Software Engineering Project

Expense Tracker

Using Node.js and React

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Short study of what are existing applications that do the same job and how our application will be better than them:

There are several existing applications in the market that offer expense tracking functionalities, such as *Mint*, *Zoho*, and *Expensify*.

While these applications have their strengths, our expense tracker website aims to offer a more intuitive and customizable experience for users. Unlike some existing applications that might overwhelm users with complex features, my website focuses on simplicity and ease of use, making it accessible for individuals of all financial backgrounds.

Additionally, by leveraging modern web technologies like React and Node.js, my website offers a fast and responsive user interface, ensuring a seamless user experience across different devices.

By considering our expense tracker website as a user-centric and innovative solution in the market, we are confident that it will provide significant value to individuals seeking a more personalized approach to managing their finances.

UX and CX study (search for customer experience):

1. **User Interface (UI) Design**:
   - Clean and intuitive design of the website, which makes it easy to navigate and use.
   - The use of consistent design elements, such as color schemes and typography, contributed to a better user experience across different pages.
2. **Ease of Use**:
   - Straightforward way to add and manage user's transactions, thanks to clear labeling and intuitive form layouts.

3. **Customization Options**:
    - The ability to customize income and expense, their title, amount and date.
4. **Performance and Responsiveness**:
    - Fast load times and responsiveness when navigating between pages and performing actions.
5. **Feedback and Iteration**:
    - Welcoming user feedback into regular updates and iterations for maintaining a user-centric approach and continuously improving the platform.

Identifying the stakeholders and users of our platform:

Knowing stakeholders and users is crucial for understanding the needs and expectations of those who interact with our expense tracker. How we would categorize them:

1. **Primary Users**:
    - Individuals: These are the end users of the platform, including individuals from different backgrounds who use the expense tracker to manage their personal finances.
    - Small Business Owners: Some users may operate small businesses and use the expense tracker to monitor business expenses and income.
2. **Secondary Users**:
    - Financial Advisors: Professionals who may recommend the expense tracker to their clients as part of financial planning and budgeting strategies.

- Accountants: Individuals responsible for organizing financial data, who may use the expense tracker to track their workflow and assist clients.

3. **Stakeholders**:

    - Developers: Those involved in the development, maintenance, and enhancement of the platform, including software engineers, designers, and project managers.
    - Business Owners: Individuals or organizations responsible for the overall direction and strategy of the platform, including decisions related to features, pricing, and marketing.
    - Investors: Individuals or entities that have invested resources (financial or otherwise) into the development and success of the platform, who have a stake in its performance and profitability.

The user stories of the application:

1. As a freelancer, I want to add income transactions with details such as amount, title, and date, so I can accurately track my sources of income.
2. As a business owner, I want to add expense transactions with details, so I can monitor my spending habits.
3. As an administrator, I want to have access to a comprehensive overview of all users' financial data, so I can monitor system performance and ensure data integrity.
4. As a financial analyst, I want to generate detailed visualizations of income and expenses over time, showing source and type, so I can provide insights and recommendations to users for optimizing their financial management.

5. As an income earner, I want to categorize my earnings into different sources such as salary, freelance, YouTube, stocks, bitcoin, or investments, so I can track my various income streams effectively.
6. As a software developer, I want to regularly update and maintain the expense tracker system to ensure compatibility with new technologies and address any security vulnerabilities or performance issues.
7. As a busy professional expenses tracker, I want to see transactions details like date, category, or amount, so I can easily locate specific transactions within my records.
8. As a transactions manager, I want to easily edit income or expense entries, so I can correct any errors or make adjustments as needed.
9. As an investor in the expense tracker platform, I want to receive regular updates on the company's financial performance and growth metrics, so I can make informed decisions about my investment portfolio.
10. As a freelancer receiving income from various sources, I want to select from a menu of options such as salary, freelance, YouTube, stocks, bitcoin, and investments when adding income transactions, so I can categorize and track my earnings accurately.
11. As an integration specialist, I want to develop seamless integrations with third-party financial services and platforms, so users can easily import and export their financial data between different systems.
12. As a data security officer, I want to implement robust encryption protocols for storing and transmitting sensitive financial information, so I can protect users' privacy and prevent unauthorized access to their data.
13. As a software tester, I want to conduct thorough testing of new features and updates before they are deployed to the production environment, so I can identify and resolve any bugs or issues early in the development process.

14. As a technical support specialist, I want to provide comprehensive documentation and training resources for users, so they can quickly learn how to use the expense tracker platform effectively and troubleshoot common issues on their own.
15. As a customer support representative, I want to provide timely assistance and resolutions to users' inquiries and issues related to the expense tracker platform, so I can maintain high levels of user satisfaction and loyalty.

All the related functional and non-functional requirements:

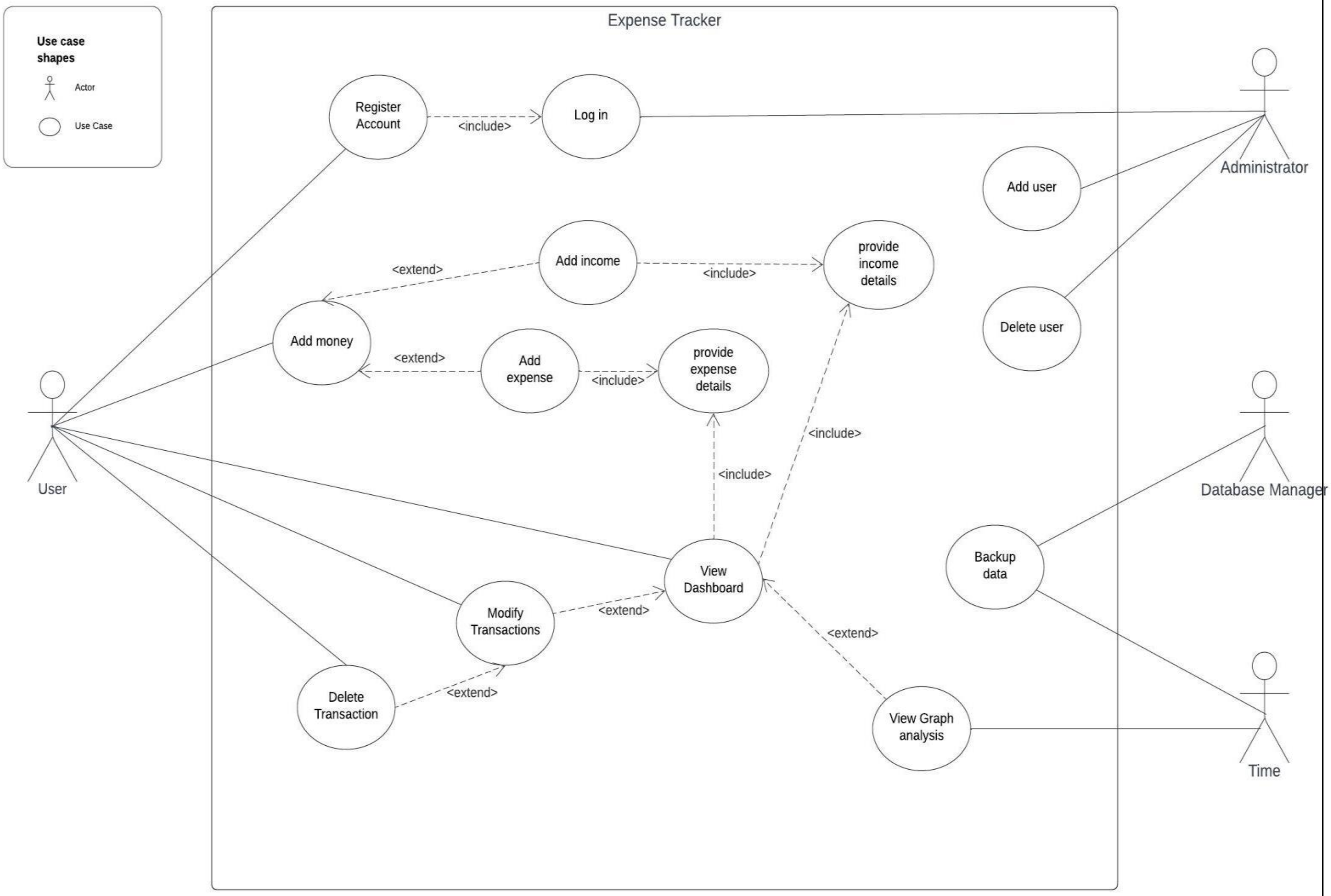
Functional Requirements:

1. **Transaction Management**:
   - Users is able to add, edit, and delete income and expense transactions.
   - Transactions include details such as amount, title, date, and category.
2. **Categorization**:
   - Users is able to categorize transactions into different income and expense categories.
3. **Analysis**:
   - Users are able to generate detailed visualizations of their income and expenses over time.

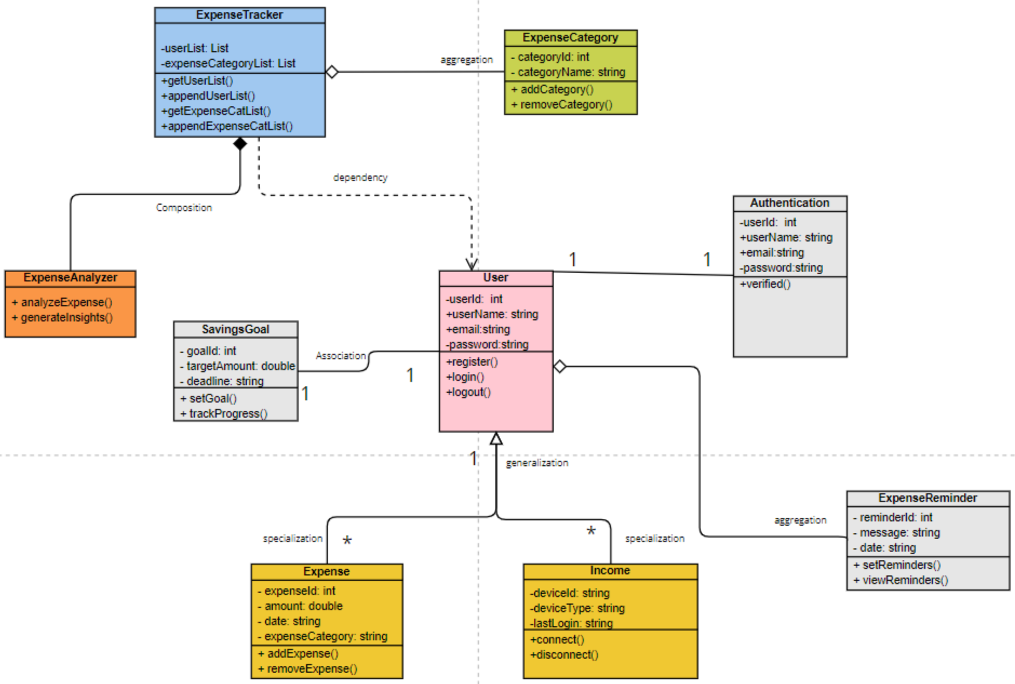
Non-Functional Requirements:

1. **Performance**:
    - The system responds to user interactions quickly, with minimal latency.
    - The system is able to handle a large volume of transactions and users concurrently without significant performance degradation.
2. **Security**:
    - User data is encrypted during transmission and storage to prevent unauthorized access.
3. **Reliability**:
    - The system is available and operational at all times, with minimal downtime for maintenance or updates.
4. **Usability**:
    - The user interface is intuitive and easy to navigate, with clear labels and instructions for performing tasks.
5. **Scalability**:
    - The system architecture should be designed to support future growth and expansion without significant reengineering or performance issues.

Use Case Diagram:



Class diagram showing the most important classes, sample of objects scenarios:



Two use case descriptions:

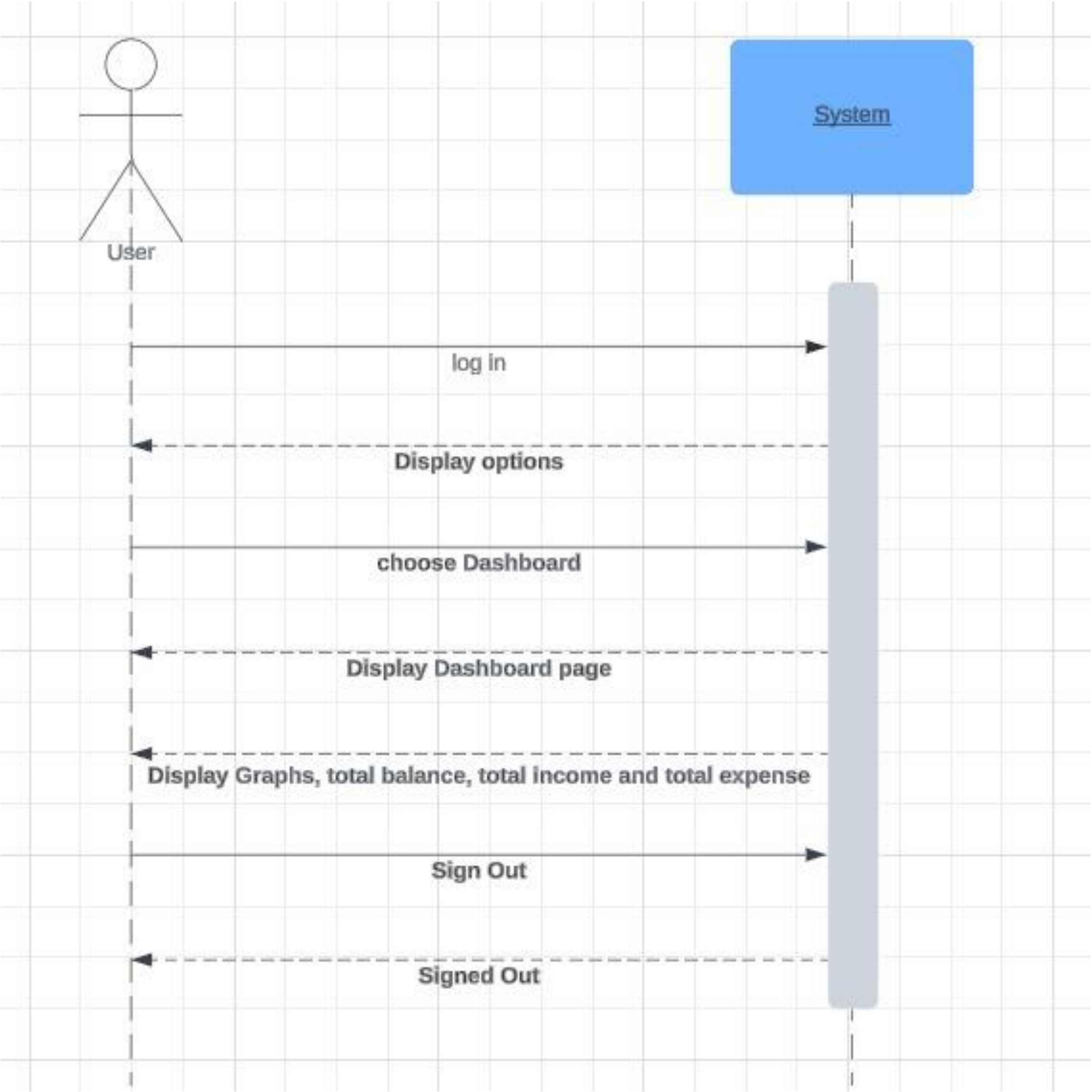
Use Case	Add Money
Brief Description	Users should be able to add money transactions, including expenses and income, to their expense tracker account.
Actors	User
Trigger	The user initiates the process of adding a money transaction.
Preconditions	The user is logged into their expense tracker account.
Main Flow	1. The user selects the option to add a money transaction. 2. The system presents the user with a form to input details of the transaction, including type, amount, title, date, and category. 3. The user fills out the form with the relevant information. 4. The user confirms and submits the transaction.
Postconditions	The money transaction (expense or income) is successfully added to the user's account.
Extensions	4.1 If the user deletes the transaction, the system returns to the previous state before transaction.

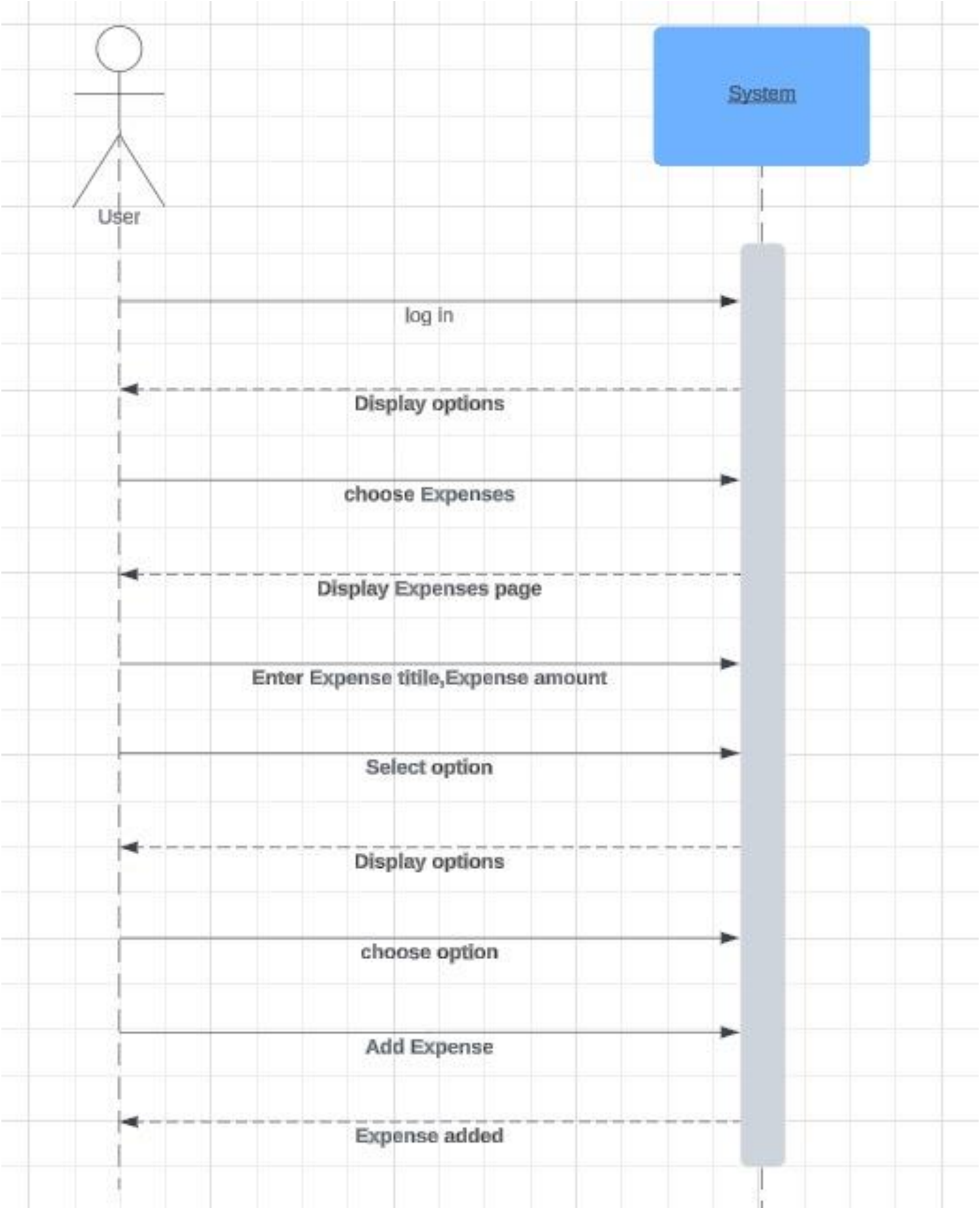
Use Case	View Dashboard
Brief Description	Users should be able to access and view the dashboard of their expense tracker account, which provides a summary of their financial information and activities
Actors	User
Trigger	The user navigates to the dashboard section of their expense tracker account.
Preconditions	The user is logged into their expense tracker account.
Main Flow	1. The user selects the option to view the dashboard from the navigation menu. 2. The system retrieves and aggregates the user's financial data, including total income, total expenses, and overall balance. 3. The system generates graphical representations, such as charts or graphs, to visually illustrate the user's financial trends over time. 4. The system displays the dashboard interface to the user, presenting the summarized financial information and visualizations.
Postconditions	The user successfully views the dashboard, getting knowledge about their financial status and activities.
Extensions	4.1 If the user's financial data has not been updated for a certain period, the system shows that in graph.

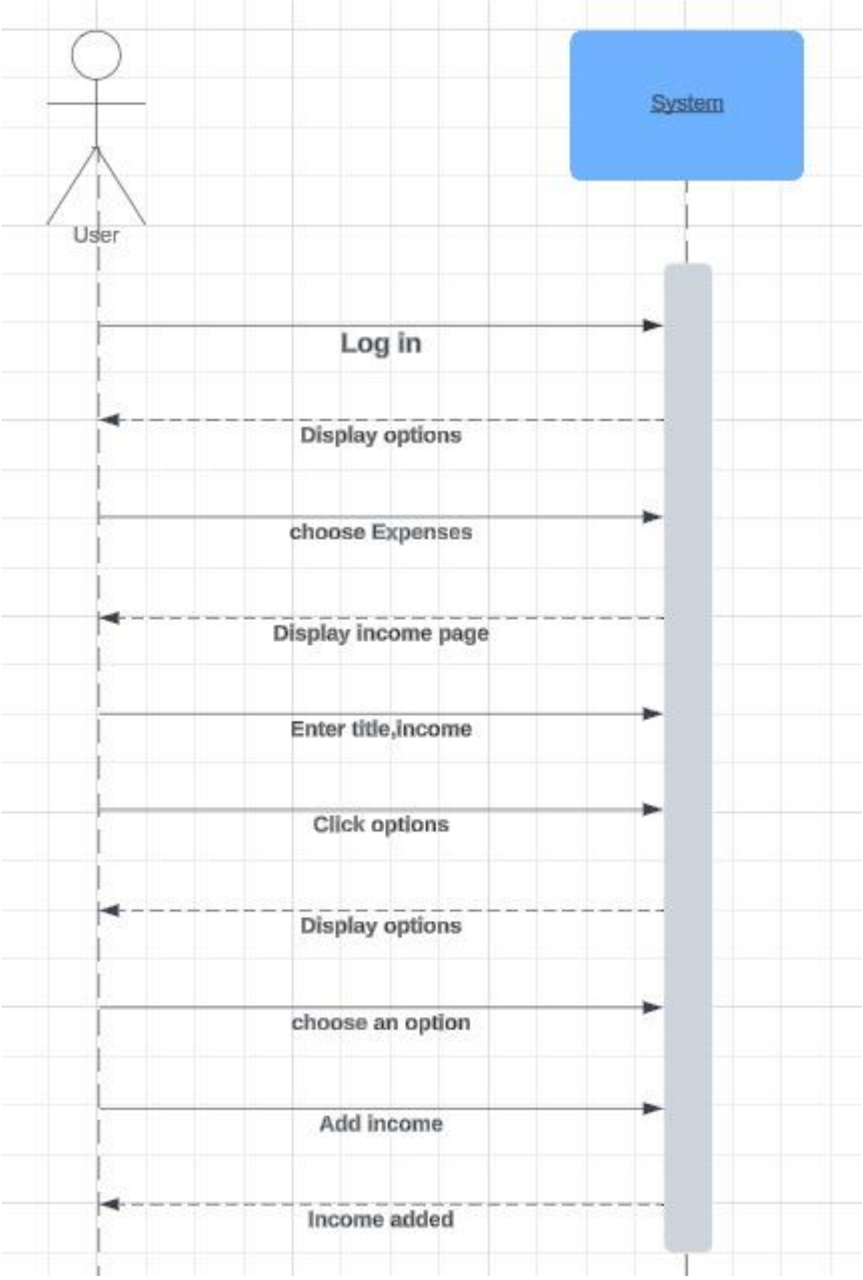
Extra use case description:

Use Case	Backup Data
Brief Description	The database manager schedules and performs regular backups of the expense tracker data to ensure data integrity and recovery in case of data loss or system failure.
Actors	Database Manager, Time
Trigger	The scheduled backup time is reached.
Preconditions	The expense tracker system is operational, and the database manager has set up a backup schedule.
Main Flow	1. At the scheduled backup time, the system triggers the backup process. 2. The database manager ensures that the backup procedure starts successfully. 3. The system creates a backup of the expense tracker database, including all user data and system configurations. 4. The backup file is stored securely in a designated location.
Postconditions	A backup of the expense tracker data is successfully created and stored.
Extensions	3.1 If the backup process fails due to technical issues or errors, the database manager receives an alert/notification. 3.2 If the backup storage space is insufficient, the system notifies the database manager to allocate additional storage capacity.

Three sequence diagrams:

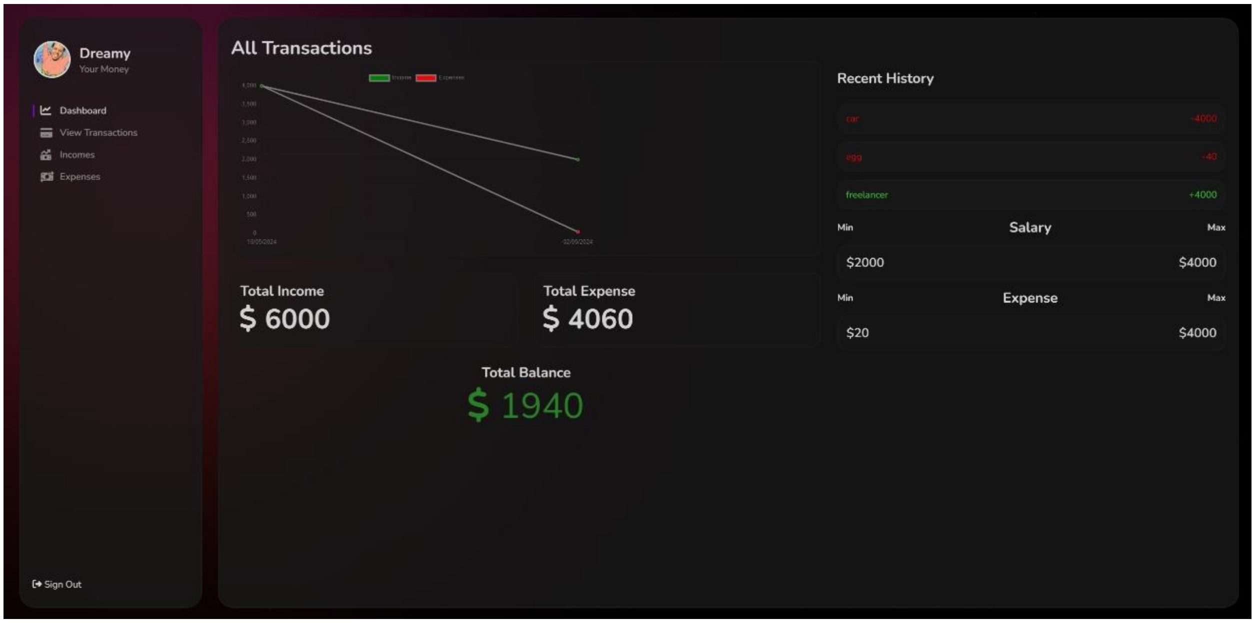



User
System
log in
Display options
choose Expenses
Display Expenses page
Enter Expense titile,Expense amount
Select option
Display options
choose option
Add Expense
Expense added


User
System
Log in
Display options
choose Expenses
Display income page
Enter title,income
Click options
Display options
choose an option
Add income
Income added

Sample of GUI:

Screenshots



All Transactions

Total Income
$ 6000

Total Expense
$ 4060

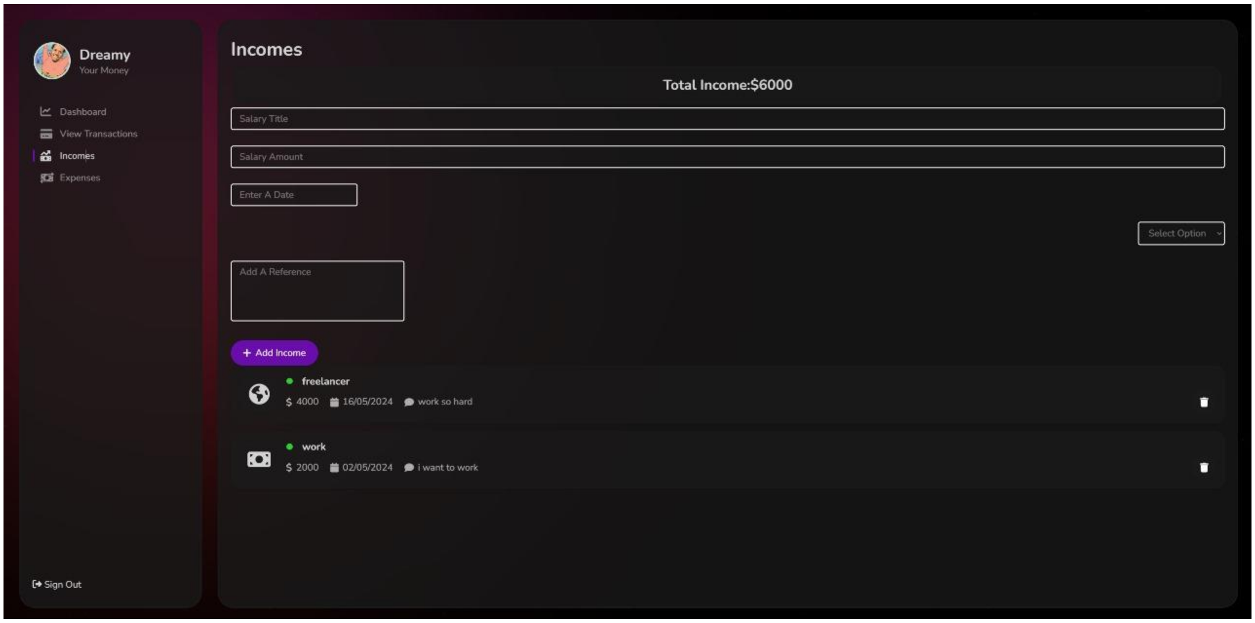
Total Balance
$ 1940

Recent History

car	-4000
egg	-40
freelancer	+4000

Min	Salary	Max
$2000		$4000

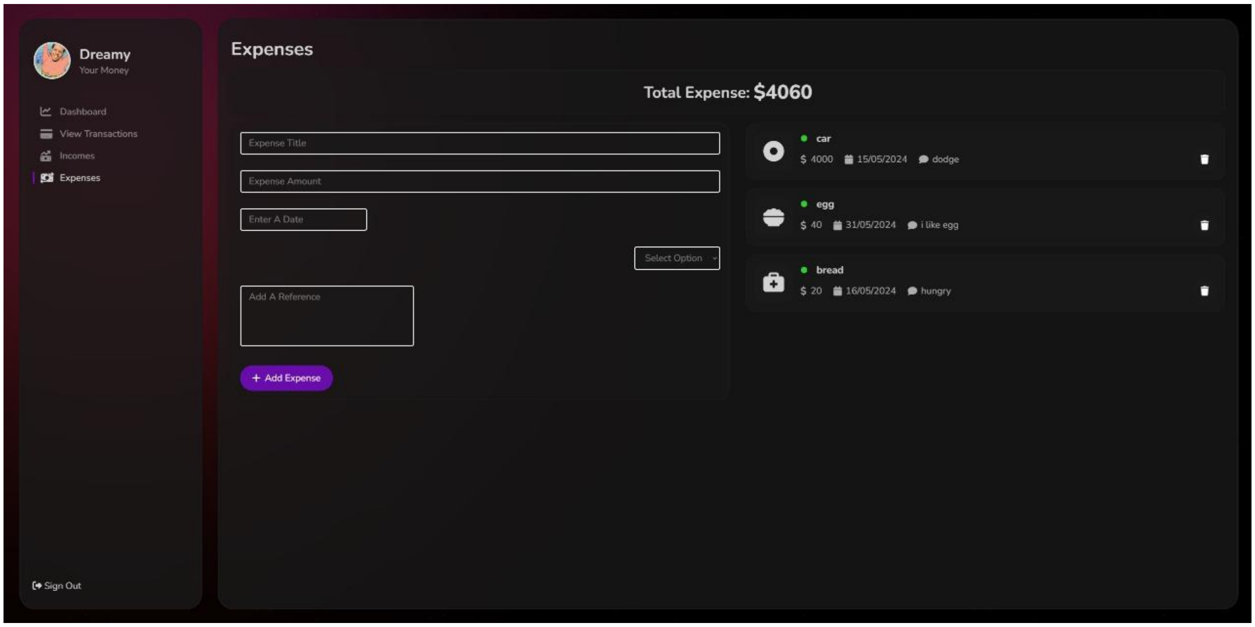
Min	Expense	Max
$20		$4000



Incomes

Total Income:$6000

- freelancer
  $ 4000 16/05/2024 work so hard
- work
  $ 2000 02/05/2024 I want to work



Expenses

Total Expense: $4060

car
$ 4000 15/05/2024 dodge

egg
$ 40 31/05/2024 i like egg

bread
$ 20 16/05/2024 hungry

GitHub Repo that contains well documented code and how to run the project:

https://github.com/YousifHazim/Expense-Tracker-Application/tree/main