Architectures

Backend applications

Three Tiers

- Presentation and Controller

- Business Logic / Service layer

- Data access / Repository layer

Presentation / API Controller layer

- Handles incoming HTTP requests and translates them into service requests.

- Uses frameworks like Express.js to define routes and handle request/response cycles.

- Validating input data and formatting responses.

Business Logic Layer (Service):

- Contains the core application logic, such as data processing, calculations, and validation.

- Is responsible for interacting with the data access layer to fetch and manipulate data.

- Can be independent of any specific API or framework, making it reusable.

Data Access Layer (Repository/Model)

- Manages interaction with the database or other data sources.

- Provides methods for creating, reading, updating, and deleting data.

- Can be implemented using libraries like Mongoose for MongoDB, Sequelize for relational databases, or custom implementations.

Benefits of layered architecture

- Modularity: Each layer has a specific responsibility, making the code easier to understand and modify.

- Maintainability: Changes in one layer do not necessarily impact other layers, reducing the risk of errors.

- Testability: Each layer can be tested independently, ensuring the code is reliable.

- Scalability: The architecture allows for easier scaling of individual components.

- Reusability: The business logic layer can be reused in different parts of the application or even in other applications.

user management system

a simple user management system

Controller

Receives a request to create a new user.

It might validate the user data (name, email, password)

Call a service to create the user.

a simple user management system

Service

Receives the validated user data.

It might check if the email already exists.

Encrypt the password.

Call the repository layer to save the user in the database.

a simple user management system

Repository

Saves the user data into the database

Informs the service layer if operation was successful