



EXCELSSIOR EDUCATION SOCIETY'S K. C. COLLEGE OF ENGINEERING AND MANAGEMENT STUDIES AND RESEARCH

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MINI PROJECT PRESENTATION SEM-V(2024-2025)



SmartSpend- Personal Finance Manager

Group members

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Name of the Guide

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Vision

To create IT graduates with ethical and employable skills.

Mission

- To imbibe problem solving and analytical skills through teaching learning process.
- To impart technical and managerial skills to meet the industry requirement.
- To encourage ethical and value based education.



Introduction to Topic

- **SmartSpend** is a personal finance management platform that empowers users to manage their expenses, investments, and financial goals efficiently.
- The platform allows users to track their spending habits, manage loans and EMIs, and visualize their financial data through intuitive charts and dashboards.
- Offering customized financial dashboards for a personalized finance overview.
- Integrates budgeting, investment tracking, and transaction management for a comprehensive financial picture.
- Provides security with JWT-based authentication to ensure user data safety.
- Users can set personalized financial goals, track progress, and get insights into their spending, helping them make informed financial decisions.



Need For Project

1. **Privacy and Security:** Users of SmartSpend need assurance that their financial data is safe, which is achieved through secure authentication and encryption practices, safeguarding personal and financial information.
2. **Expense Tracking:** Users seek an easy-to-use platform to monitor spending, investments, and savings, with detailed graphs and summaries to visualize their financial habits effectively.
3. **Password Recovery:** In case of forgotten passwords, users want a secure and simple method to recover their accounts, ensuring they can regain access to their financial information quickly.
4. **Goal Management:** Users want to set financial goals, such as saving or debt reduction, and track their progress over time through customizable budgeting tools.
5. **Collaboration:** Users may wish to collaborate with financial advisors or share budgeting tips, creating a space for learning and mutual growth in personal finance management.
6. **User Experience:** A streamlined, intuitive interface is essential, ensuring users can easily manage their financial data, set budgets, and view reports without any unnecessary complexity.



Motivation

1. **Facilitating Financial Awareness:** SmartSpend helps users build genuine awareness of their financial health by promoting careful tracking of spending, investments, and savings.
2. **Empowering Users with Financial Insights:** Through detailed analysis and reports, SmartSpend ensures users gain meaningful insights into their finances, enabling better decision-making and planning.
3. **Enhancing Financial Goals and Achievements:** SmartSpend goes beyond tracking by helping users set financial goals and manage real-world milestones, like paying off debt, saving for purchases, or investing for the future.
4. **Commitment to Privacy, Security, and Data Accuracy:** SmartSpend prioritizes user data protection with secure authentication and encryption while offering a reliable platform for users to explore financial management and planning strategies safely.



Problem Statement

The problem statement is **Building SmartSpend-Personal Finance Manager Website with intuitive and user-friendly UI for users to have a seamless and financially holistic experience.**



Literature Survey

Year	Title of the paper	Methodology Used	Advantages	Limitations & Disadv.
2023	Comparison Of Android-Based Personal Financial Management Applications With Variative Financial Conditions by L.Dewi	Financial planning empowers individuals to make informed financial decisions. This study compares three Android-based personal finance apps: Money Lover, Keuangan Pribadi Ku, and Catatan Keuangan Harian.	Variety of Features: All three apps provide a standard feature set for effective personal finance management, enabling users to handle various transaction types flexibly. Support for Various Financial Conditions: Money Lover and Catatan Keuangan Harian can record transactions in surplus, balanced, and deficit conditions, offering versatile options for comprehensive financial tracking.	Inconsistency Across Platforms: Being Android-based excludes users on iOS, limiting accessibility for potential users. Feature Gaps: While offering basic tools for personal finance management, the apps may lack advanced financial planning features or integrations with external services.



Literature Survey

Year	Title of the paper	Methodology Used	Advantages	Limitations & Disadv.
2018	Development of Spreadsheet-Based Applications for Learning of Financial Management I. Jaya, N. Masih, N. Wahyuni, I. Sugiarta	The research highlights the need for spreadsheet-based applications in financial management education. It develops a practical application covering essential financial concepts, demonstrating consistent results with manual calculations, thereby enhancing the learning experience for students and lecturers alike.	Expedited Learning Process: The spreadsheet-based application enhances learning for students and lecturers by simplifying financial management tasks like cash flow, accounts receivable Real Learning Application: This research demonstrates that the spreadsheet tool can be effectively utilized in practical, real-world scenarios, improving the comprehension of financial concepts.	Technological Familiarity: Users must be skilled in spreadsheet tools like Excel, which can be challenging for individuals with limited experience in using such software. Software Compatibility: Compatibility issues may arise based on the spreadsheet software version (e.g., Excel or Google Sheets), impacting the application's usability.



Literature Survey

Year	Title of the paper	Methodology Used	Advantages	Limitations & Disadv.
2015	Online Personal Finance Management Applications Viera Gáfriková, W. Szczesny, Z. Odrzygóźdź · 2015	The paper is devoted to internet applications supporting personal finance management (PFM). The main aim of the paper is to describe presumptions for development of PFM applications and to compare – from the user's point of view selected PFM websites, taking into consideration two categories: credibility and functionality. Within each category several factors were considered.	Credibility and Trustworthiness: The study emphasizes the significance of credibility in PFM websites, ensuring users can safely entrust their sensitive financial data to reliable platforms. Functionality: It compares the functionalities of different PFM websites, indicating that robust applications provide essential features for efficient personal finance management.	Limited Scope of Study: The research primarily focuses on Polish PFM websites, which may restrict its relevance for users in other regions with varying financial requirements. Variability in Functionality: The study indicates that PFM website functionalities differ significantly, potentially resulting in inconsistent quality in financial management support for users.

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Challenges in Existing Methodology

- 1. Privacy and Data Security:** Financial management apps like SmartSpend must ensure that sensitive financial data is protected against unauthorized access, data breaches, and cyber threats, especially with increasing concerns about data privacy.
- 2. User Education and Financial Literacy:** A major challenge is helping users understand and utilize the platform's tools effectively, as financial literacy levels vary widely among users, requiring ongoing educational resources and support.
- 3. Data Accuracy and Synchronization:** Ensuring real-time updates and accurate data tracking across various financial accounts, banks, and investment platforms remains a challenge, particularly with the need to integrate and sync third-party services.
- 4. Regulatory Compliance and Financial Standards:** SmartSpend must navigate complex financial regulations, tax laws, and data protection standards, ensuring the platform remains compliant while adapting to evolving legal and financial landscapes.



Proposed System

- 1. Transforming Financial Management:** SmartSpend, a MERN stack application, reshapes personal finance by offering users comprehensive tools to manage expenses, track investments, and set financial goals efficiently.
- 2. Tech Stack and Features:** Built with MongoDB, Express, React, and Node.js, SmartSpend delivers a seamless experience with features like budgeting, expense tracking, loan management, and dynamic dashboards with intuitive graphs powered by Chart.js. Secure user authentication is achieved using JWT and bearer tokens.
- 3. Privacy and Security:** SmartSpend ensures users' financial data is protected through robust encryption and secure authentication methods. Data is accessible only by authorized users, safeguarding personal information and financial activities.
- 4. Enhanced User Experience:** With a user-friendly interface, SmartSpend provides clear financial insights using graphs and summaries. The platform is designed for ease of use, enabling users to easily track expenses, monitor savings, and make informed decisions about their financial health.



Architecture

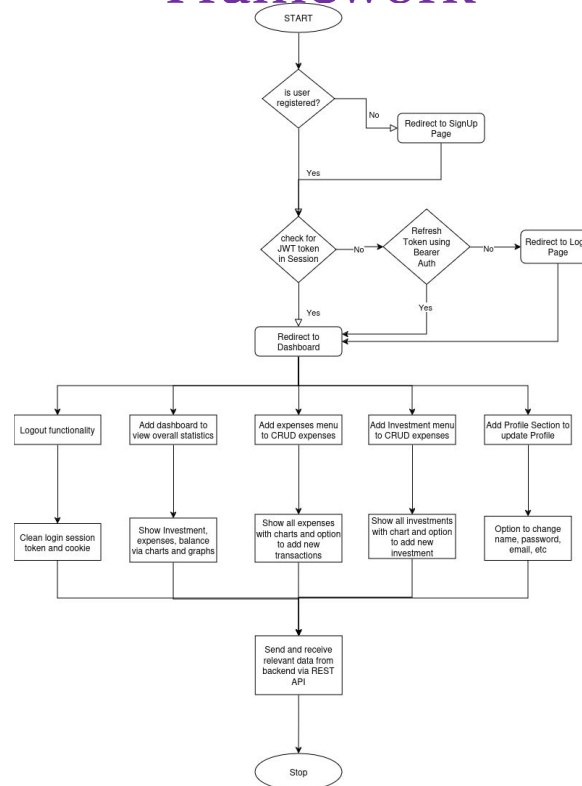
SmartSpend Architecture

- **Backend:** Built using Node.js and Express, with JWT for secure user authentication and session management.
- **Database:** MongoDB stores user data, transactions, and financial records, using Mongoose for database interaction.
- **Frontend:** Developed with React, featuring a dynamic and responsive user interface powered by React Router DOM for smooth navigation.
- **Data Visualization:** Utilizes Chart.js for generating insightful graphs to represent expenses, investments, and budget tracking.
- **Security:** User authentication is secured with encrypted passwords and bearer tokens, ensuring protected access to user data.
- **Future Plans:** Possible additions include bank integration, real-time alerts, and mobile app connectivity.



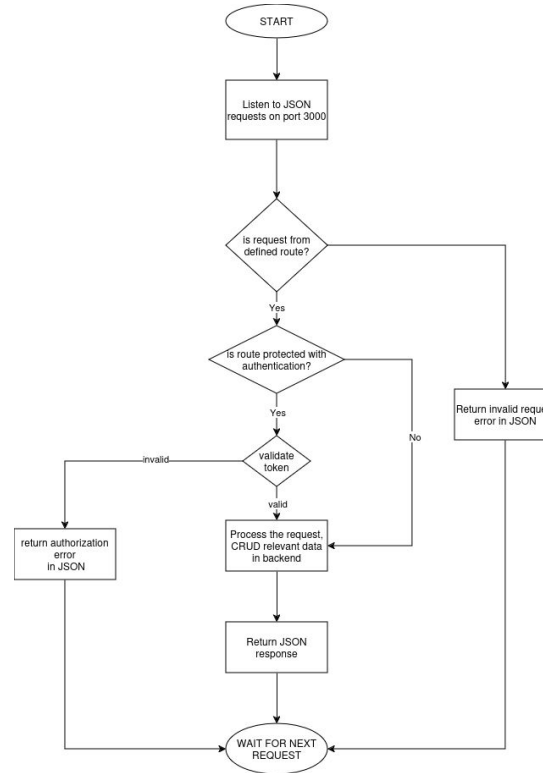
Framework

FrontEnd Flowchart:



Framework

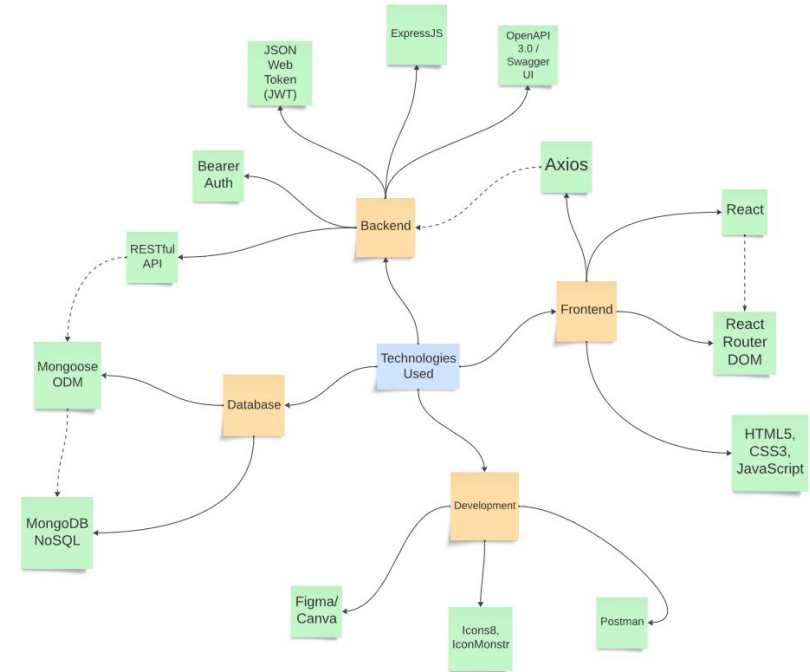
BackEnd Flowchart:



Flowchart

The project can be understood by various visual representations and diagrams given below:

- Comprehensive **mind map** of **technologies, frameworks** and **resources** used



Requirements

Hardware Requirements:

- Operating System: Linux Server with Python version 3.11.5+ and pip installed.
- Internet: High-speed connection.
- CPU: Multi-core (4+ cores) processor.
- Storage: Minimum 20GB of free disk space.
- RAM: 2GB or higher.

Software Requirements:

- Backend: Python Flask v2.0 with additional libraries listed in requirements.txt.
- Database ORM: SQLAlchemy for database-to-object mapping.
- Frontend: Python 3.8+ with Flask as the framework.
- Web Browser: Latest version of Chrome, Safari, or Firefox.
- Database: PostgreSQL installed and configured for secure data management.



Feasibility Study

We started by addressing the shortcomings of existing systems and implemented improvements in SmartSpend accordingly:

- **Lightweight Deployment:** Optimized for low-end machines by keeping the implementation minimal and efficient.
- **Comprehensive Documentation:** Provided detailed instructions for both building and deployment to streamline the process.
- **Dedicated Server:** Ensured continuous 24x7 service by utilizing a robust server to store and retrieve financial data securely.
- **Authentication and Authorization:** Integrated secure user authentication using JWT, similar to Flask-Login, for safe access.
- **Dependency Management:** Utilized npm for managing package dependencies, ensuring that packages remain updated and vulnerabilities are avoided.

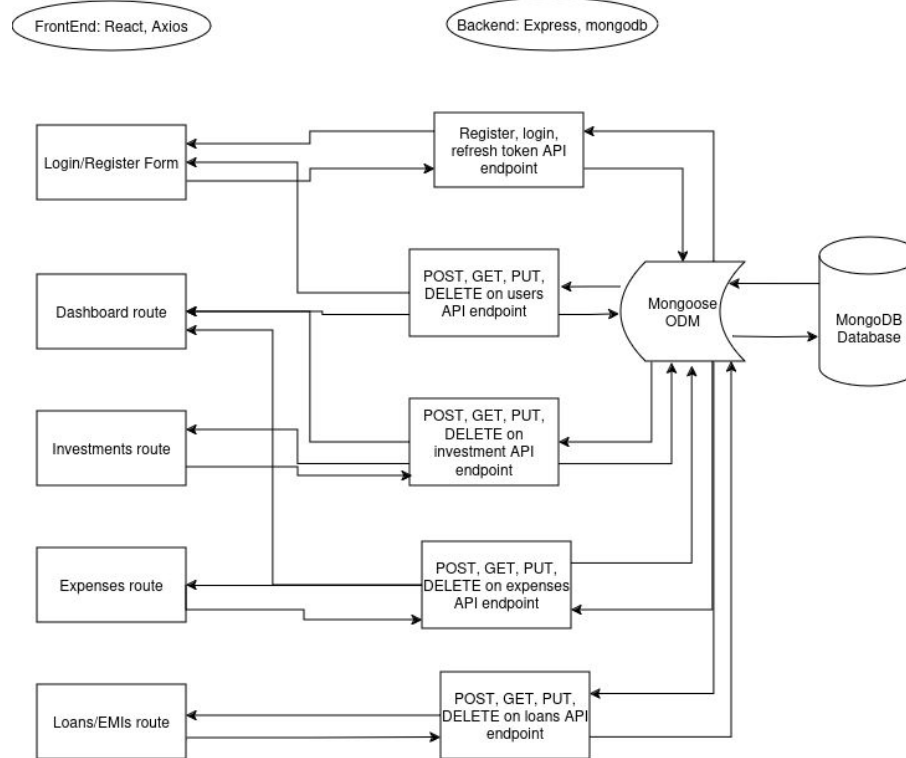


Methodology

- The project is a full-stack application built using the MERN stack, featuring technologies such as HTML/CSS, JavaScript, React, Express, and MongoDB. The application includes the following features:
- Users can manage their finances by tracking expenses, investments, and transactions directly within the application.
- The lightweight design allows it to run efficiently on minimal hardware configurations.
- User authentication emphasizes security, ensuring that sensitive data is protected through industry-standard encryption techniques.
- Users can create various types of financial entries, including expenses, income, and loans, which can be reviewed and analyzed for better financial management.
- To prioritize user privacy, only authorized personnel can access sensitive user information, which is secured behind a password-protected login page. The application is designed for speed and accuracy, offering a visually appealing interface.



DFD Diagram



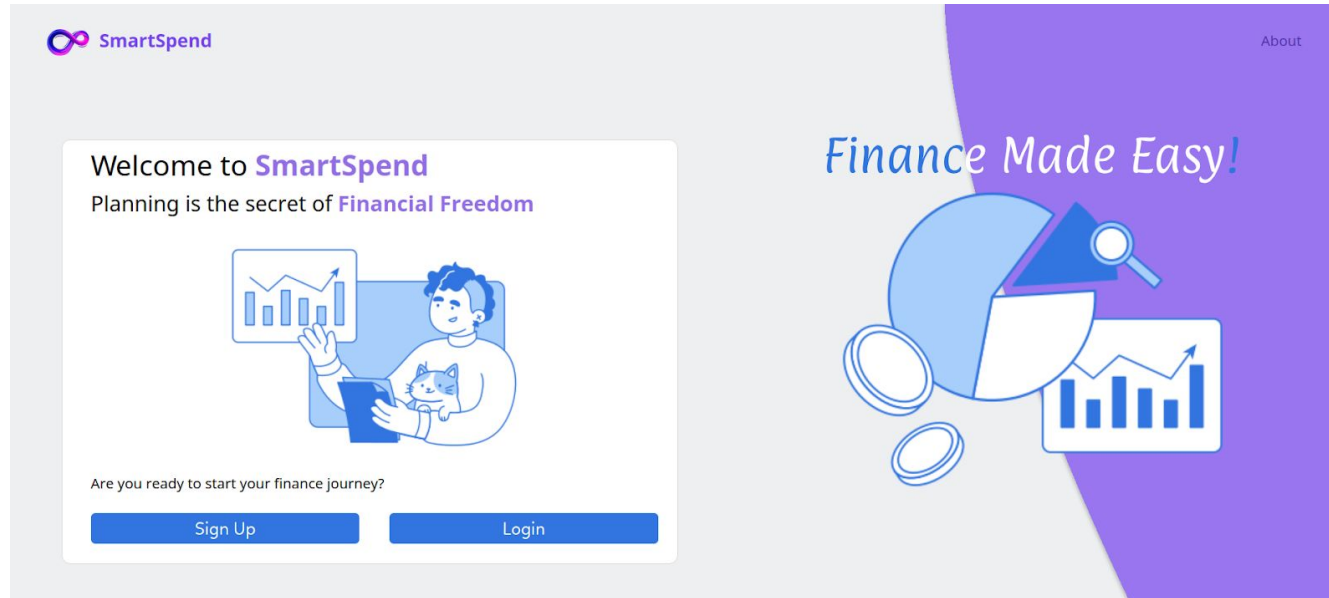
Implementation

- The project was divided into 3 parts with
 - **Yash Patil:** Database schema design, frontend and backend development, encryption, and deployment.
 - **Sairaj Pai:** Frontend design, backend development, form validation, and quality assurance.
 - **Nandini Nichite:** Documentation, security features, testing, and frontend validation
- We divided the tasks amongst us and had set deadlines to complete the certain code blocks at a given amount of time.
- With that, the GUI aspects were done simultaneously by every member of the team.



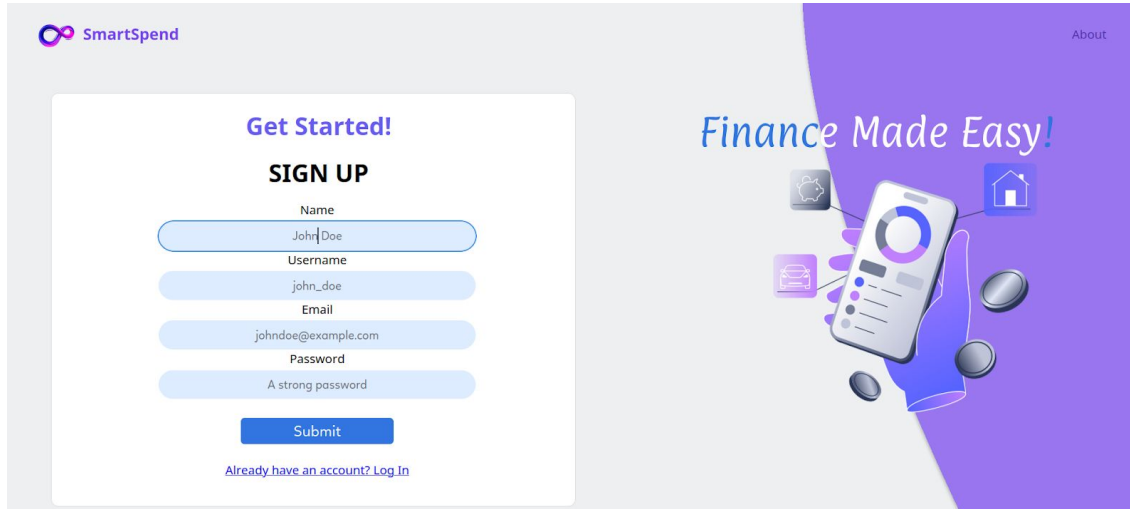
GUI Snippets

Landing Page



GUI Snippets

Sign Up Page :



The image shows a web application interface for 'SmartSpend'. The top left corner features the 'SmartSpend' logo, which consists of a purple infinity-like symbol followed by the text 'SmartSpend'. The top right corner has a link labeled 'About'. The main content area is split into two sections. On the left, there is a white box with a light gray border containing a sign-up form. The form has the heading 'Get Started!' in blue, followed by 'SIGN UP' in bold black. Below this are four input fields: 'Name' (containing 'JohnDoe'), 'Username' (containing 'john_doe'), 'Email' (containing 'johndoe@example.com'), and 'Password' (containing 'A strong password'). A blue 'Submit' button is at the bottom of the form, and a link 'Already have an account? Log In' is below it. On the right, there is a purple background with the text 'Finance Made Easy!' in white. Below the text is an illustration of a hand holding a smartphone displaying a financial dashboard with a pie chart. Surrounding the phone are icons for a house, a car, and coins.

SmartSpend

About

Get Started!

SIGN UP

Name
JohnDoe

Username
john_doe

Email
johndoe@example.com

Password
A strong password

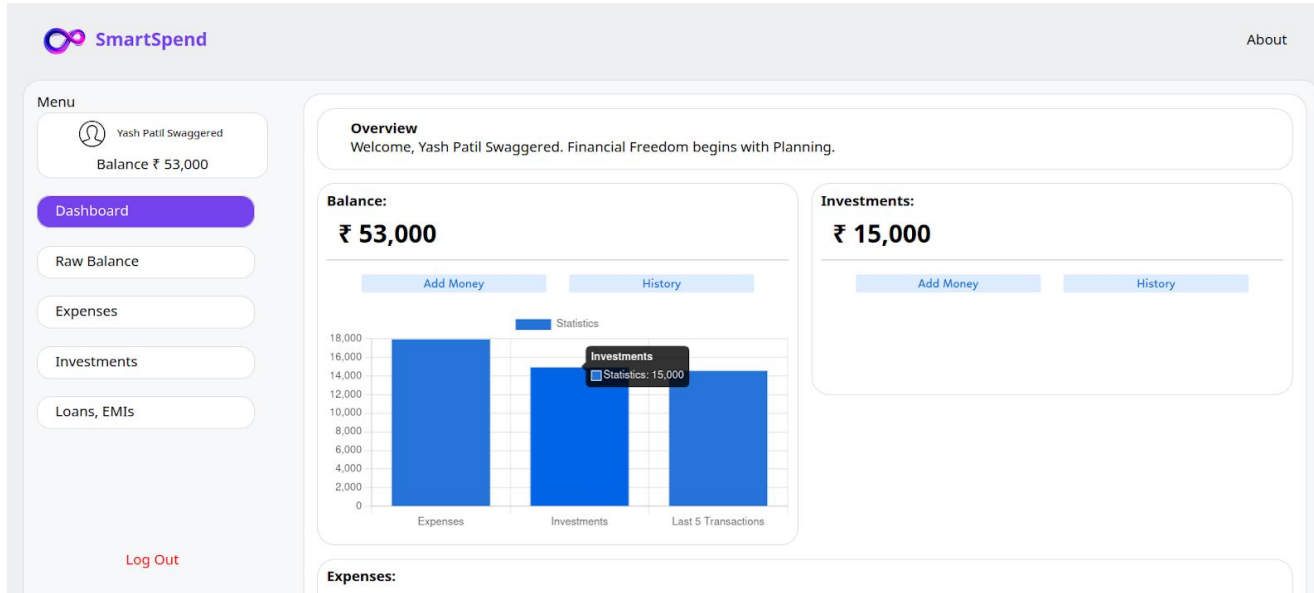
Submit

[Already have an account? Log In](#)

Finance Made Easy!



GUI Snippets



Menu



Yash Patil Swaggered

Balance ₹ 53,000

Dashboard

Raw Balance

Expenses

Investments

Loans, EMIs

Log Out

Balance

Check your account balance, transaction history and add new transactions.

Balance Data:

Current Balance: ₹ 53,000
Monthly Income: ₹ 12,433
Amount spent this month: ₹ calc
Remaining from this month: ₹ calc
Days remaining till next income: ₹ calc

Add/Remove money

Transaction Description

Transaction Amount

Transaction type:

Add Money

Submit

Transactions:

Description	Amount
Add Money	3000
Test	1333
aDD MORE MONEY	3434
aDD MORE MONEY	3434
aDD MORE MONEY	3434

Menu



yash4

Balance ₹ 50,000

Dashboard

Raw Balance

Expenses

Investments

Settings

Log Out

Investments

Check your investments, add new expenses and update existing ones.

Investment Data:

Total Investments: ₹ 1,10,000
Investments + Account Balance: ₹ 1,60,000
Number of Investments: 3
Types of investments: FD, Gold, Real Estate
Amount invested this month: ₹ 1,10,000
Income to investment ratio: 220 %

Investment Graph:

FD Gold Real Estate



Add new investment:

Investment Type

Real Estate



GUI Snippets

UPI

Submit

Added transaction of ₹ 200

EXPENSE INFO
Expense Name:
Groceries
Total Value: **10000**
Used Value: **1200**
Payment Method: **Cash**

12 %

New Transaction Description
Buy Oil
Transaction Amount
200
Transaction type:
Add spent money
Submit

Delete Expense
To Confirm **Delete**,
Enter expense name:
Submit

Transactions

Description	Amount	Date
Buy Oil	200	22/10/2024, 6:56:19 pm
Buy Cereals	1000	22/10/2024, 6:56:09 pm
Create Expense	10000	22/10/2024, 6:55:46 pm

Settings
View and change your account information and settings.

Name: Yash Patil
Username: yash4
Email: ahsfh@hsdfh.co
Monthly Income: ₹ 50,000

Update Account Info:
New Name:
Yash Patil
Monthly Income

New Password:

Confirm Password:

Submit



Conclusion

In conclusion, OpenMedia offers a revolutionary solution for engaging with digital content on social media. Through advanced technologies, user-centric design, and robust security, it provides a versatile platform for connecting, sharing, and discovering content effortlessly. With an intuitive interface and strong privacy measures, OpenMedia sets a new standard, empowering users to build meaningful connections in a safe and inclusive environment. Looking ahead, OpenMedia is committed to evolving with users' needs through ongoing updates and community contributions, ensuring it remains at the forefront of social media innovation for users worldwide.



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- [6] React Router DOM Reference playlist:
https://www.youtube.com/watch?v=VpzeeBeVWeg&list=PL4cUxeGkcC9iNnY07bh_UPaRIQZcJfARY



Thank You!!!

