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PROJECT SUMMARY: SPENDWISE - PERSONAL EXPENSE MANAGER

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1. INTRODUCTION & PROBLEM STATEMENT

In an era where digital transactions are ubiquitous, maintaining financial health requires disciplined tracking of income and expenses. SpendWise is a web-based Personal Expense Manager designed to address the need for a simple, platform-independent tool for financial oversight. Unlike complex accounting software, SpendWise focuses on intuitive financial tracking, allowing users to log daily transactions, categorize spending, and visualize their financial standing in real-time. The project began as a client-side prototype and evolved into a robust full-stack application, ensuring data persistence and secure user management.

2. SYSTEM ARCHITECTURE

SpendWise utilizes a modern Full-Stack Architecture, decoupling the user

interface (Frontend) from the data management (Backend) to ensure scalability

and performance.

A. Frontend (The Interface)

The frontend is built using standard web technologies to ensure broad compatibility:

* HTML5: Provides the semantic structure for the application, organizing content into logical sections such as the Sidebar, Dashboard, and Reports.

* CSS3: Handles the presentation and layout. It utilizes modern Flexbox and Grid layouts to ensure responsiveness across devices, from desktops to mobile phones.

* Vanilla JavaScript: The core interactivity is powered by pure JavaScript without heavy frameworks. It handles DOM manipulation, event listeners, and API communication, ensuring a lightweight and fast user experience.

B. Backend (The "Brain")

The application’s logic and storage are powered by Django, a high-level Python web framework.

* Django REST Framework (DRF): The backend exposes a RESTful API. This allows the frontend to send HTTP requests (GET, POST, DELETE) to the server to fetch or modify data.

* SQLite Database: All user data, including credentials and transaction history, is stored in a relational database. This replaces the initial browser-based localStorage, ensuring that data is safe, persistent, and accessible from any device.

* Authentication: The system implements Token-Based Authentication. When a user logs in, the backend issues a secure token. The frontend attaches this token to every subsequent request, ensuring that users can only access and modify their own private data.

3. KEY FEATURES & FUNCTIONALITY

A. User Authentication & Security

The application features a secure entry point with dedicated Sign In and Register views.

* Registration: Users create accounts with a username, email, and password. The backend securely hashes passwords before storing them.

* Session Management: Upon successful login, an authentication token is stored locally in the browser, allowing the user to remain logged in during their session without re-entering credentials.

B. The Dashboard & Transaction Management

The core of SpendWise is the Dashboard, which provides an immediate financial overview.

* Real-Time Statistics: The application dynamically calculates and displays the Total Balance, Total Income, and Total Expenses based on the current transaction history.

* Transaction Logging: Users can add transactions using a comprehensive form that captures the description, amount, date, and type (Income vs. Expense).

* Categorization: Expenses are categorized into predefined groups such as Food, Travel, Bills, and Shopping to facilitate better analysis.

* CRUD Operations: Users have full control to Create new entries and delete erroneous ones. The interface updates instantly (optimistic UI) while the backend processes the changes in the background.

C. Data Visualization & Reports

To help users understand their spending habits, SpendWise includes a Spending Breakdown section.

* Progress Bars: The application iterates through transaction data to calculate the percentage of total spending allocated to each category. These are visualized as colored progress bars, giving users an "at-a-glance" understanding of where their money is going (e.g., 50% on Bills, 30% on Food).

* Dynamic Calculation: The updateUI() logic aggregates expenses in real-time, ensuring the report is always accurate after every new transaction or deletion.

4. USER EXPERIENCE (UX) & DESIGN

The design philosophy centers on cleanliness and usability.

* Responsive Layout: Using CSS Media Queries, the application adapts to screen size. On mobile devices, the sidebar collapses to save space, ensuring the transaction list remains the focal point.

* Dark Mode: A built-in theme toggle allows users to switch between Light and Dark modes. This is implemented using CSS Variables, which instantly repaint the interface without reloading the page.

* Feedback & Interaction: Smooth CSS transitions are used for hover states and deleting items, providing a polished, app-like feel. A "Financial Tip" feature displays rotating advice (e.g., the 50/30/20 rule) to encourage financial literacy.

5. CONCLUSION & FUTURE ROADMAP

SpendWise successfully bridges the gap between complex financial software and simple manual logging. By migrating from a static prototype to a dynamic Django-backed application, the project now offers a secure, scalable solution for personal finance management. Future enhancements include implementing Chart.js for pie-chart visualizations and adding Budget Goal tracking to further empower users in their financial journey.