Personal Finance Recommender System

Objective

Build a system that analyzes an individual's historical expense data and provides:

- Personalized **budgeting suggestions**
- Monthly **savings goals**
- Alerts on **overspending in specific categories**
- Simple **recommendations** (e.g., "Reduce dining expenses by 15% to meet savings target")

Dataset

You can use any relevant dataset from sources like Kaggle or simulate suitable dataset on your own.

Assignment Tasks

1. Data Cleaning and Exploration

- Parse and convert dates.
- Group expenses by month and category.
- Visualize total income vs expense trends.

2. Categorical Budget Analysis

- Identify the top 3 spending categories per month.
- Compute % of monthly income spent on each category.

3. Savings Calculator

- Recommend a fixed or increasing savings goal (e.g., 20% of income).
- Detect months where user failed to meet savings target.

4. Recommendation Engine

- Based on user spending patterns, generate actionable suggestions like:
    - Limit online shopping to ₹3000 next month.
    - Increase investment contribution to ₹500 based on current surplus.

5. Advanced Option (Optional for Advanced Interns)

- Use **clustering (K-means)** to segment spending behaviour (e.g., Saver, Spender, "Balanced").
- Use **regression** to predict next month's total expense.

Tools & Technologies

- Python, Jupyter Notebook
- Pandas, NumPy, Matplotlib/Seaborn
- Scikit-learn (for clustering/regression)
- Streamlit (optional – for dashboard UI)

Assignment Evaluation Criteria

Criteria	Weight
Data Cleaning & Pre-processing	15%
Insightful Visualizations	20%
Logic for Budget & Savings	20%
Quality of Recommendations	25%
Code Quality and Documentation	10%
Bonus (Clustering/Prediction)	10%