

# Project Report: Personal Financial Tracker using SQL

## 1. Introduction

This project involves the development of a Personal Financial Tracker using SQL to manage and analyze personal income and expenses. The tracker enables users to log transactions, categorize spending, and generate reports to understand financial habits and plan better.

## 2. Objectives

- Track daily income and expenses efficiently.
- Categorize transactions into custom-defined groups (e.g., food, rent, travel).
- Provide monthly and yearly reports on spending habits.
- Ensure data integrity and consistency through relational database design.

## 3. Tools and Technologies Used

- SQL (Structured Query Language) - SQLite or MySQL (for demonstration purposes) - Any frontend or data input interface (e.g., Python script, web form) can be used to interact with the database.

## 4. Database Design

The database consists of the following tables: 1. Users: Stores user credentials and basic profile information. 2. Categories: Defines various spending/income categories. 3. Transactions: Records all financial transactions with references to category and user. Each transaction includes: - Transaction ID (Primary Key) - User ID (Foreign Key) - Category ID (Foreign Key) - Amount - Type (Income/Expense) - Date - Notes

## 5. SQL Features Utilized

- CREATE TABLE, INSERT INTO, SELECT, UPDATE, DELETE
- JOIN operations for generating reports across tables
- GROUP BY and aggregate functions (SUM, COUNT) for summarizing data
- Views for monthly/yearly reports
- Constraints for data validation (e.g., CHECK for positive amounts)

## 6. Sample SQL Queries

```
- SELECT SUM(amount) FROM Transactions WHERE type = 'Expense' AND strftime('%m', date) = '07';  
- SELECT category_id, SUM(amount) FROM Transactions GROUP BY category_id;  
CREATE VIEW MonthlyReport AS SELECT strftime('%Y-%m', date) AS month, SUM(amount) FROM Transactions GROUP BY month;
```

## 7. Conclusion

The Personal Financial Tracker project provides a practical use-case of SQL in real-world finance management. It showcases how structured data and relational design can help manage, analyze, and visualize personal finance efficiently. This system can be further expanded with frontend integration or advanced analytics for budget planning and forecasting.