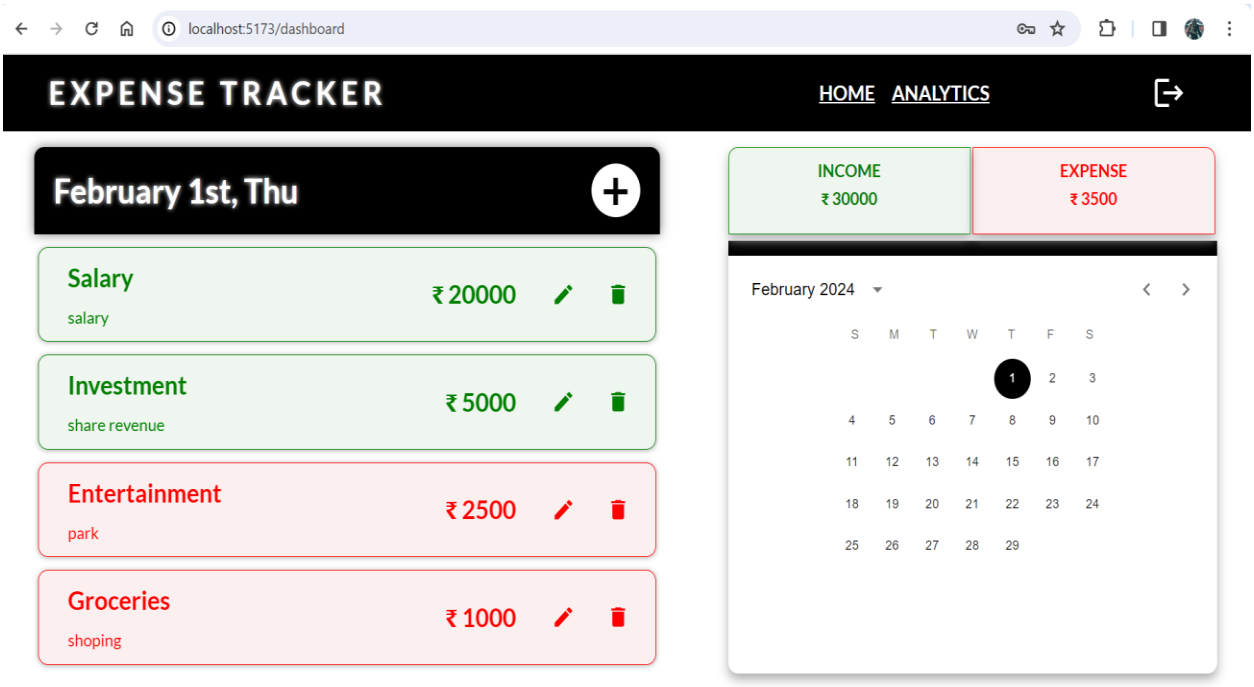
SIGN IN PAGE:



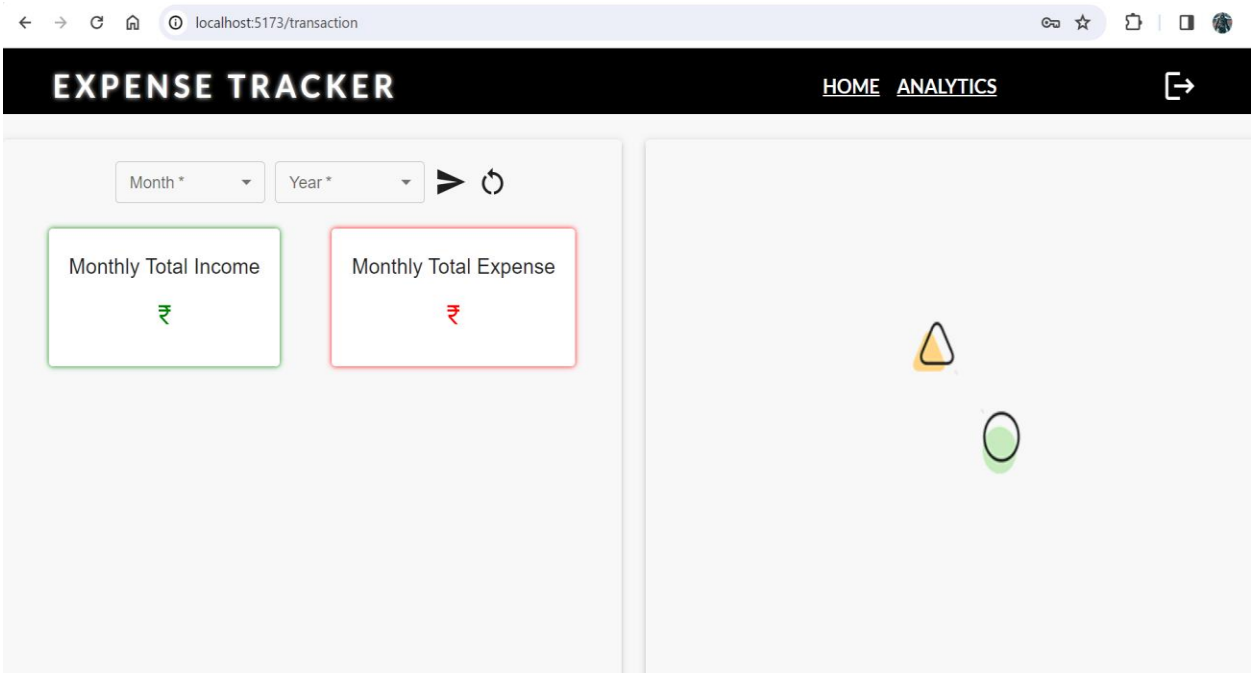
SIGNUP PAGE:

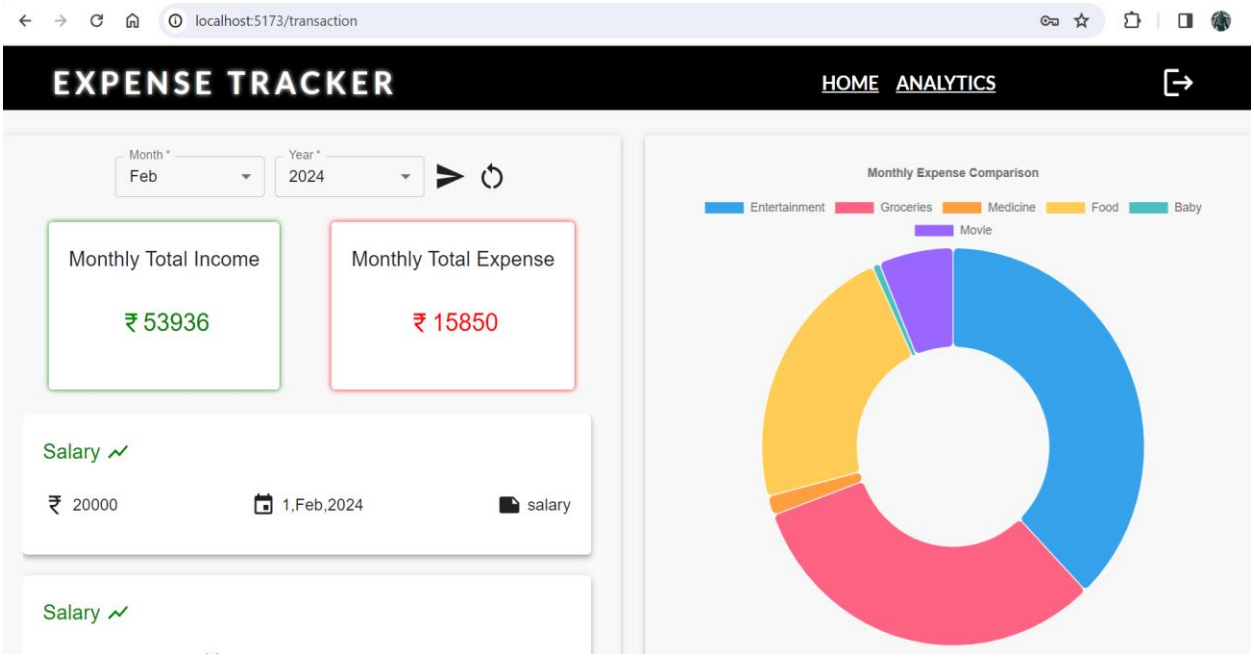


DASHBOARD PAGE:

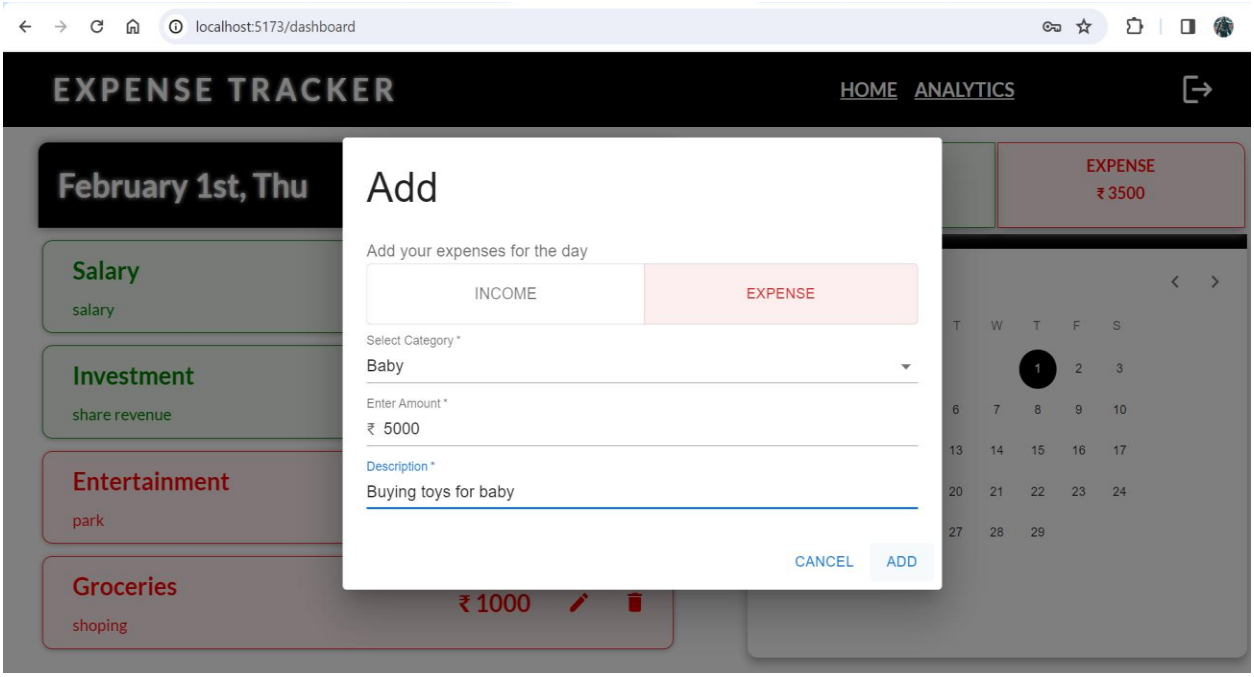


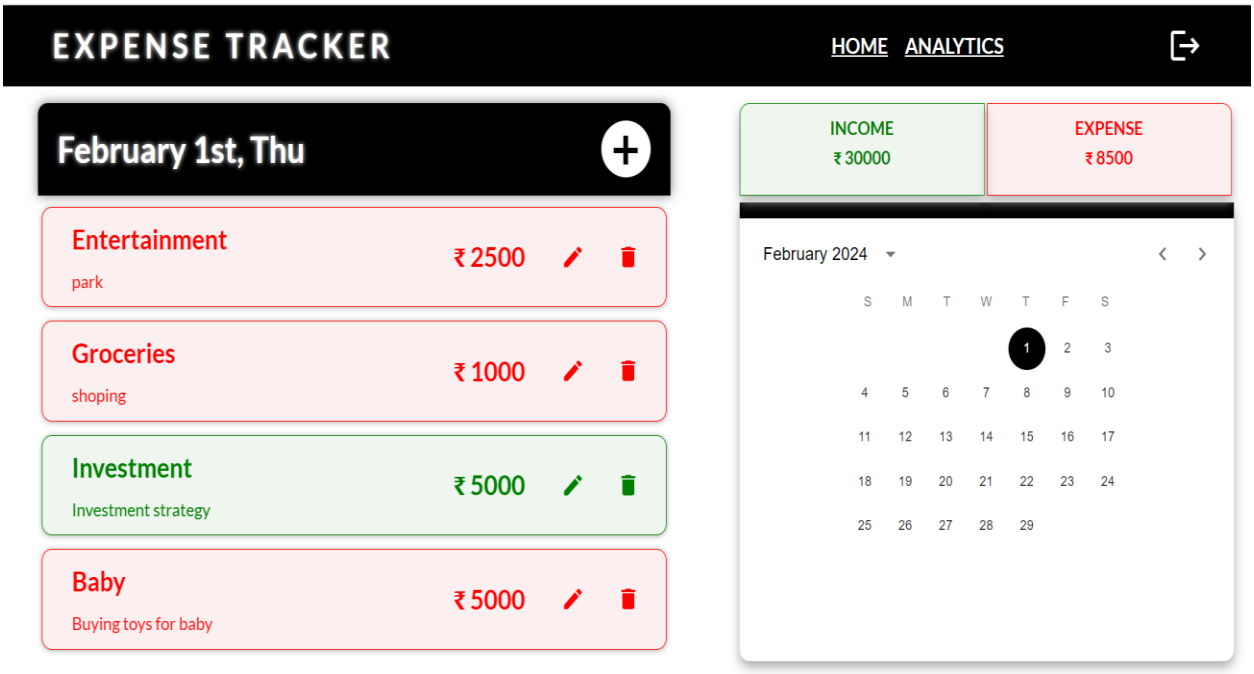
ANALYTICS PAGE:





ADD FUNCTIONALITY:





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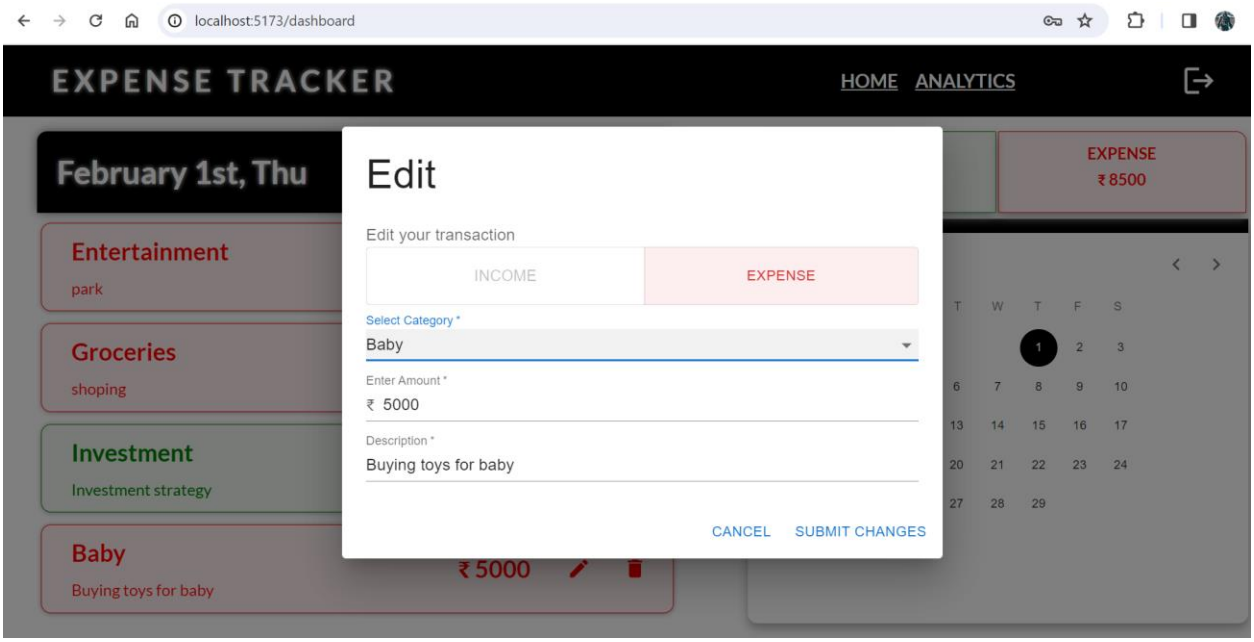

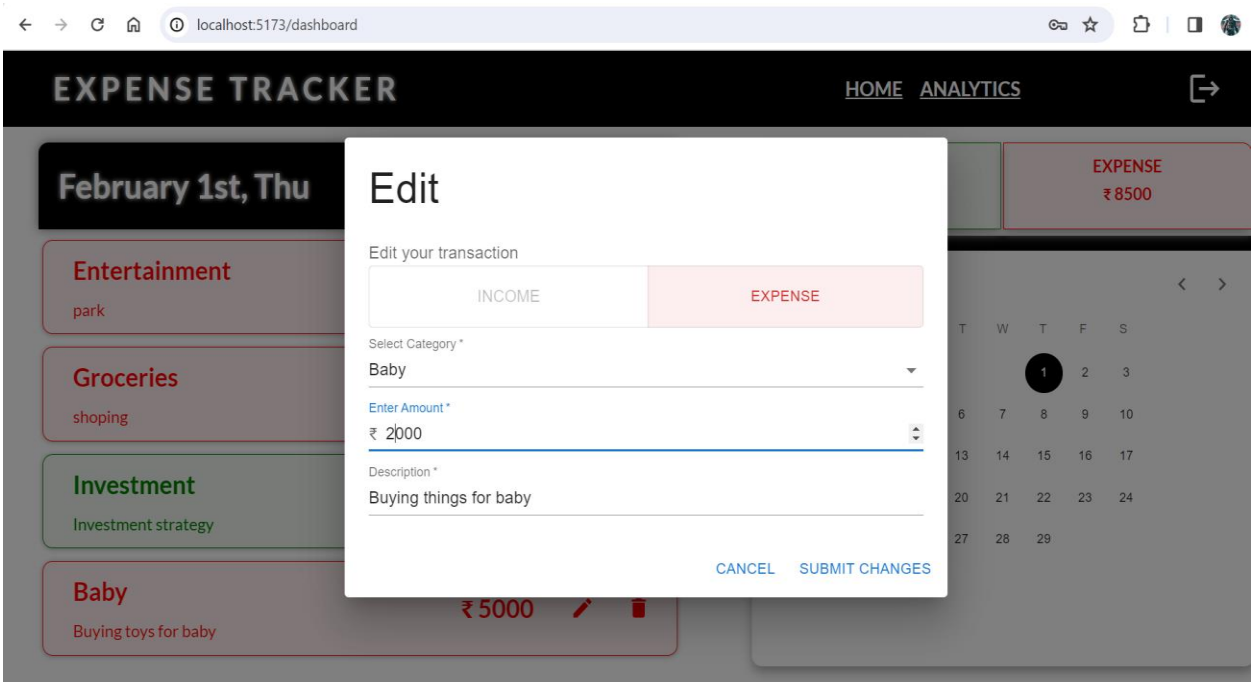

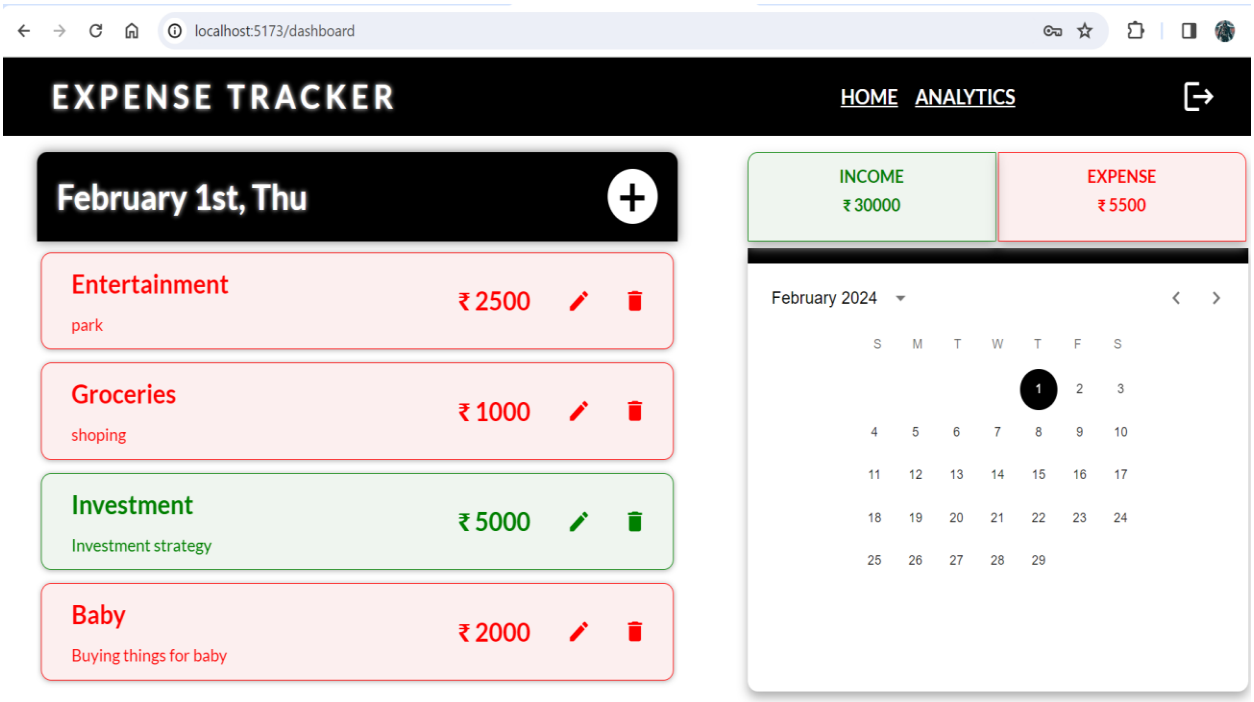

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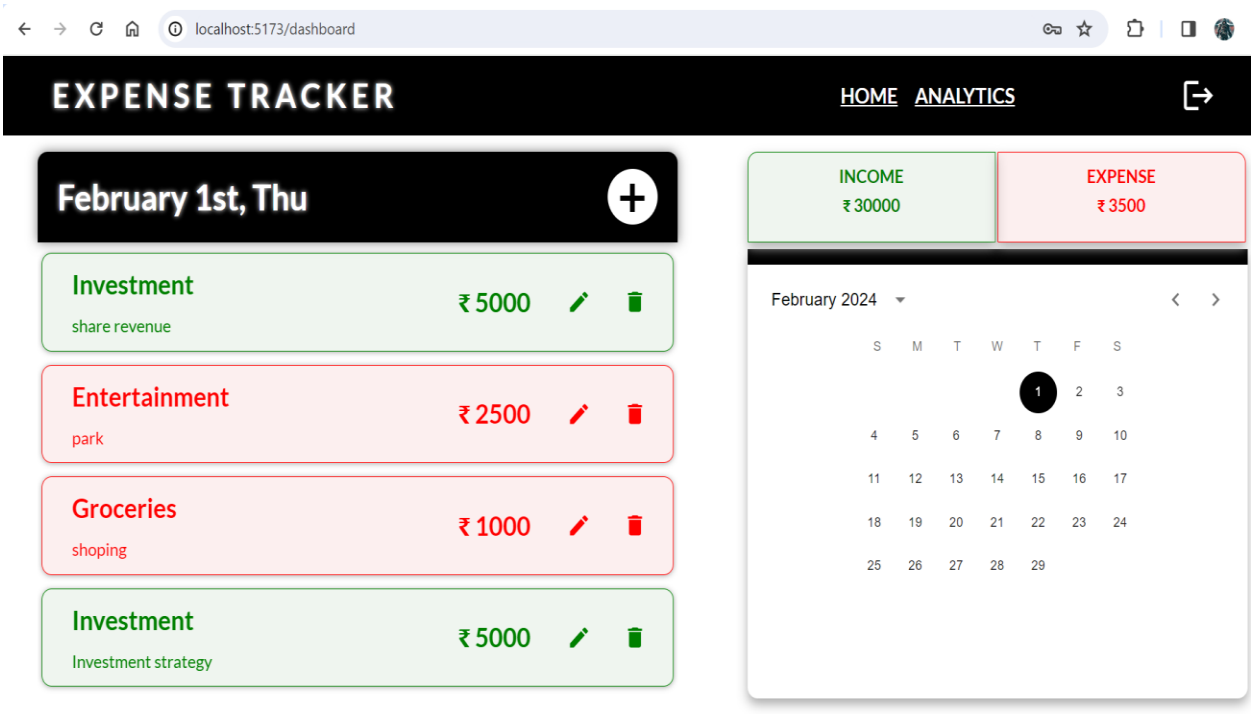

The implementation of the Expense Tracker project has resulted in a fully functional web application that offers a comprehensive solution for managing personal and business expenses. The project successfully achieved its objectives of providing users with an intuitive platform to track their income and expenses, categorize transactions, visualize spending patterns, generate reports, and make informed financial decisions.

Key Features Implemented

Today's Overview: Users are greeted with a personalized panel upon login, displaying today's date along with any recorded income and expenses for that day. This immediate overview provides users with real-time insights into their daily financial activities.

Add Income/Expenses: The application allows users to effortlessly add new income or expenses with a dedicated button. Users can also select from a list of predefined categories, ensuring accurate and organized tracking of transactions.

Category Selection: The feature to select categories for each income or expense entry enhances the organization of financial data. Users can easily categorize transactions such as groceries, utilities, entertainment, and more.

Date Navigation: Users have the flexibility to navigate to different dates to view and add income and expenses. This functionality enables users to retrospectively track their financial activities over specific timeframes.

User-specific Data: Each user's login displays only their recorded income and expenses, maintaining privacy and personalized financial tracking. This feature ensures that users can manage their financial data securely within their own accounts.

Analysis Reports: Users can generate visual reports to identify the percentage breakdowns of expenses for each category over a selected month. This analytical feature aids users in budgeting, identifying spending patterns, and making informed financial decisions.

Edit Transactions: The ability to edit income and expense details provides users with flexibility and accuracy in their financial records. Users can easily update transaction descriptions, amounts, and categories as needed.

Future Enhancements

While the Expense Tracker project has achieved its core objectives, there are several areas for potential future enhancements:

Budgeting Features: Implementing budgeting tools that allow users to set monthly spending limits for different categories and receive alerts when nearing or exceeding these limits.

Data Insights: Incorporating more advanced data analysis features, such as trend analysis, predictive spending patterns, and comparative analysis with previous months or years.

Multiple Currency Support: Adding support for multiple currencies to cater to users with diverse financial needs.

Data Export: Allowing users to export their transaction data and reports in various formats, such as CSV or PDF, for external analysis or record-keeping.