

Explanations of entity mapping and persistence.

1. Introduction

Explanation of entity mapping and persistence in the context of a hospital information system.

2. Entity Classes Overview

- **Department Entity**
 - Fields: **id**, **code**, **name**, **building**.
 - Relationships:
 - One-to-One with **Doctor** (as **director**).
 - One-to-Many with **Ward** (as **wards**).
- **Doctor Entity**
 - Inherits from **Employee**.
 - Fields: **speciality**.
 - Relationships:
 - One-to-Many with **Patient** (as **patients**).
 - One-to-One with **Department** (as **directedDepartment**).
- **Employee (Abstract) Entity**
 - Fields: **id**, **surname**, **firstName**, **address**, **telephoneNumber**.
 - Used as a base class for **Doctor** and **Nurse**.
- **Nurse Entity**
 - Inherits from **Employee**.
 - Fields: **rotation**, **salary**.
 - Relationships:
 - Many-to-One with **Department** (as **department**).
 - One-to-One with **Ward** (as **supervisedWard**).
- **Patient Entity**
 - Fields: **id**, **name**, **surname**, **address**, **telephone**, **diagnosis**, **bedNumber**.
 - Relationships:
 - Many-to-One with **Ward** (as **ward**).
 - Many-to-One with **Doctor** (as **treatingDoctor**).

- **Ward Entity**
 - Fields: `id`, `number`, `numberOfBeds`.
 - Relationships:
 - One-to-One with `Nurse` (as `supervisor`).
 - Many-to-One with `Department` (as `department`).
 - One-to-Many with `Patient` (as `patients`).

3. Entity Relationships

- **One-to-One Relationships:**
 - Between `Department` and `Doctor` (Director).
 - Between `Nurse` and `Ward` (Supervisor).
- **One-to-Many Relationships:**
 - Between `Department` and `Ward`.
 - Between `Doctor` and `Patient`.
 - Between `Ward` and `Patient`.
- **Many-to-One Relationships:**
 - Between `Nurse` and `Department`.
 - Between `Patient` and `Ward`.
 - Between `Patient` and `Doctor`.

4. Entity Inheritance

- Use of `@Inheritance(strategy = InheritanceType.JOINED)` for the `Employee` class.

5. Persistence Annotations

- **@Entity**: Marks the class as a JPA entity.
- **@Id** and **@GeneratedValue**: Primary key and its generation strategy.
- **@OneToOne**, **@OneToMany**, **@ManyToOne**: Define the relationships between entities.
- **@JoinColumn**: Specifies the foreign key column in the database.
- **@Inheritance**: Used in the `Employee` class to define inheritance strategy.

6. Database Schema Generation

Tables that were generated

- Department,
- Doctor,
- Employee,
- Nurse,
- Patient,
- Ward