IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Personal Expense Tracker

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Summary- The Personal Expense Tracker project is a robust Full Stack web application developed with the MERN stack. It tackles the challenges individuals face in managing personal finances by offering an intuitive and user-friendly platform for tracking income, expenses, and investments in real-time.

Equipped with features like automated transaction categorization, customizable budgeting tools, the Personal Expense Tracker project enables users to effectively manage their finances. Utilizing advanced technology, the project caters to actionable insights and personalized recommendations, helping users in accomplishing their financial goals.

1. INTRODUCTION

1.1 Background

Throughout our entire life, acquiring materials and belongings is a never ending need. To meet our needs and desires, we purchase goods, and this requires money. Thus, the cycle of earning and spending is a continual process. Traditionally, people have used paper-based methods to track income and expenses, but this approach is cumbersome, tedious and time-consuming. The probability of papers getting misplaced is also an issue in this regard.

To simplify and facilitate this process, a management system is important for efficiently managing day-to-day earnings and expenses. Our solution is the " Personal Expense Tracker," a user-friendly tool that replaces traditional methods, allowing for quick and easy record-keeping with just a few clicks.

1.2 BACKGROUND AND PURPOSE OF THE PROJECT

Financial challenges are a prevalent issue among students, particularly with the soaring costs of energy, daily necessities, and food.Many students resort to part-time jobs unrelated to their studies, balancing work and academic responsibilities while striving to maintain good grades. This scenario underscores the critical need for effective budget management skills.

Though today's banking applications often feature budget management tools, allowing users to categorize and track their monthly credit card expenditures on food, utilities, entertainment, and travel. These insights enable users to adjust their spending habits and stay within their budgets and achieve their financial goals. Inspired by this concept, our project aims to develop a comprehensive MERN stack based project tailored for students.
The primary goal of this project is to create an application using the MERN stack (MongoDB, Express, React, and Node.js) that helps students or anyone in general in scrutinizing their spending habits and help users make more informed financial decisions.

Our project ponders upon several pivotal research questions:

How can the MERN stack be harnessed to develop an efficient and user-friendly expense tracking application ?
What essential features should be incorporated to make the application both user-friendly and highly efficient?
By leveraging cutting-edge technology, this project aims to help the users make well informed decisions regarding their expenses and finances by providing them with a platform wherein they can login and keep a track of their expenses securely instead of jotting down somewhere. We also have future scope set for our project which is the amalgamation of the bank details and transaction details which also includes loan instalments, bills etc. can be done for a far better user experience.

2. PROBLEM DESCRIPTION

1. User-Friendly Expense Tracking:
Develop a web application that allows users to easily and efficiently track their daily expenses. The application should enable users to add, edit, and categorize expenses with a click.
2. Real-Time Expense:
Build an expense tracker that reflects real-time expenses to users so that user can keep track and alter their spending habits.
3. Expense Analytics and informative Insights:
Develop a web application that not only tracks expenses but also provides users with insightful analysis using graphical representations to help users understand their spending patterns over time.

3. APPROACH AND IMPLEMENT

The application was finished in four month and a half, which includes the time for designing, planning, reading the documents, coding, debugging and deployment. The design and planning phase reflected how the final product would look like, the kind of components to be used on a page. The front-end and the back-end were being developed sincerely to make sure they are working together efficiently with each other. Various documentations are of great help in the development of the application. The writing phase for the review paper also started as soon as the project culminated.

3.1 Application Workflow

Figure 1 shows the workflow of our application. Users start at the login page. If an account has already been created, they can log in to proceed to the home page. If not, they are required to create an account on the register page. After signing up, they will be redirected to the login page, the user will have to enter the user credentials they just created. Landing at the home page after successfully logged in, they can navigate back and forth between there and the categories. Users can log out as well and will have to login again in case user wants to use the application again. Only home and category page can be accessed if the user is logged in. While the sign in and register page can be visited by anyone.

3.2 Project Structure

We have frontend and backend folders wherein the respective logics for both frontend and back end is seated. We have public and src subfolders as well.

In the frontend folder we have, index.html, all the css files and js files, components files like,LineProgressBar.js, Header.js, and many more. All our assets also reside here in frontend folder.

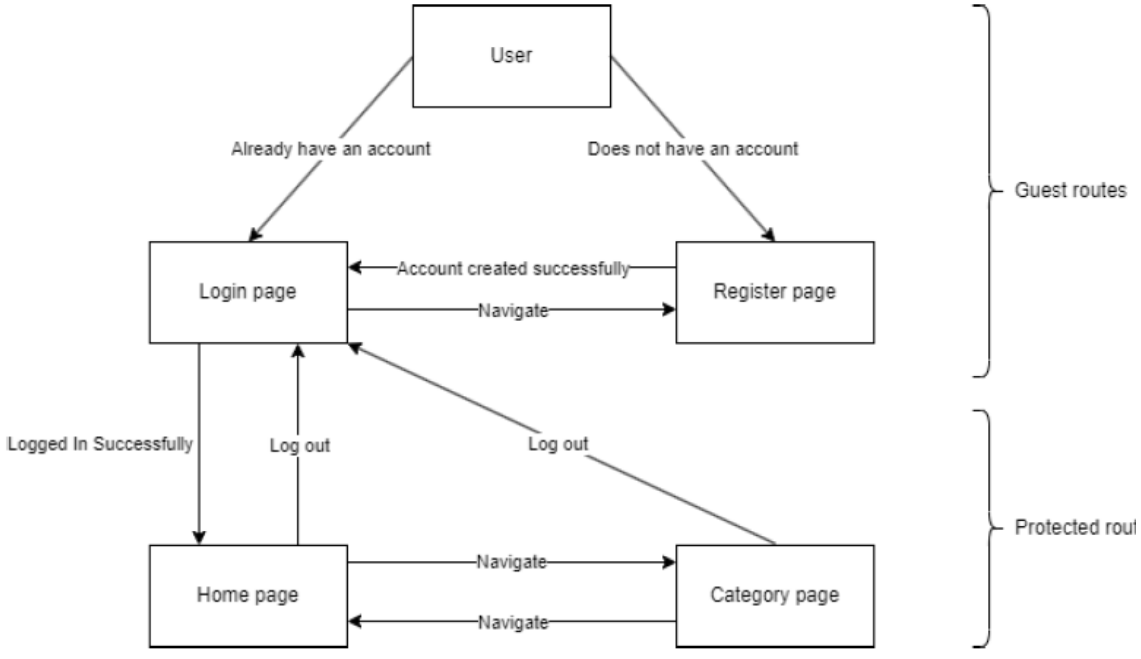
In the backend folder we have, controllers, routers, models and database files.

- The “components” folder contains all the modular and reusable components that are used on a page, such as forms, lists, charts, and the navigation bar
- The calculations in this project are happening in the back-end server, specifically in the addTransactionController function, which is responsible for handling the addition of new transactions to the database.
- The “utils” folder holds our redirection components which redirect user to destinations based on their authorization status.

While in the “server” folder, there are also multiple subdirectories that worth mentioning:

- The “config” : Defines the configuration variables for the application, such as the database connection string and the secret key for the JSON Web Tokens (JWTs.
- The “controller” folder includes all the functions in the server that tie to our routes.
- The “database” folder is where we connect to our MongoDB database.
- The routes/transaction.js: Defines the transaction-related routes, such as the add, update, and delete routes.
- models/User.js: Defines the User schema and model for the MongoDB database.
- models/Transaction.js: Defines the Transaction schema and model for the MongoDB database.

FIG-1



4 Conclusion

The review paper is a vital part in the learning path in order to become a full stack web developer. The application has also proved to be of great help in daily life as it has given an informative perspective on day-to-day and monthly expenses, which motivates the author to alter the spending habit and accomplish the targeted finance objectives. The MERN stack provides a seamless connection between the front-end and the back-end, provides various methods like taking data and authentication. The Node server with Express framework, along with the MongoDB, handles requests quickly and stores a huge amount of data without any interruptions. The login and register function also provides a safe and secure experience for the user because the important data such as the transaction list can only be accessed by the user. However, certain improvements can be made in this application in the future to make the user experience more interesting and convenient. For example, The amalgamation of the bank details and transaction details which also includes loan instalments, bills etc. can be done for a far better user experience. To make the application user friendly for other strata of people in the society, languages can be added in the application like Hindi, etc. Furthermore, addition of blockchain will help in boosting security of the application.

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