# Expense Tracker Application - Design Document

**Step 1: Define the Scope**
- Add expenses (food, travel, bills, etc.)
- Categorize expenses
- View monthly/yearly reports
- Budgets & limits
- Export to Excel/PDF
- Authentication (login/register)

**Step 2: High-Level Architecture**
**Backend (Spring Boot)**
- REST APIs for CRUD operations
- Authentication & authorization (JWT or Spring Security)
- Persistence (MySQL/Postgres/SQLite)
- Reports API

**Frontend (Angular)**
- Components for dashboard, expense list, add/edit forms, charts
- State management (NgRx or services)
- Consume backend REST APIs

**Step 3: Database Design (basic)**
Tables required:
1. User (id, name, email, password)
2. Category (id, name: Food, Travel, Shopping, …)
3. Expense (id, user_id, category_id, amount, description, date)
4. Budget (id, user_id, category_id, monthly_limit)

**Step 4: Backend (Spring Boot)**
Modules:
1. User Module → Login, Signup, JWT-based authentication
2. Expense Module → Add, edit, delete, view expenses
3. Category Module → CRUD for categories
4. Report Module → Monthly, yearly, category-wise expense summary
5. Budget Module (optional) → Alert when spending exceeds budget

**Step 5: Frontend (Angular)**
Pages:
1. Login / Signup Page
2. Dashboard (summary of expenses, charts)
3. Add Expense Page
4. Expense List Page (filter by date/category)
5. Reports Page (bar chart, pie chart)
6. Manage Categories
7. Profile / Settings

**Step 6: Tech Add-ons**
- Database: MySQL or PostgreSQL
- ORM: Spring Data JPA / Hibernate
- Charts: ngx-charts / chart.js in Angular
- Export: Apache POI (for Excel/PDF from backend) or jsPDF/xlsx.js in frontend
- Deployment: Dockerize, then host on AWS / Azure / Heroku

**Step 7: Suggested Development Flow**

1. Setup Git repo (backend + frontend as separate folders)
2. Backend First: Build basic REST APIs for user + expense
3. Frontend: Create Angular app → integrate login/signup → fetch/add expenses
4. Add Charts & Reports
5. Enhance with Budget & Export Features
6. Polish UI/UX

## Module + Page Flow Diagram

**Expense Tracker - Module & Page Flow**