

Project Report: Personal Finance Tracker

Introduction

This report details the design, development, and implementation of a Personal Finance Tracker database. The primary objective of this project was to create a robust SQL-based system capable of managing and analyzing user income and expenses, providing a clear overview of an individual's financial health.

Abstract

A relational database was designed using SQLite to serve as the backend for a personal finance application. The schema includes four main tables: Users, Categories, Income, and Expenses, linked by foreign keys to ensure data integrity. SQL scripts were written to create this structure and populate it with a customized dataset of 10 users. Key analytical queries were developed to generate reports on monthly spending and category-wise expenditure. To enhance functionality, a VIEW was created for simplified balance reporting, and a TRIGGER was implemented to automatically track the last activity date for each user, demonstrating advanced database automation.

Tools Used

Database System: SQLite

Management Tool: DB Browser for SQLite

Scripting Language: SQL

Steps Involved in Building the Project

Schema Design: A relational schema was designed with four primary tables (Users, Categories, Income, Expenses) to logically separate and store financial data.

Database Creation: SQL CREATE TABLE scripts were executed to build the database structure, including primary keys, foreign keys, and data constraints.

Data Population: The database was populated with a custom dataset for 10 users, including unique Indian names and realistic financial transactions.

Query Development: Analytical SELECT queries using JOIN and GROUP BY were written to generate reports on monthly expenses and spending per category.

View Implementation: A VIEW named UserBalance was created to provide a simplified, real-time summary of each user's total income, expenses, and current balance.

Advanced Automation: A TRIGGER named `update_last_activity` was implemented to automatically update a `last_activity_date` in the `Users` table whenever a new expense is recorded, showcasing an understanding of database automation.

Conclusion

This project was a successful exercise in practical database management. It provided hands-on experience in schema design, data manipulation, and advanced SQL features. The resulting database is a functional and efficient system for tracking personal finances. Key takeaways include the importance of a well-structured schema for data analysis and the power of views and triggers in simplifying and automating database operations.