KHAN INSTITUTE OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

EXPENSE TRACKER MOBILE APPLICATION

Android App Development

Project Report

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0.1 Introduction

0.1.1 Overview of the Project

The Expense Tracker is a cross-platform mobile application designed to help users efficiently manage their personal finances. It allows users to track their daily income and expenditures, providing a clear overview of their financial health through a centralized mobile interface.

0.1.2 Problem Statement

Many individuals struggle to maintain financial discipline due to a lack of organized tracking systems. Manual recording of daily expenses is often inconsistent, leading to difficulty in understanding cash flow and saving money

0.1.3 Motivation of the Project

The motivation behind this project is to leverage modern mobile technologies, such as React Native and Expo, to build a practical tool that simplifies financial management. Providing users with instant access to their financial summary on their mobile devices encourages better spending habits.

0.1.4 Objectives

- Enable full CRUD (Create, Read, Update, Delete) operations for financial transactions.
- Deliver real-time financial statistics, including total balance, income, and expenses.
- Improve user productivity through an organized and intuitive mobile UI

0.2 System Analysis

0.2.1 Proposed Solution

The proposed solution is a full-stack mobile application that provides real-time transaction tracking and financial analytics. By using a cloud-hosted database, users can securely access their data from any supported mobile device.

0.2.2 Scope of the Project

Included:

User authentication, transaction management dashboard, financial summary analytics, and profile settings

Not Included:

Team-based expense sharing, AI-based investment suggestions, or automatic bank synchronization.

0.3 System Design

0.3.1 Architecture

The system follows a Client-Server Architecture using RESTful APIs. The mobile client sends requests to the Node.js server, which interacts with the PostgreSQL database to process and retrieve data

0.3.2 Database Design

The database utilizes a relational structure to manage data efficiently:

Users Table:

Stores credentials such as username, email, and hashed passwords.(Stores in Clerk)

Transactions Table:

Stores financial records including title, amount, category, and timestamps linked to a specific user.

0.4 Technologies Used

0.4.1 Front-end

React Native (Expo):

For building the cross-platform mobile interface.

NativeWind (Tailwind CSS):

For responsive and modern UI styling.

React Navigation:

To manage the screen flow between Authentication and the Dashboard.

0.4.2 Back-end

Node.js and Express.js:

To build the server-side environment and RESTful API endpoints.

Postgres.js:

As the database driver to execute SQL queries directly from the backend.

0.4.3 Database

PostgreSQL:

A powerful relational database used for secure and persistent data storage.

0.5 Implementation

0.5.1 Modules

Authentication Module:

Manages secure user signup and login processes.

Transaction Module:

Handles the creation, viewing, and deletion of financial records.

Analytics Module:

Computes real-time totals for balance, income, and expenses.

0.5.2 Important Logic

The system uses SQL aggregation for financial calculations:

Balance Calculation:

Uses SUM(amount) to find the net total of all user transactions

Categorization:

Separates income (amount > 0) from expenses (amount < 0) using SQL WHERE clauses.

Null Handling:

Uses COALESCE to ensure the app displays '0' instead of an error when no data exists.

0.6 Results and Discussion

0.6.1 Performance Discussion:

he application operates as expected, with all major functionalities—including transaction creation and summary analytics—working smoothly. The use of optimized SQL queries ensures that financial data is calculated rapidly on the server side.

0.6.2 Future Enhancements

Visual Charts:

Integration of pie charts for category-wise expense distribution.

Push Notifications:

Reminders for users to log their daily expenses

Data Export:

Option to download monthly financial statements in PDF format.

0.7 Conclusion

The Expense Tracker project successfully demonstrates the use of modern mobile technologies to solve a practical real-world problem. This project significantly enhanced my understanding of full-stack mobile development, API integration, and relational database management.