Outline of Design

- The user begins by uploading a CSV file of a bank statement they want to analyze.
- A neatly categorized list of transactions is then generated for easy reference, along with a brief AI analysis of current spending habits and practical tips for reducing non-essential expenses.

After this overview, the user gains access to four detailed tabs:

1. **Spending Patterns**
    - Spending Breakdown: A pie chart that visually displays how money is allocated across categories.

    - Spending Heatmap: A calendar view showing which days of the week the user typically spends the most.

2. **Subscriptions**
    - A table of recurring subscriptions and potential “gray charges.”

    - AI-powered savings analysis showing how much could be saved monthly and yearly if certain subscriptions were canceled.

    - Identification of forgotten free trials that may have converted into paid subscriptions, encouraging the user to review and cancel unnecessary ones.

3. **Savings Goals**
    - Users can set a savings goal by entering a target amount and date.

    - AI determines whether the goal is feasible, suggests adjustments by category, and calculates how much should be saved each month to reach it.

4. **Deals and Discounts**
    - Based on age and occupation, the user can find deals and discounts tailored to them.

The AI’s tone stays non-judgemental, kind, and constructive. It also reassures the user that all their information is kept confidential throughout this process.

Tech Stack

Frontend / UI

- **Streamlit**: Provides the main user interface as a lightweight web app framework. Enables fast prototyping and interactive dashboards..

- **Plotly Express**: Used for building interactive data visualizations such as pie charts, bar charts, and heatmaps. Enhances user experience with hover tooltips and drill-down capabilities.

Backend / Logic

- **Python**: The core programming language driving the app.

- **Pandas**: Handles CSV parsing, transaction categorization, filtering, and data aggregation.

- **Datetime**: Used for date parsing and handling.

AI Layer

Groq API (LLaMA-3.3-70B model):

- The AI coach that interprets raw data into actionable insights.
- Structures outputs into tables, bullet points, and clear takeaways.
- Keeps advice kind, concise, secure, and non-judgemental.

Use of AI Tools

ChatGPT (OpenAI's GPT-5)

- Helped expand feature ideas, refined documentation, and assisted with portions of the code such as debugging and prototyping.
- Was chosen to accelerate development under the time constraint and to maintain clarity from design to implementation.

Future Enhancements

1. Bank Integration

- Future versions could integrate directly with users' bank accounts via the Plaid API, enabling automatic transaction imports.
- This would remove the need for CSV uploads and provide real-time tracking of income and expenses.

2. Frontend Upgrades

- Upgrade the UI using React for a web app, or React Native for a mobile app.
- Allow richer interactivity, detailed dashboards, and smoother user experience.

3. Secure User Management

- Implement a database-backed login system for secure user accounts.
- Enable persistent storage of transactions, preferences, and personalized insights.

4. Cloud Deployment and Scalability

- Deploy on AWS or GCP for scalability to support multiple users, secure storage of sensitive data, and automated notifications.

5. Gamification and Engagement

- Introduce streaks, badges, or fun visuals to encourage consistent saving habits.
- Display engaging metrics like "You saved $X this month!" or "You've reduced coffee spending for 5 days straight!"

6. Personalized Insights

- Tailor insights based on user interests. For example:
  - If the user cares about their environmental impact: Show CO_2 saved by spending less.
  - If they support certain social causes: Show potential contributions to charities or shelters if saved money is donated.

7. Ways to Profit

- Introduce premium tiers for personalized features, while keeping the core budgeting tools free so everyone can budget better.
- Include sponsored ads to support the free version of the app.