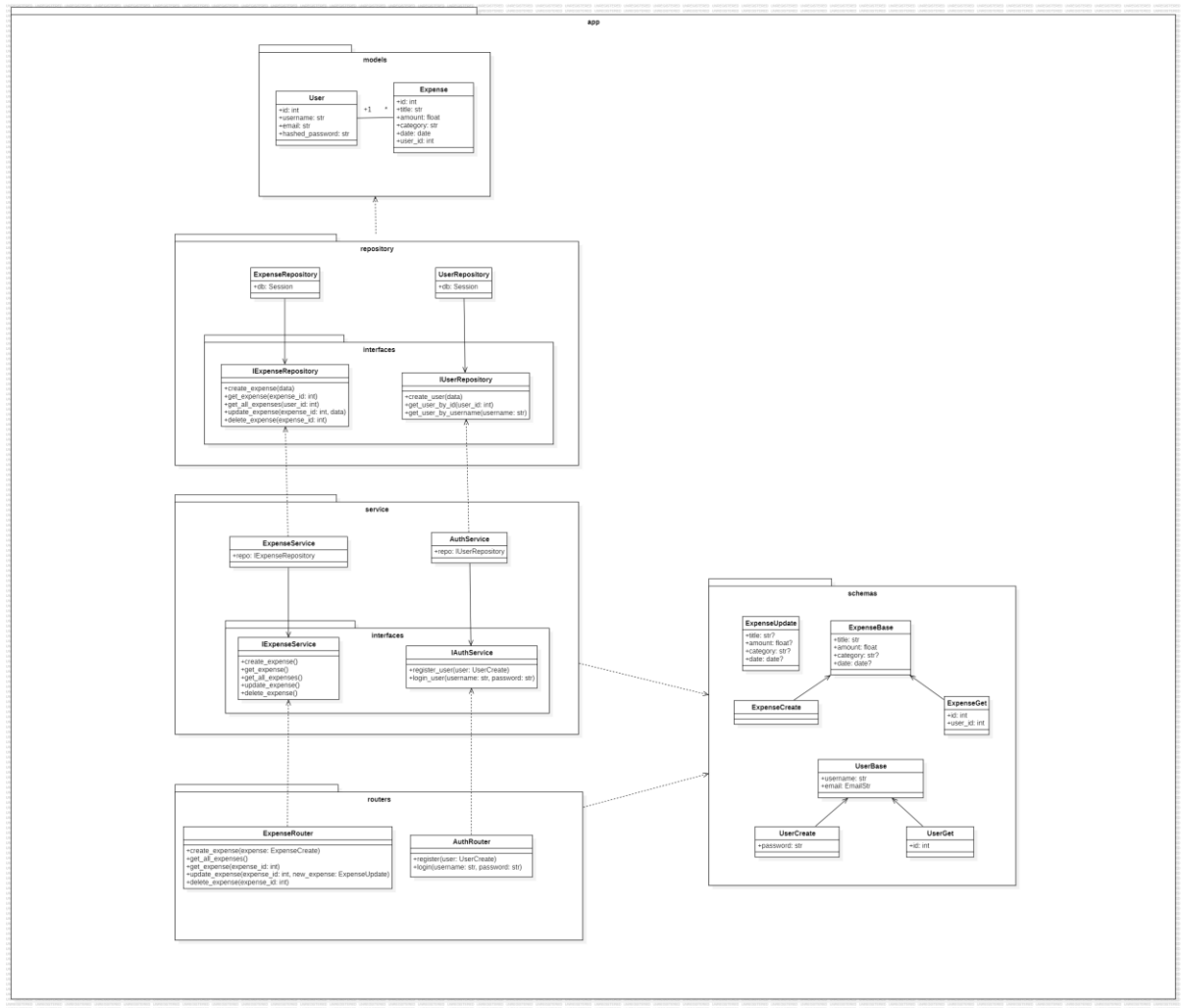# Budgeting App Backend

Architecture Overview

Technologies Used

FastAPI

Fast, modern Python web framework for building APIs.

- Auto-generates interactive Swagger and ReDoc docs.

- Asynchronous I/O support.
- Easy dependency injection.

SQLAlchemy ORM

Python ORM (Object-Relational Mapper) used to map Python classes to database tables.

We use it with **PostgreSQL** as the underlying database.

Pydantic

Used by FastAPI for:

- Request validation
- Response serialization
- Data type enforcement

It ensures your data models are clean and validated automatically.

JWT (JSON Web Tokens)

Used for secure, stateless authentication.

Each user logs in with a username/password → receives a **JWT token** → includes it in `Authorization: Bearer <token>` header to access protected endpoints.

Passlib

Used for securely hashing passwords using the **bcrypt** algorithm.

Core Functionality

Authentication

Endpoints:

- `POST /auth/register` — Register a new user
- `POST /auth/login` — Authenticate and get a JWT token

All expense operations are **scoped per user** — no one can access another user's data.

Expense Management

Authenticated users can:

- `POST /expenses/` — Create an expense
- `GET /expenses/` — List all expenses
- `GET /expenses/{id}` — Retrieve a specific expense
- `PUT /expenses/{id}` — Update an expense
- `DELETE /expenses/{id}` — Delete an expense

All expense operations are **scoped per user** — no one can access another user's data.