

COLLEGE MONEY MANAGER

A Python-Based Financial Tracking & Prediction Tool

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INTRODUCTION

OVERVIEW

College life is often the first time students manage their own finances. Without a proper system, money tends to "disappear" by the middle of the month. Manual diaries are easily lost or ignored.

THE SOLUTION

The College Money Manager is a console-based application designed to replace manual logs. It doesn't just record expenses; it analyzes them to tell you exactly how much you can spend tomorrow.

THE PROBLEM



MONTH-END CRUNCH

Students spend lavishly in the first week and starve in the last week due to poor planning.



LACK OF DATA

Paper logs are easily lost. Students often forget to log expenses, making records inaccurate.



NO FORECASTING

Knowing you spent ₹500 today is useless if you don't know the safe limit for tomorrow.

PROJECT OBJECTIVES

- ✓ **Digital Persistence:** Store expense data permanently using JSON file handling so data is never lost.
- ✓ **Gap Analysis:** Automatically detect if a student missed entering data for previous days.
- ✓ **Statistical Prediction:** Apply mathematical formulas to calculate daily spending volatility.
- ✓ **Safe Limits:** Generate a dynamic "Safe Spending Limit" for the next day.

TECHNOLOGY USED



PYTHON 3.X

Core logic and control flow.



JSON

Lightweight data storage.



MATH MODULE

Statistical calculations.



OS & RANDOM

System ops & ID generation.

STATISTICAL ALGORITHM

We use Standard Deviation to calculate volatility:

Step 1: Mean (μ)

$$\mu = \frac{\sum x}{N}$$

Step 2: Std Dev (σ)

$$\sigma = \sqrt{\frac{\sum (x - \mu)^2}{N}}$$

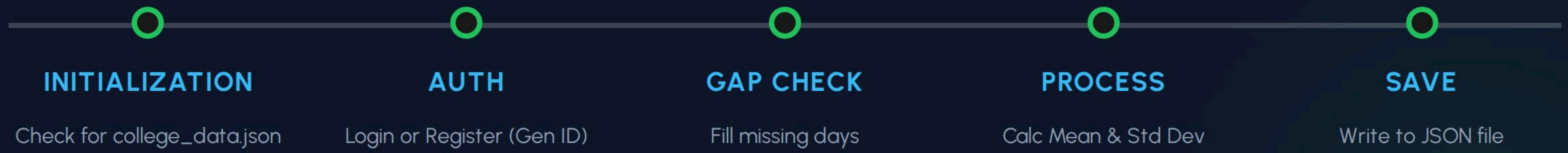
Result: Safe Limit = $\mu + \sigma$

WHY THIS WORKS?

If a student typically spends ₹100 \pm ₹20, then spending ₹120 is considered normal behavior. Spending ₹200 would be an outlier.

This formula automatically adapts to the student's personal spending habits to define a realistic "Safe Zone" for the next day, rather than a rigid, arbitrary budget.

SYSTEM ARCHITECTURE



KEY CODE LOGIC

⌚ THE MISSING DAY LOOP

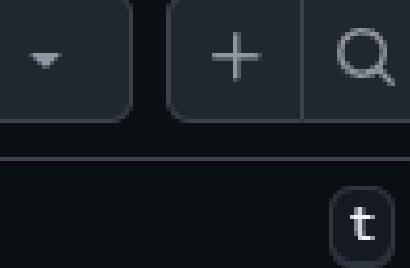
The code iterates from Day 1 to the Current Day. If a day key is missing in the dictionary, it triggers an input prompt loop.

```
for x in range(1, d + 1): ...
```

🗄 DATA PERSISTENCE

We use **json.dump()** inside the main loop. This ensures that even if the program crashes or is closed abruptly, the user's transaction data is saved immediately.

main



Go to file

Preview | Code | Blame

97 lines (56 loc) · 3.05 KB



Raw

README.md

student_money_manager.py

VITyarthi-project

College Money Manager v2.0  

A smart, statistics-driven Command Line Interface (CLI) application designed to help college students track expenses, analyze spending habits, and stick to a monthly budget.

📌 Overview

College Money Manager goes beyond simple expense tracking. It utilizes basic statistical methods (Standard Deviation) to analyze your spending volatility and predicts a "Safe Spending Limit" for the next day. It features a persistent login system, visual data representation, and report generation.

✳️ Key Features

🔒 User Authentication: Secure registration and login system with password protection and auto-generated Student IDs. 🗄 Data Persistence: Automatically saves all user profiles and expense history to a local college_data.json file. 💡 Smart Backfill: Automatically detects if you haven't logged in for a few days and prompts you to fill in missing expenses sequentially. 📊 Statistical Analysis: Calculates:

Total Expenditure

Daily Average

Standard Deviation (spending consistency)

📈 ASCII Visualizer: Generates a text-based bar graph in the console to visualize spending spikes (1 Star ≈ ₹50). 🤖 Predictive Budgeting: Suggests a "Safe Limit" for tomorrow based on your historical spending variance. 📁 Report Export: Exports a detailed receipt of your expenses to a text file ([Name]_report.txt) for external record-keeping.

🛠 Built With

Language: Python 3.x

Libraries: json, math, random, os (Standard Library - No external pip installs required!)

📦 Installation & Usage

OUTPUT & RESULTS

CONSOLE INTERACTION

- ✓ **Scenario 1:** Registration generates a unique ID (e.g., STU4921).
- ✓ **Scenario 2:** The system calculates "Variation" and suggests a "Safe Limit".
- ✓ **Scenario 3:** If expenses exceed the budget, an "Over Budget" warning is displayed.

```
COLLEGE MONEY MANAGER

1. New Student
2. Login
3. Exit
Choice: 1
Your Name: amaan
Registered. ID: STU3474

1. New Student
2. Login
3. Exit
Choice: 2
Enter ID: STU3474
Today's Date (e.g. 5):
```

CHALLENGES FACED

⚠ DATA PERSISTENCE

Issue: Data was disappearing after closing the program initially.

Solution: Implemented `json.dump` inside the main loop to save immediately after every entry.

⚡ HANDLING GAPS

Issue: Logic errors when users skipped days.

Solution: Added a "catch-up" loop that forces the user to fill Day 1-4 before accepting Day 5.

CONCLUSION

The College Money Manager successfully helps students become financially disciplined. By using simple Python logic and file handling, we solved a complex real-world problem.

FUTURE SCOPE

- Upgrade to GUI (Tkinter)
- Visual Graphs (Matplotlib)
- Cloud Database (SQL)

