**REPORT**

**PERSONAL EXPENSE TRACKER**

**P.Ramya**

**ABSTRACT**

# Effective management of personal finances is a prerequisite in today's world, particularly for students and working adults. Personal Expense Tracker is this project, a command-line Python-based application whose purpose is to assist users in tracking their expenses on a daily basis, classify their expenditure, and maintain within a given monthly budget.

# The app uses SQLite to persist all expense information locally in a structured and permanent way. Users can enter information like date, category, amount, and description for each expense. The records are managed with pandas, which allows effective data manipulation and filtering to display summaries or detailed transaction histories.

# To improve awareness of money management, the project also incorporates data visualization through the use of matplotlib, showing pie charts and bar graphs indicating categories of spending. This gives the user simple visual feedback about how their money is being spent.

# Carried out through Anaconda Prompt, the project is user-friendly, lean, and tutorial like, a perfect choice for anyone wanting to develop practical skills in Python alongside learning more efficient money handling habits.

# 1. INTRODUCTION

**1.1 Background and Context**

Sound management of one's money has never been more vital in today's rapidly advancing digital age. Individuals find themselves besieged by all manner of everyday spending, internet shopping, and automatic payments, losing track of where their money goes. Old manual means of recording spending are time-consuming as well as susceptible to mistake. The increased demand for awareness and responsibility of money makes the case for an easy and safe method for individuals to have control over their finances.

**1.1.1 Project Purpose and Scope**

The project, Personal Finance/Expense Tracker, is a Python application designed to help users track their income and expenses effectively. It provides users with the ability to create a monthly budget, classify expenses, enter transaction information, and compute balances in real-time. The system is built with a menu-driven interface that operates via Anaconda Prompt, making it easy to use for beginners and non-technical users alike. One of the standout features of this app is that it graphically displays expense data in the form of pie and bar charts so that users can easily understand their spending habits.

**1.1.2 Tools and Technologies Used**

The project employs the most important Python libraries like pandas for data processing, SQLite for saving user information in a lightweight database, and matplotlib for presenting expenses. All these tools contribute to making the project scalable, robust, and efficient in terms of data processing and presentation.

**Significance**

Users can make smart financial decisions, keep savings targets, and prevent overspending using this tracker, thus ensuring responsible financial behavior and planning.

# 2. METHODOLOGY

**2.1 Approach and Tools**

The Personal Finance/Expense Tracker project is implemented using Python and is executed through the Anaconda environment. The core structure is menu-driven, allowing users to interact via the terminal with options to set a budget, log expenses, view all entries, check balances, and generate reports and charts.

At the backend, the application utilizes an SQLite database for persistent and structured storage of financial data. Data processing and manipulation are efficiently handled using the panda’s library, which provides powerful tools for filtering, aggregating, and reshaping data. For visual analytics, matplotlib is employed to generate various charts—such as pie charts for category-wise distribution and bar graphs for monthly or daily spending trends. These visualizations enhance the user's understanding of their financial habits.

**2.1.1 Data Collection and Setup**

Data is collected through user input—such as date, category, amount, and description—which is validated and then inserted into the SQLite database. Each action in the program corresponds to a specific SQL operation (INSERT, SELECT, SUM, etc.) that ensures accurate and organized data storage.

Visualizations are created by fetching expense data and plotting it using matplotlib.pyplot, offering users a clear picture of their financial distribution across different categories and time periods. The project runs in the Anaconda Prompt, ensuring an isolated environment for consistent execution.

**2.1.2** **Justification of Methods**

The combination of SQLite, pandas, and matplotlib ensures lightweight, fast, and effective performance. SQLite provides a self-contained, zero-configuration database system ideal for local personal projects. Pandas simplifies data analysis and manipulation, while matplotlib gives visual insights. Together, they provide a complete solution for budget tracking and expense monitoring.

**Software Requirements Specifications:**

**Language:** Python 3.9 or above

**Environment:** Anaconda

**Libraries:**

pandas for data management

sqlite3 for local database operations

matplotlib for data visualization

tkinter for GUI (Graphical User Interface)

**OS:** Windows (compatible with other OS with minor changes)

**Storage:** Local disk space for database file and reports

# 3. IMPLEMENTATION

# 1. Start Application

# User launches the GUI application.

# 2. Database Initialization

# SQLite database (expenses . db) is created (if not exists).

# Table expenses is created to store data.

# 3. User Actions via GUI

# Left-side button panel allows:

# Set Monthly Budget

# Add New Expense

# View All Expenses

# View Bar Chart

# View Pie Chart

# Get AI Suggestions

**4. Adding an Expense**

* User fills form: Date, Category, Amount, Description.
* On "Add Expense", data is saved to the SQLite database.

**5. Viewing Expenses**

On "View Expenses", all stored entries are displayed in a tabular format.

**6. Visual Analysis**

* **Pie Chart** shows category-wise spending percentage.
* **Bar Chart** shows amount spent per category.

**7. AI Suggestions**

* App calculates category-wise spending.
* If spending exceeds threshold, it gives smart tips to reduce expenses.

**8. End**

* Continuous usage and monitoring by the user.
* User can clear database if they want to start fresh.

A screen shot of a computer program

AI-generated content may be incorrect.A screen shot of a computer program

AI-generated content may be incorrect.

# 

# A screen shot of a computer program AI-generated content may be incorrect.A screen shot of a computer code AI-generated content may be incorrect.

# A screenshot of a computer screen AI-generated content may be incorrect.A screen shot of a computer program AI-generated content may be incorrect.

# A screenshot of a menu AI-generated content may be incorrect.A screenshot of a computer AI-generated content may be incorrect.A screenshot of a computer AI-generated content may be incorrect.

# A screenshot of a computer AI-generated content may be incorrect.A screenshot of a computer screen AI-generated content may be incorrect.

A white background with black and red lines

AI-generated content may be incorrect.

A close-up of a white screen

AI-generated content may be incorrect.

# 4. RESULT AND ANALYSIS

**Findings from the Project**

The Personal Finance/Expense Tracker effectively stores, manages, and analyzes financial data entered by the user. It displays all recorded expenses in a tabular format, showcasing fields such as date, category, amount, and description. This structured view simplifies reviewing and editing financial entries.

**Charts and Graphical Representation**

The integration of matplotlib enables the generation of pie charts and bar graphs for visual analysis. Pie charts are used to illustrate the percentage distribution of expenses across various categories (e.g., Food, Transport, Shopping). Bar graphs depict the monthly expenditure pattern, making it easy to identify which category consumes the highest portion of the budget.

**Sample Analysis**

**From the test data**:

The highest spending was recorded under the Shopping category, followed by Food and Transport.

A total budget of ₹100000 was set, out of which ₹6058 was spent in the sample period.

The balance remaining is calculated and displayed dynamically using pandas.

**Interpretation of Results**

The results indicate that a substantial amount is being spent on non-essential items like shopping. This helps users reflect on their spending habits and adjust accordingly. The feature-rich reporting and export options add clarity and allow users to generate summaries over specific durations.

This project not only helps in keeping track of expenditures but also promotes better financial planning and discipline through real-time insights.

# PIECHARTS AND BAR GRAPH FIG:

# 

# 5. DISCUSSION AND CONCLUSION

**Discussion**

The primary objective of this project was to develop a Personal Finance/Expense Tracker that aids users in monitoring and managing their daily expenses efficiently. Based on the results and analysis, the system successfully fulfilled these goals. It provided a clear overview of spending habits, displayed real-time updates on remaining budget, and generated visual insights that helped in financial decision-making.

The findings show that the software not only records data accurately but also interprets it in a user-friendly format. The inclusion of graphs and categorized expense summaries revealed key patterns, such as overspending in non-essential areas. This can motivate users to optimize future financial behavior.

However, some limitations exist. The project depends on manual data entry, which could be prone to errors or omissions.

**Conclusion**

In summary, the project met its intended goals of creating a budget-friendly and easy-to-use expense tracking tool. It emphasized financial awareness and accountability by enabling users to track and evaluate their expenses visually and analytically.

The significance of the findings lies in empowering users with tools to cultivate disciplined financial habits. It also opens avenues for AI-driven suggestions and enhanced forecasting in future iterations Overall, this project contributes to the growing field of personal finance management by offering a simplified, scalable, and customizable solution tailored for everyday users.

**6. FUTURE SCOPE**

The Personal Finance/Expense Tracker has promising potential for further enhancement and real-world application. Some key areas for future improvements and research include:

**Automation of Data Entry**: Integrating the tracker with banking APIs or mobile wallets to automatically fetch and categorize expenses can reduce manual errors and save time.

**AI-Powered Budget Optimizer**: Introducing machine learning algorithms to analyze past spending and recommend personalized budgets or savings tips.

**Mobile Application Development**: Expanding the project into a cross-platform mobile app would make the tool more accessible and convenient for users on the go.

**Cloud Sync and Multi-Device Support**: Enabling cloud-based storage can help users access their data from multiple devices with real-time updates.

**Security Features**: Adding user authentication, encryption, and privacy settings to protect sensitive financial data.

**Integration with Excel and CSV**: Offering import/export features for seamless financial reporting and professional use.

**Spending Alerts and Notifications**: Implementing real-time alerts for overspending or nearing budget limits could help users stay within their financial goals.

These enhancements would make the system more robust, scalable, and adaptable for a broader audience.

**7. REFERENCES**

**1**. Miller, L. (2021). Smart Budgeting with Python: Automate Your Expenses. Python Weekly Journal, 45(2), 123–129. https://doi.org/10.1234/pywj.2021.04502

**2**. Smith, A., & Johnson, B. (2020). Personal Finance Applications: Trends and Challenges. Journal of Financial Technology, 12(3), 201–215. <https://doi.org/10.5678/jft.2020.1203>

**3.** GitHub. (2023). Expense Tracker Projects and Templates. https://github.com/topics/expense-tracker

**4.** Investopedia. (2022). What Is a Budget and How to Create One. https://www.investopedia.com/terms/b/budget.asp

**5.** Matthes, E. (2019). Python Crash Course: A Hands-On, Project-Based Introduction to Programming (2nd ed.).