Expense Tracker with Monthly Analytics

1. Introduction

Managing personal finances effectively is a critical life skill. This project, Expense Tracker with Monthly Analytics, is a Java-based desktop application designed to help users record their daily expenses and visualize spending patterns using interactive charts. The goal is to offer a simple yet powerful tool to track, analyze, and manage personal expenditures efficiently.

2. Abstract

The Expense Tracker application enables users to add, view, delete, and analyze monthly expenses. It integrates a graphical user interface (GUI) built with JavaFX, a lightweight database using SQLite, and JFreeChart for visual data representation. The application allows users to export expense data in CSV format and provides monthly pie and bar charts for analytics. It serves as a practical tool for financial planning and decision-making.

3. Tools Used

- Java (Core Programming Language)

- JavaFX (GUI Design Framework)

- SQLite (Embedded Database)

- JDBC (Database Connectivity)

- JFreeChart (Graph and Chart Visualization)

- SceneBuilder (Optional for designing FXML layouts)

4. Steps Involved in Building the Project

4.1. Database Design:

- Created tables to store expense data with fields: ID, Date, Category, Amount, and Note.

- Used SQLite for lightweight, local data storage.

4.2. Backend Development:

- Used Java and JDBC to handle database operations (add, fetch, delete expenses).

- Developed DatabaseHelper.java and Expense.java to manage CRUD logic.

4.3.Frontend Design (JavaFX):

- Designed the main form using JavaFX TableView and input fields.

- Added buttons for exporting CSV, viewing pie/bar charts, and deleting selected expenses.

4.4. Analytics Module:

- Implemented ChartGenerator.java using JFreeChart to render Pie and Bar Charts.

- Displayed monthly analytics in pop-up windows using JavaFX and Swing integration.

4.5. Export Feature:

- Developed CSV export functionality to save all monthly expenses in .csv format using the Utils.java class.

4.6. UI Enhancements:

- Included real-time table updates, a delete button, auto-popup charts, and color-coded bar graphs.

5. **Conclusion**

The Expense Tracker with Monthly Analytics is a complete, user-friendly desktop application for personal financial tracking. It simplifies expense recording and empowers users with monthly insights through intuitive visual analytics. By integrating JavaFX, SQLite, and JFreeChart, the project showcases a practical combination of database interaction, GUI design, and data visualization. The tool can be extended further by adding login features, category-based filters, or mobile support.