Student Finance Agent – Write-Up

Problem Statement

For students, financial management is often a daily struggle. Between tuition fees, rent, groceries, transportation, and subscriptions, expenses quickly add up and are difficult to track manually. Most students either rely on ad-hoc spreadsheets or simply lose track of where their money goes. This leads to missed deadlines for payments, unnecessary late fees, and a lack of awareness about spending patterns.

The problem I chose to solve is: **How can we give students a "mini-CFO" that automates financial tracking, categorization, and planning — without the complexity of enterprise finance tools?** This is important because just like companies need CFOs, students need proactive systems that guide them toward better financial health.

Approach & How I Did It

I built an AI-powered **Student Finance Agent**, a lightweight dashboard that acts as a "personal CFO" for students. The workflow is designed to feel natural and automated:

1. **Receipt Upload & OCR**
    - Students can upload a grocery or rent receipt.
    - OCR (pytesseract) extracts vendor, date, and amount.
2. **Categorization & Insights (AI)**
    - A categorizer powered by **Groq API (LLaMA 3.1)** analyzes text.
    - It maps expenses into categories (Food, Transport, Housing, etc.) and generates insights like *"Food spending increased 20% compared to last month."*
    - If the categorization is wrong, the student can correct it, and the agent **learns over time**.
3. **Dashboard**
    - Key metrics: total income, total expenses, and cash runway (months left).
    - Visualizations: bar chart (cash flow by category), pie chart (spending breakdown), and **trend line of expenses over time**.
4. **Payment Reminders**

- Students can add reminders (e.g., rent due on the 1st).
- These appear in the dashboard and could be extended to sync with calendars.

5. **Bill Splitting**
    - Roommates can be added, and the app automatically splits expenses.
6. **Scenario Chat (Agentic Feature)**
    - Students can ask natural language queries like:
      "What if I spend $200 more on food next month?"
      "How many months will my $5000 savings last if rent increases by 10%?"
    - The agent responds with projections, turning financial planning into a conversation.
7. **Learning Log**
    - Shows all corrections the student has made to categorization.
    - This proves the agent is *adaptive*, not static.

Challenges & How I Solved Them

- **OCR Noise** → Real receipts contain cluttered text. I combined regex with AI prompts to clean vendor names and amounts.
- **Model Access** → Initial attempts to use Claude failed (not available on Groq). I pivoted to **LLaMA 3.1-8B**, which offered speed and affordability.
- **Data Storage** → A database felt too heavy for a prototype. I implemented lightweight JSON storage for expenses, reminders, and corrections, making it portable and easy to reset.
- **Insights Overload** → Showing every insight line made the UI cluttered. I introduced a **summary insight panel** at the top (total spent, top category, cash runway), keeping drill-down insights optional.
- **Agentic Experience** → The hardest part was making the app feel like an "agent," not just a tracker. Adding the scenario chat and learning log gave it personality and adaptability.

Market Research & Relevance

Managing expenses is a **major pain point for students**:

- According to *Education Data Initiative (2024)*, the **average U.S. college student spends $1,200/month** on living expenses (excluding tuition).
- Surveys show that **64% of students feel anxious about their finances**, and **43% report missing bill payments at least once per semester**.
- Tools like Mint or YNAB exist, but they are **complex, subscription-based, and not student-focused**. Students need **lightweight, free, AI-powered tools** tailored to their lifestyle.

This app directly addresses that gap by:

- Automating repetitive tasks like scanning receipts and splitting bills.
- Providing **real-time insights** that help avoid financial mistakes.
- Acting as a **personal CFO**, but scaled down for the unique needs of students.

Conclusion

The **Student Finance Agent** demonstrates how AI can make financial literacy practical, personalized, and proactive. It saves time by automating categorization, reduces risk by reminding about payments, and helps students plan smarter with scenario simulations.

Just as Paystand automates CFO workflows for businesses, this project brings the same intelligence to students' daily lives — showing how agentic AI can transform financial management at every scale.