Finance Tracker Database

1. Introduction

The **Finance Tracker Database** project is designed to record and analyze personal financial transactions. It supports multiple users, tracks incomes and expenses under proper categories, and generates detailed reports. The main focus of the system is to simplify financial management by providing insights into **monthly expenses**, **category-wise spending**, and **balances** through automated queries and views.

2. Abstract

This project aims to build a structured database for personal finance management using MySQL. The database stores user information, categorizes transactions as income or expenses, and provides summarized financial reports. Queries are designed to calculate monthly totals, category breakdowns, and overall balances. A dedicated view is created to simplify balance checking for each user.

By implementing grouping, joins, aggregations, and views, the project demonstrates how SQL can be applied in real-world scenarios to support financial decision-making.

3. Tools Used

- **MySQL Workbench** → for schema design, data entry, and query execution
- **SQL (MySQL)** → for creating tables, inserting data, and generating reports
- **ER Diagram Tools (dbdiagram.io / Lucidchart)** → for visualizing relationships between tables
- **Command-Line MySQL Client (optional)** → for running and testing queries outside Workbench

4. Steps Involved in Creating the Project

1. **Requirement Analysis**
    - Identified entities: Users, Categories, Income, Expenses.
    - Defined relationships: A user can have many incomes and expenses, and each transaction belongs to a category.
2. **Database Schema Design**
    - Created tables for storing users, categories, income records, and expenses.
    - Applied primary keys and foreign keys to maintain data integrity.

- Ensured normalization to avoid redundancy.

3. **Data Insertion**
    - Added sample user details.
    - Inserted dummy income and expense transactions.
    - Linked each transaction with proper categories (Salary, Rent, Food, etc.).
4. **Report Queries Development**
    - **Monthly Expense Summary**: Calculates total expenses for each user per month.
    - **Category-Wise Spending**: Breaks down expenses into categories for better analysis.
    - **Balance Tracking View**: Provides total income, expenses, and balance for every user in a single table.
    - **Monthly Income vs Expense Report**: Combines incomes and expenses for each month and shows the net balance.
5. **Testing & Validation**
    - Verified reports with inserted dummy data.
    - Checked that all balances and monthly totals matched expected values.
    - Ensured query results remained consistent even when no income or expenses existed for a user.

5. Explanation of Reports

5.1 Monthly Expenses Report

Shows how much each user spent in a given month. Useful for tracking monthly financial activity and identifying costly periods.

5.2 Category-Wise Spending

Provides a detailed breakdown of expenses into categories like Rent, Food, Transport, or Shopping. Helps users understand where most money is being spent.

5.3 Balance View

Displays the total income, total expenses, and remaining balance for each user. Makes it easy to quickly check financial health without running multiple queries.

5.4 Monthly Income vs Expense Report

Combines both income and expenses for each month and calculates the balance. This comprehensive report helps determine whether a user is saving money or overspending.

6. Conclusion

The Finance Tracker Database successfully demonstrates the use of SQL for financial management. The queries provide meaningful insights into user transactions, monthly trends, and overall financial status.

- **Monthly summaries** show expense patterns.
- **Category analysis** highlights spending habits.
- **Balance tracking** simplifies financial monitoring.
- **Comprehensive monthly reports** combine income and expenses in one place.

This project can be extended further with stored procedures for automated reporting, triggers for budget alerts, and integration with front-end applications for visualization.