

Knight Foundation School of Computing and Information Sciences (KFSCIS)

Fall Semester 2024 Senior Design Project

PrismWealth

Students: Josue Miranda, Alex Choi, Dorys Ricardo Abellon, Gabriela Vega Lobatos
Instructor/Faculty: Masoud Sadjadi, Florida International University

PROBLEM

Managing personal finances can be challenging due to manual tracking methods like spreadsheets, which are time-consuming and error-prone. Users struggle with overspending, insufficient savings, and finding personalized financial advice. Existing tools often lack tailored recommendations, making it difficult to improve financial health or stick to savings goals.

SYSTEM DESIGN

Frontend (React):

- User interface for expense tracking, goal-setting, and actionable insights.
- Material UI for a modern design.
- Chart.js for dynamic visualizations of financial insights.

Backend (Django):

- RESTful API to manage financial data and serve personalized recommendations.
- Recommendation engine for actionable insights.

Database (PostgreSQL):

- Persistent storage for financial data, including expenses, savings goals, and personalized recommendations.

VERIFICATION

Verification of the system includes:

Unit Testing: Validate individual components like expense filtering and goal tracking.

Integration Testing: Ensure smooth data flow between frontend, backend, and database.

User Acceptance Testing (UAT): Confirm functionality meets user needs.

Security Testing: Use JWT for secure user authentication and protect sensitive financial data.

CURRENT SYSTEM

Most financial management solutions rely on standalone apps or spreadsheets, which:

- Lack integration across platforms.
- Require manual tracking of finances.
- Fail to offer personalized guidance for savings and spending.

OBJECT DESIGN

Core objects in the system include:

User: Tracks individual user accounts.

Expense: Represents financial transactions, categorized by type and date.

Savings Goal: Monitors user-defined financial targets.

Recommendation: Generates personalized tips based on user data and spending patterns.

SUMMARY

The Personalized Recommendation System empowers users to manage their finances effectively. By integrating React for the frontend, Django for the backend, and PostgreSQL for data management, the system delivers tailored insights to improve financial health. Visual analytics provide users with actionable advice, ensuring a user-friendly, secure, and scalable experience.

REQUIREMENTS

Frontend: Develop a page or modal to display actionable insights and recommendations, such as savings tips or warnings about overspending trends.

Backend: Implement a recommendation engine that analyzes financial data and generates advice. Use Django endpoints to serve these insights.

Database: Use PostgreSQL to store processed user financial data and generated recommendations for future reference.

Key User Story:

“As a user, I want to filter expenses by category and date for better insights.”

IMPLEMENTATION

Frontend: Implements financial tracking, goal-setting, and recommendation visualizations using React.

Backend: Provides Django-based endpoints for financial management and personalized insights.

Database: Uses PostgreSQL to store financial records, categories, and actionable insights.

REFERENCES

Django Documentation:
<https://www.djangoproject.com/>

PostgreSQL Documentation:
<https://www.postgresql.org/docs/>

React Documentation:
<https://reactjs.org/docs/getting-started.html>

ACKNOWLEDGEMENT

