Personal Finance Application – User Guide

This guide will help you install, run, and use the Personal Finance Application. Each section explains how to navigate the app's features, including login, expense tracking, income management, and budgeting. USE OF GEN AI: ChatGPT was used to help throughout the project and assist with reporting and documentation of the finance tracker, with changes and adjustments made on our end.

ChatGPT: "Help me write a concise introduction and purpose for the finance tracker project".

Introduction:

The Finance Tracker is a desktop application that helps individuals record, organize, and analyze personal finances. Built with Python (Tkinter/ttkbootstrap) and SQLite, it centralizes income and expense entry, category management, and CSV import into a simple, audit-friendly data model. The app generates clear, decision-oriented reports—such as expenses by category and profit over time—using pandas for computation and matplotlib for visualization, enabling users to see where money goes, how spending changes, and whether they are on track.

Purpose:

- Provide a GUI application that records transactions, categories, and accounts using a local SQLite database.
- Streamline data entry through manual entry and CSV imports; prevent "dirty" data with consistent formats and required fields.
- Provide repeatable reports (e.g., top spending categories, monthly profit) that support budgeting and goal tracking.
- Allow users to download exportable tables/charts (CSV, PNG, PDF) for sharing or archiving.

USE OF GEN AI: ChatGPT was used to expand on some design decisions based on code and reports we already have in place. Also, to understand how we can enhance existing code to address certain challenges. "Explain how to understand and write some design decisions for a finance tracker project, also give me some scenarios."

Assumptions and Design Decisions:

Assumptions

- Users will run the application in a desktop Python IDE (Windows or Mac) and is able to use a computer mouse to click through all the features
- Users' primary language is English and is able to type and read
- Users will need to check in with requirements.txt to ensure they have the necessary Python libraries to run the application
- Transaction inputs (data, amount, category) will be valid and follow consistent formats
- A single SQLite database is sufficient for storage; users are not expected to set up external databases
- Individuals will primarily use the application for personal finance tracking, not enterprise accounting
- Additionally, we assume the user will either upload a CSV with data or create manual entries

Design Decisions

- Organized Source Code into Modules to follow ISTM Modularity standards
- Integrated pandas and matplotlib for reporting/visualizations, pandas to read in CSV
- Currently allows users to add categories but not yet edit or delete them (future phases will address this)
- The auth page now gives additional information when registering
- In the Analytics tab, users can click on data visualizations (if they prefer overall visuals instead of dense text) to see a pop up of further information if they want to do a deeper analysis (click to pop up allows for a cleaner UI, avoiding cluttering and overwhelm for the user).
- Users can choose the start and date range to look at personal finance data for a certain time period, so that they see the information that they need at that time

Challenges and solutions:

Challenge #1: Users did not receive clear confirmation/error messages when registering.

Solution: Authentication page to provide success/error messages, including password requirements and registration confirmation prompts. Reducing confusion and improving user experience.

Challenge #2: The "View Income" and "View Expense" menus only showed the most recent transactions.

Solution: Database queries and display logic ensure that all transactions are retrieved and displayed, allowing users to view all data, rather than just the latest entry.

Challenge #3: Manual entry and CSV imports sometimes produced inconsistent formats.

Solution: Implemented input parsing and normalization to standardize data formats across both manual and imported entries. Consistency in how dates, amounts, and categories are stored and displayed.

Challenge #4: Ensuring consistent data validation for both manual and CSV input.

Solution: Unified validation rules are applied at both front-end and back-end, covering required fields, date formats, and numeric ranges.

Challenge #5: Coordinating team contributions across security, validation, GUI, and reporting.

Solution: Established a shared coding standard, modular architecture, and weekly check-ins to ensure integration.

Use of Gen AI: ChatGPT was used to assist in documenting and explaining the login feature of our personal finance application. The AI was used to clarify technical steps, error handling, and best practices for securing user accounts. All generated content was reviewed and edited by our team to fit the project's requirements.

Prompt: "Can you help me write setup and usage instructions for the login feature of our finance app?"

Installation & Setup:

In PyCharm

Go to File → New Project from Version Control…

Paste the repo URL (https://github.com/jhenderson-tamu/Honorable_Honey_Badgers) → Clone.

When it opens, trust the project if prompted

Bottom-right, where the interpreter shows:

Click it → Add Local Interpreter → New Virtualenv (location: <project>/.venv, base: Python 3.13
PyCharm should prompt you to install from requirements.txt → Install. (Or open Terminal and run pip install -r requirements.txt.)
Right-click main.py → Run 'main'

- Run the program with:
  main.py

Login:
The login feature secures access to the personal finance application. Each user has their own account, ensuring that financial data remains private and isolated.
In the login window-
For new users:

- Enter a username and password
- Click **Register**

For existing users:

- Enter your username and password
- Click **Login**

If correct, you'll be taken to the Main Dashboard.
What Happens Behind the Scenes

- The app logs each login attempt, which you can later view under Manage Account → Login History

Error Messages & Fixes

- "Invalid username or password" → Check spelling or register a new account first
- "Incorrect password" → Make sure Caps Lock is off, program will give error of 'Incorrect Password- please re-enter password'

Security Notes

- Password requirement- Use a strong password
  - At least 8 characters
  - At least 1 uppercase letter
  - At least 1 number
  - At least 1 special character
  - No spaces
- Logging out or closing the app will end your session

Expense:

You can use the Expenses section to view, add, and remove expenses to help keep track of your finances. All actions are saved under your current username and don't affect other users.

Open the Expenses tab on the main page. You will see that you have 4 courses of action to choose from, depending on your needs:

Manual Entry

- Here, you can manually enter any expenses that you want to add
- Enter the amount in numbers (don't enter the $ sign). Decimals are acceptable input as well.
- Enter the date that you had the expense in the format (YYY-MM-DD)

- Select the category from the dropdown to specify what type of expense you had, or you can choose to add a new category to describe the expense (to help you see what your money is being spent on)
- Then click on the **Save Expenses** button

Import Expense

- You can choose to import a CSV file of your expenses
- Click on the **browse** button to look for the CSV file containing your expenses on your computer. Then it will show that you have selected a file.
- Then, click on the **import** button so that the finance tracker can utilize your CSV file of expenses

View Expense

- When viewing expenses, it will show a table of your expenses. The data schema for the table will be ID, the date you had the expense, the category, the amount, and the description.

Remove Expenses

- If you want to delete an expense, simply choose an expense and click on the “Delete Selected Expense” button (you delete expenses one by one).

Any time you want to go back to the “Expenses” page to view the other actions to do with expenses, click on the **Back to Expenses** button or click on the **Expenses** tab on the left.

Once you are done managing your expenses, click on the **Close Expense Page** button to return to the main page, or you can select any of the tabs on the left to manage other aspects of your finances (income, budget, reports), manage your account, or log out.

Income:

ChatGPT: “Describe how to work with the income section of this application using the income file code”

Income Section:

Use the Income area to record money you earn, import income from a CSV file, review your history, and delete entries you no longer need. All actions are saved under your current username and don’t affect other users.

Open the Income tab from the app’s main navigation.
You’ll see these options:

- Income Manual Entry
- Import Income
- View Income
- Remove Income
- Close Income Page

Income Manual Entry:

1. Click Income Manual Entry.
2. Fill the form:
    - Description – e.g., “Paycheck” or “Gift”
    - Amount – numbers only (e.g., 1250.50)

- Date (YYYY-MM-DD) – pick from the calendar or type it
- Select Category – choose an existing category – or type a name under “Or Add New Category” and click Add Category

3. Click Save Income.

Import income from CSV:

1. Click Import Income.
2. Click Browse and choose a CSV file
3. Click Import.

View income:

1. Click View Income.
2. A table lists your entries with columns: ID, Date, Category, Amount, Description.
3. Use Back to Income to return.

Remove income:

1. Click Remove Income.
2. Click a row to select it.
3. Click Delete Selected Income and confirm in the pop-up.
4. Return back to the main screen

Budget:

ChatGPT - “ Help me describe the budget section in a user guide format.”
The budget section will serve as a net savings/budgeting tab, where users can record their savings based on income and expenses. It will be calculated by subtracting total income from total expenses. All actions will be saved under your username based on your registration at the start.

Net Savings = Total Income - Total Expenses

Open the budget tab, and you will see the following.

- Start Date (YYYY-MM-DD) - Beginning of tracking period
- End Data (YYYY-MM-DD) - End of tracking Period
- Total Expenses - All expenses within the selected date
- Total Income - All income within the selected date
- Savings - Calculated net savings for the period
- Calculate Budget - Runs the calculation and updates the saving field
- Back - Returns to the previous menu

Import Expense and Income based on the criteria above

Dates Manual Entry

1. Enter the start date to define when income/expense tracking begins
2. Enter the end date to define when income/expense tracking ends

Calculate Budget

1. Once you enter the dates, the system will display total income and expenses for the specified period
2. Click the Calculate budget tab, and the application will compute and display net savings

Category:

Using Gemini AI, I asked to create a user guide for the “category” section.

The Category Management Page provides a dedicated interface for organizing and maintaining the categories used to classify your financial records. This page allows you to view, rename, and safely delete both Expense Categories and Income Categories.

A key feature is the safe deletion mechanism: if you attempt to delete a category that is currently assigned to existing financial records (expenses or income), the system will automatically prompt you to reassign those records to another category, ensuring no data is lost or left uncategorized.

Guide: Updating and Deleting Categories
This section details how to perform management actions on your categories.

Viewing Categories
1. Navigate to the Category Management Page.
2. The page displays two distinct lists: Expense Categories and Income Categories.
3. Each list shows all currently defined categories for that transaction type.

Renaming (Updating) a Category
Use this feature to correct typos or change the name of an existing category. Renaming a category automatically updates all associated transactions to use the new name.
1. Select the category you wish to rename by clicking on its name in either the *Expense Categories* or *Income Categories* list.
2. Click the Update button located beneath the list.
3. A dialog box will appear, prompting you to "Rename '[Old Category Name]' to:".
4. Enter the new name for the category in the input field and click OK.
5. A confirmation message will appear, and the list will refresh, showing the category with its new name.

Deleting a Category
You can safely delete a category, even if it has existing records, by reassigning its records first.
Case 1: Deleting an Unused Category
If the category is not currently assigned to any expense or income record:
1. Select the category you wish to delete from the list.
2. Click the Delete button.
3. A confirmation prompt "Delete category '[Category Name]'?" will appear.
4. Click Yes to permanently remove the category. The list will refresh.

Deleting a Category That Is In Use
If the category **is** currently assigned to one or more financial records, the system will prevent a simple deletion to ensure data integrity:
1. Select the category you wish to delete from the list.

2. Click the Delete button.
3. A warning message, "Category In Use", will appear, informing you of the number of records tied to this category and that you must reassign them before deletion.
4. A "Reassign Category" dialog box will appear.
5. Enter the name of an existing category you want to move the records to.
    - *Tip:* If you leave this field blank, the system will automatically reassign all records to the default category, "Uncategorized".
6. Click OK.
7. A confirmation message will appear, stating the category was deleted and its records were reassigned to the new category. The list will refresh.

Exiting the Page
To return to the previous screen in the application:

- Click the Close Category Page button at the bottom of the screen.

Analytics:

Using Gemini AI, I asked to create a user guide for the "Analytics" section.

This guide provides an overview and instructions for using the Analytics Reports feature, which allows you to navigate and view various financial reports.
The Analytics Reports Navigation page serves as the main menu for accessing different financial analysis reports. It uses the AnalyticPages class to display a list of available reports as buttons in a clean, user-friendly interface powered by ttkbootstrap (an extension of Tkinter).
This feature is designed to quickly link a user to detailed views of their financial data, such as spending patterns, monthly summaries, and cash flow.

Key Reports Available:

- **Expenses by Category Report:** Displays your spending distribution across different categories, typically using a **Pie Chart**.
- **Monthly Expenses Report:** Shows spending trends over time, usually presented with a **Bar Chart**.
- **Top Categories Report:** Highlights the categories with the highest expenditures, typically shown with a **Bar Chart**.
- **Cash Flow Report:** Visualizes the relationship between your income and expenses.

User Guide: Navigating Analytics Reports
Follow these steps to access and view your financial analytics reports.

1. Accessing the Analytics Menu
The main analytics menu is displayed when the create_analytic_page() method is called by the main application, usually by clicking an "Analytics" or "Reports" button in the main application interface.

- **Action:** Click the button in your application that leads to the analytics section.
- **Result:** The main window pane will clear and display the **"Select an Analytic Option"** title along with a list of navigation buttons.

2. Viewing a Specific Report

To view the details of a report, simply click on the corresponding button.

Button Text	Report Type	Description
Expenses by Category Report (Pie)	Category Report	Shows what percentage of your total expenses falls into each spending category.
Monthly Expenses Report (Bar)	Monthly Report	Displays total expenses for different months to track spending over time.
Top Categories (Bar)	Top Categories Report	Pinpoints your highest expense categories.
Cash Flow (Income vs Expenses)	Cash Flow Report	Visualizes the difference between your total income and total expenses.

Action: Click one of the report buttons (e.g., **"Monthly Expenses Report (Bar)"**).

- **Result:** The current analytics menu will be replaced by the chosen detailed report. Each individual report typically includes a **'Back'** or **'Close Report'** button to return to the main menu.

3. Returning to the Analytics Menu
When viewing a specific report, you can always return to the main selection page.

- **Action:** Within any report view, click the **'Back'** or designated button that returns you to the main analytics menu.
- **Result:** The screen will refresh, showing the **"Select an Analytic Option"** menu again.

5. **Closing the Analytics Page**

To completely exit the analytics section and return to the application's previous state (or main dashboard), use the designated close button.

- **Action:** Click the **"Close Analytics Page"** button (styled in a prominent "danger" color for clear indication).
- **Result:** The entire analytics section is cleared from the display, and you return to the main application interface.

Manage Account:

The **Account Management page** provides users with tools to manage their personal account settings within the application. It includes functionality to securely update the user's password and to review login history records for audit and transparency. The password change feature validates user credentials before committing updates and logs successful changes as user actions for accountability. The login history section retrieves prior login activity from the database and displays it within the interface, offering visibility into account access over time.

Changing Your Password

1. Enter your **old password** in the "Old Password" field.
2. Enter your **new password** in the "New Password" field.
   - Passwords must meet security rules (length and complexity requirements).
3. Click **Update Password**.
   - If successful, a confirmation message will display and your password will be updated.
   - If the old password is incorrect or the new password does not meet requirements, an error will display.

Viewing Login History

- The "Login History" section displays a list of your past login attempts, including timestamps and recorded actions.
- This helps you track account activity and verify that no unauthorized access has occurred.

Navigation

- To return to the main menu, click **Back to Main Menu**.

Future Improvements:

Reporting and Visualization

- Being able to delete potential entries at a time or undo actions
- Use pandas for data aggregation and matplotlib for visual charts.
- Improve financial insights with monthly/quarterly breakdowns.

Data Export Functionality

- Allow export of transactions and reports in multiple formats (CSV, Excel, PDF).
- Enable filtered exports (date range, category, income/expense type).
- Include summaries alongside raw data for easy external analysis.

Recurring Transaction Support

- Add scheduling for recurring income/expenses.
- Store rules for frequency (daily, weekly, monthly, yearly).
- Automatically generate transactions on due dates, reducing manual entry.
- ‘Quick Add’ feature from the main dashboard (date defaults to today, remembered category)

Backup & Restore

- Provide one-click backup of the entire database and user data.
- Allow restore from backup with integrity checks and confirmation prompts.
- Protect against accidental data loss or corruption

Transaction Search & Filtering

- Add filters by data range, category, transaction type, or amount.
- Implement text search within transaction descriptions.
- Display totals for filtered results to give quick summaries.
- Improve usability for a large database by adding paging or a quick search.

Honor Code:

On my Honor, as an Aggie, we have neither given nor received unauthorized aid on this academic work.