



Expense Tracker Application

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ABSTRACT

This app looks into a new kind of money-tracking app that uses advanced technology. It explores how the app is made, what it does, and how it could change the way people handle their money. The app is built using Python for coding, SQLite3 for managing data, and some Python tools to show information in a clear way. The paper talks about everything from how the app is designed and built to how it keeps data safe and works well. It also mentions areas where the app could get even better. By looking at how Python and other technologies are used in a money-tracking app, this research paper adds to what we know about managing personal finances.

Introduction

The ultimate tool for managing your personal Expenses, Budget, Analysis and for tracking your future savings[1]. It also allows users to set budgets , get overview of money distribution and has added functionality of analysing data using graphical representation.[2] If you always want to be in sync and control of your budget, bills and savings, then this tool is best suited for you. Seamlessly log your personal and business transactions analyse your revenue and expense reports with beautiful graphs. Review your daily, monthly finances easily.

Features

Intuitive Interface - Add, edit, Archive your financial records easily. **Multi-currency support** - you can select your currency from the list of 10+ major world currencies. **Multiple accounts** - You can create any number of accounts to manage and streamline your Income and Expense transactions. **Graphs and Pie Charts** - Gives more clarity and visual analysis of your spending areas in detail. It gives a percentage split up of your revenue and spending category wise for all the months. **Custom Categories** - If default categories do not work for you. You can simply create your own Spending and Income Categories with Built-In Icons and colours. **Budget Management** - You can set and alter your monthly budget any time. You will get an alert message on your main window when your spending has reached the budget threshold.

- **Goals** - Save for your future expenses by setting Goals. You can add contributions towards your goal and keep track of your saving progress to achieve your goal.
- **Built-In Calendar** - Your daily, monthly Spending and revenue can be beautifully summarized within the built Calendar view.
- **Multi device support** - Budget Mate supports almost every major PC and platforms irrespective of the OS.

We aim to add and support more range of units to the application in the near future.

Background

We want to make it easy for people to track their money. In today's fast world, spending money happens quickly, and it's hard to keep track. Many people struggle to remember where their money goes. Some write it on sticky notes, others use complicated spreadsheets, and some even use old-fashioned balance sheets. But all these methods make it hard to organize and use the information. There's a risk of missing important details or making mistakes. Also, people often don't keep good records, so it's tough to see the big picture of their spending.

To solve these problems and make managing money easier, we are thinking of a well-designed app is the answer. This app will smoothly record expenses and have an easy-to-use interface. It's not just easy, it can show users a complete history of their spending. Basically, it makes tracking expenses simple and helping people have better control over their money[5].

Relation

We made a special app to help people handle their money better. Many apps already do this, but we wanted ours to be different and better. One thing we added is the ability to see graphs and a history of how you spend your money right in the app. This helps you understand where your money goes. We also made it so more than one person can use the app together, like families or roommates.

But we didn't stop there. We wanted our app to do more than just track spending. We added a feature where you can answer surveys about your spending habits. This makes our app unique because it's not just about tracking money; it's also about learning from users[1][2]. We also made charts to show your money info in a way that's easy to understand.

System

Lots of apps help people manage their money. One popular kind is expense tracker apps. They're like digital versions of old-fashioned ways to keep track of spending, like using a pen and paper or a spreadsheet. These apps do basic things like letting you note down and categorize your expenses. They also help you plan a budget and show your spending in easy-to-understand graphs. Some apps even let you set money goals, get reminders, and make reports to plan better[6].

And some link to your bank, so your transactions automatically show up in the app.

Methodology

This project follows a clear plan, starting with understanding what users need and choosing the right technologies. First, we look at what people want in an expense tracking tool and the standards that are important. We talk to users through surveys and interviews to learn about their preferences and challenges with existing expense trackers. This helps us make a tool that really meets their needs[5].

We choose SQLite3 for efficient data storage and retrieval. We include Python libraries like Matplotlib and Seaborn for data visualization to make the app more analytical.

Then comes the part where we actually build the application. We use Python to create the main functions of the app, like user registration, entering expenses, sorting them into categories, planning budgets, and visualizing data. SQL is used to store financial data in a structured and secure way. We design the database to organize the data well, minimizing redundancy and keeping it reliable.

The data visualization part, powered by Python libraries, lets users see their financial information in a clear and visual way. This helps users make better financial decisions[8]. After building the app, we test it with users to make sure it's easy to use. We gather feedback and continuously improve the app based on what user's feedback .

Sequence Diagram

```
@startuml
actor User
participant UserInterface
participant Application
database Database

User -> UserInterface: Open Application
UserInterface -> Application: Display Expense Recording Form
User -> UserInterface: Fill Expense Details
UserInterface -> Application: Submit Expense Details
Application -> Database: Store Expense Data
Database --> Application: Confirmation
Application --> UserInterface: Expense Recorded
UserInterface --> User: Display Success Message

@enduml
```

This sequence diagram represents a simplified process which starts with the user opening the application. The user interface displays the registration form, which the user fills out. When the user submits the form, the application stores the user's data in the database. Upon successful registration, the application displays a success message to the user.

Activity diagram

```
@startuml
start
:Open Application;
if (User is new?) then (yes)
  :User Registration;
  if (Registration Successful?) then (yes)
    :Login;
  else (no)
    stop
  endif
endif
:Log In;
if (Login Successful?) then (yes)
  :Main Dashboard;
  :Record Expense;
  if (Expense Valid?) then (yes)
    :Store Expense Data;
    if (Data Stored Successfully?) then (yes)
      :Display Success Message;
    else (no)
      :Display Error Message;
    endif
  else (no)
    :Display Error Message;
  endif
endif
else (no)
  :Display Error Message;
endif
stop
@enduml
```

In this activity diagram:

1. The process begins with the user opening the application.
2. If the user is new, they go through user registration. If successful, they log in.
3. Upon successful login, the user is directed to the main dashboard.
4. From the dashboard, they can record an expense.
5. The system checks if the recorded expense is valid.
6. If the expense is valid, the system stores the expense data.
7. If the data is stored successfully, a success message is displayed. Otherwise, an error message is shown.

Modules

Multiple Accounts

This module allows users to create and manage multiple accounts for tracking their expenses. Users can initiate the account creation process by clicking the "+" sign button, which triggers a dialog to enter the account name. The newly created account will be saved in the account tab[7]. Additionally, users can delete a specific account by selecting the account name and confirming the deletion action.

Add Expenses

The "Add Expenses" module is designed for users to input their daily expenses seamlessly. However, a prerequisite for expense entry is the selection of an expense category. Users are unable to enter expenses without associating them with a category. Once the user enters a transaction, it is recorded and added to the Transactions tab. If the need arises to remove a specific transaction, the user can perform a long press action to delete it from the tab.

Add Category

In this module, users have the capability to add new expense categories. Categories play a crucial role in organizing expenses effectively. While the application provides a set of pre-defined categories, users also have the option to add custom categories to suit their specific needs.

Filter Transaction View

The "Filter Transaction View" module empowers users to sort and filter their transactions. Within the Transactions tab, users can select a specific day, month, or year, and upon clicking the filter button, the transactions relevant to the chosen timeframe will be displayed. For example, if a user selects a particular day, such as Sunday, the application will exclusively display transactions made on Sundays.

View Analytics

This module provides users with the option to view their expense data through graphical representations, specifically pie charts. By clicking on the "View Analytics" option, users are directed to a statistics page where rotating the phone triggers the initiation of graphical representations in the form of pie charts. These pie charts display expenses in a visually appealing manner, with colours and percentage values.

PDF Report

The "PDF Report" module facilitates the creation of detailed expense reports in PDF format. Users can generate a PDF report by clicking on the PDF button in the Transactions tab. Once generated, users have the ability to view the report and the document is automatically saved on their device, providing a convenient and accessible record of their financial data.

Conclusion

Thus, we have developed such type of application which help the users to reduces their effort of handling daily expenses. That the application will have various components of updating and viewing users' expenditures. As part of research, we considered adding certain components to the application to make it more useful to the user. Some of the extra Components are like enabling users to register to the application using existing email or social network account, it will synchronize the users profile data to the application[3][4].

Future Enhancement

The application will be consistently updated to ensure compatibility of system A "Persistent Data History" feature will allow users to view all data within the application, even if specific data has been deleted from the database. Advanced statistical analysis will be introduced, based on users' income and expense details, offering deeper financial insights[8]. Users will have the capability to share financial data through Bluetooth and messaging platforms like WhatsApp. Printing functionality will be implemented to enable users to create physical records of specific income or expense details. Furthermore, users will be able to register using existing email or social network accounts, with their profile data seamlessly synchronized with the application, enhancing the user experience[3][4].

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