Islamic University of Technology

Expense Tracker

(SWE 4538 Server Programming Lab Project)

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1 Github Link

Repository link of: Expense Tracker

2 Project Overview

Expense Tracker is a web-based application designed to help users manage their financial transactions efficiently. The primary objective is to provide an interactive platform where users can track their income and expenses, categorize transactions, and analyze spending patterns. This project aims to improve users' financial awareness and budgeting habits.

3 Features

- **User Authentication:** Secure login and registration for personalized tracking
- **Transaction Management:** Users can add, edit, and delete transactions.
- **Categorization:** Transactions can be categorized (e.g., food, transportation, entertainment, etc).
- **Dashboard:** A visual representation of income and expenses.
- **Real-time Data Updates:** The system dynamically updates transaction records.

4 Navigation

- **User Registration/Login:** New users create an account, while existing users log in.
- **Dashboard View:** Upon login, users are directed to the dashboard displaying an overview of financial transactions.
- **Adding Transactions:** Users can input new income or expenses by specifying the amount, category, and date.
- **Viewing Transactions:** A list of recorded transactions is displayed, with options to edit or delete entries.
- **Logout:** Users can securely log out of their accounts.

5 Tools and Technology

- **Frontend:** HTML, CSS, Javascript
- **Backend:** Node.js, Express.js
- **Database:** MongoDB Atlas

6 API Design

User Authentication

- **POST /register -** Create a new user
- **POST /login -** Authenticate user and return a token

Transaction Management

- **GET /transactions -** Fetch all transactions
- **POST /transactions -** Add a new transaction
- **DELETE /transactions/:id -** Remove a transaction

7 Use Case Scenario

- **Budget Planning:** A user logs in to track their monthly spending, adds salary income, and categorizes daily expenses.
- **Expense Analysis:** A user analyzes transactions to evaluate overspending trends.
- **Data Management:** A user modifies an incorrect transaction entry and deletes duplicate records.MongoDB Atlas

8 Challenges & Solutions

- **Database Connection:** I found it difficult to connect the database with the server. I used Mongo url to connect with database
- **Password Hashing** Passwords were stored in plaintext at first. Implemented bcrypt hashing and JWT tokens for secure authentication.

9 Future Improvements

- **Graphical Representation:** Implement visual charts for financial analysis.
- **Recurring Transactions:** Add automatic monthly expense/income entries.
- **Report Generation:** Provide CSV/PDF report generation for transaction history.
- **Multi-user Support:** Enable family/shared accounts with permissions.
- **Cloud Hosting:** Deploy on a cloud platform for better accessibility.

10 Conclusion

The Expense Tracker project provided valuable insights into full-stack development. Key learnings and insights i had from the projects are -

- Backend API design
- Database integration and handling (CRUD)
- Secured authentication methods
- Different types of routings
- Proper status codes for each request
- Various HTTP methods
- Following MVC architecture to organize project

Overall, this project serves as a solid foundation for a comprehensive expense management system.