

Project Design Phase

Solution Architecture

Date	3 April 2025
Team ID	SWTID1742834197
Project Name	Personal Expense Tracker App
Maximum Marks	4 Marks

Solution Architecture

Overview:

The MERN Expenses Tracker is a full-stack personal finance tracking application built with the MERN stack (MongoDB, Express.js, React.js, Node.js). The application allows users to register, log in, and track their income and expenses through a secure and interactive dashboard.

The architecture bridges user needs for organized financial management with a modern, responsive, and scalable tech stack.

Goals of the Architecture:

- Provide a secure and responsive web platform to manage income, expenses, categories, and dashboards.
- Integrate JWT-based authentication and role-based route protection.
- Enable efficient state management with React Redux and React Query.
- Design a scalable backend using Express and MongoDB.
- Utilize Tailwind CSS for modern, component-based UI.

Features and Development Phases:

Phase 1: User Registration, Email Confirmation, Login

Phase 2: Profile Update, Password Management, Authentication

Phase 3: Add/View/Edit/Delete Transactions and Categories

Phase 4: Filter Transactions by Date/Type, Dashboard Graphical Reports

Phase 5: Protected Routes, JWT Auth, Error Handling Middleware

Solution Requirements:

- Frontend: React.js, React Router, Redux Toolkit, React Query, Tailwind CSS
- Backend: Node.js, Express.js, Mongoose, MongoDB
- Authentication: JSON Web Tokens (JWT), bcryptjs
- Development Tools: VS Code Extensions (Prettier, Helium Icon, MongoDB for VS Code, etc.)
- Hosting (optional): Render, Vercel, MongoDB Atlas.

Personal Finance Tracker Flowchart

