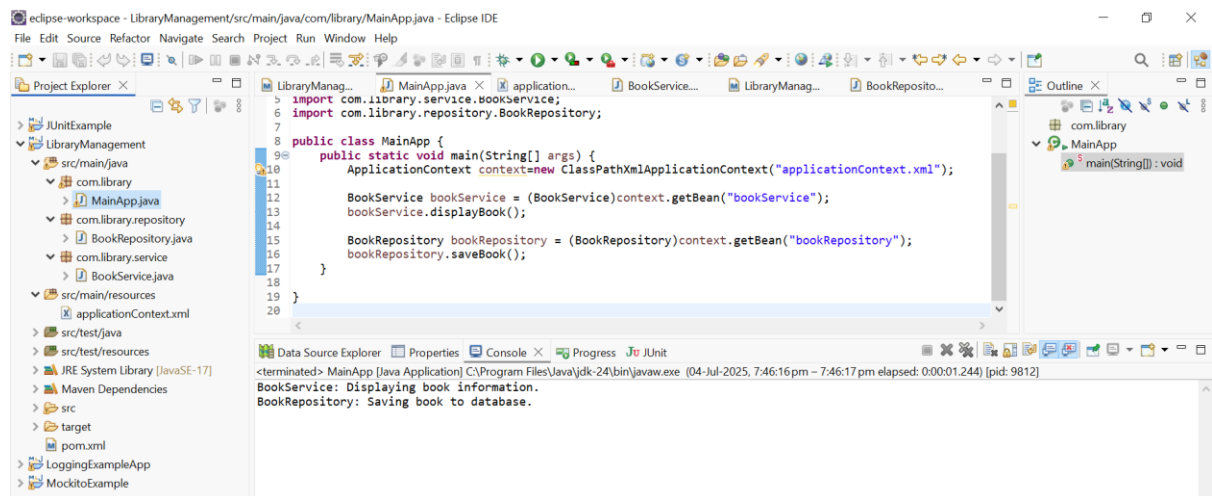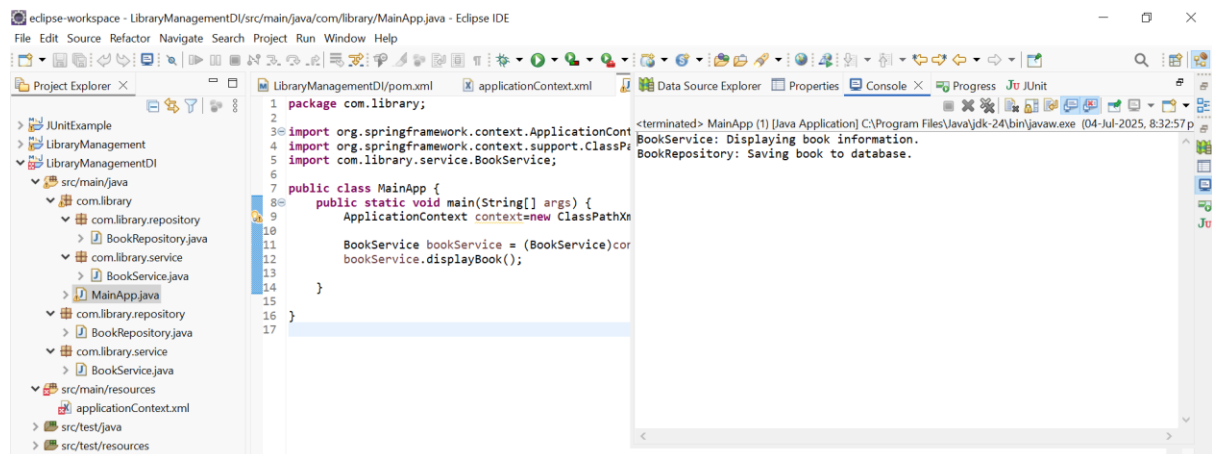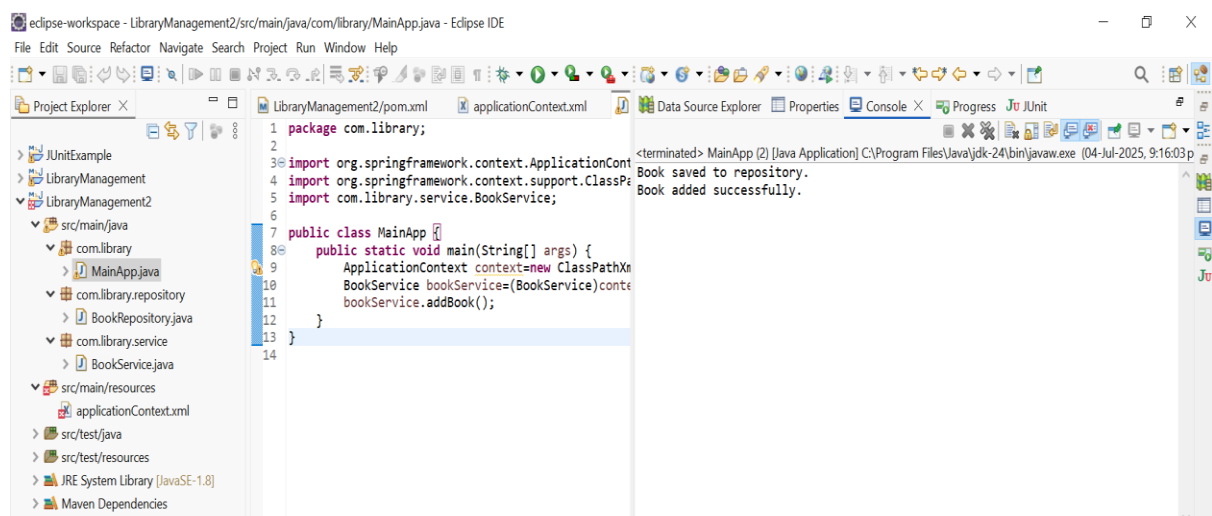# Exercise 1: Configuring a Basic Spring Application
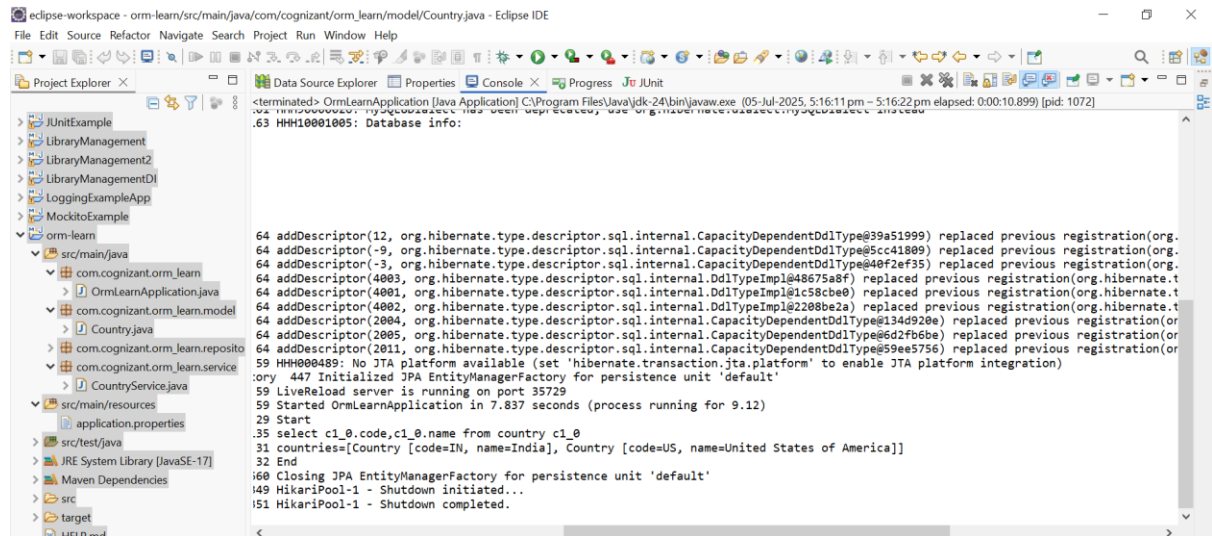

Exercise 2: Implementing Dependency Injection

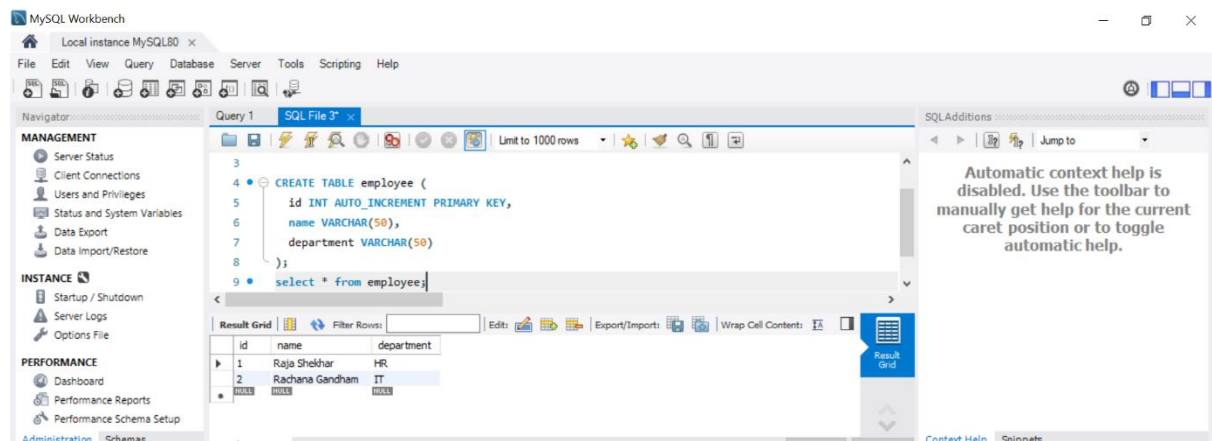# Exercise 4: Creating and Configuring a Maven Project
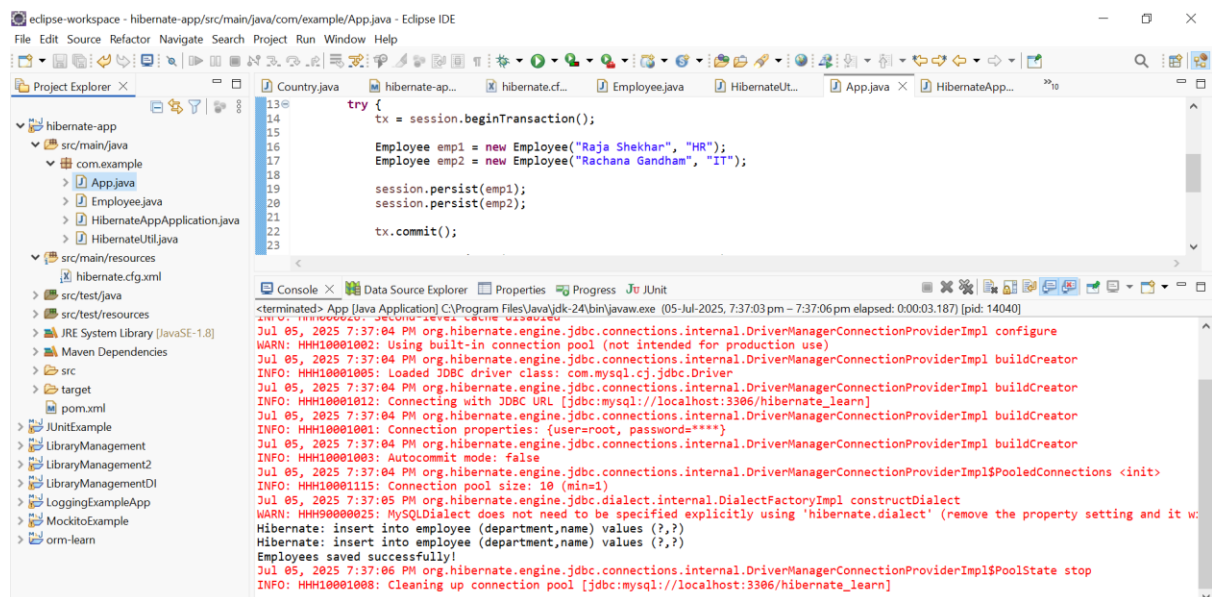
Spring Data JPA - Quick Example
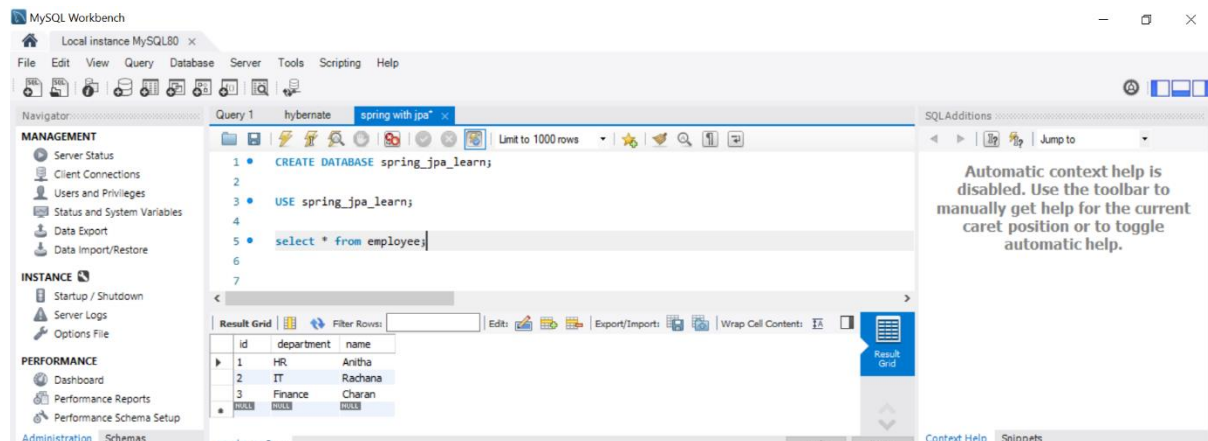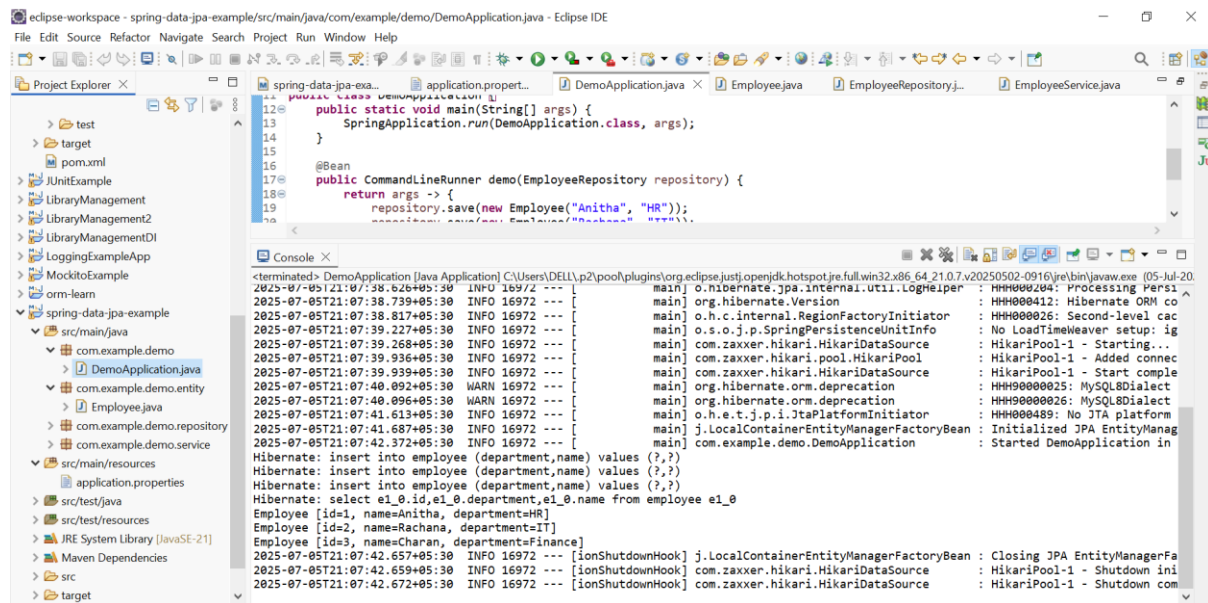

Difference between JPA, Hibernate and Spring Data JPA

Hibernate

Spring Data JPA

Java Persistence API (JPA)

- **What it is:**
  JPA is a specification (defined by JSR 338) for mapping Java objects to relational database tables and managing persistent data.
- **Key point:**
  It is just an interface/standard, and does not provide its own implementation.
- **Usage:**
  You still need a JPA provider (like Hibernate, EclipseLink, etc.) to actually perform the persistence operations.
- **Features:**
  Defines standard annotations (`@Entity`, `@Id`, etc.) and APIs for CRUD, querying (`JPQL`), and transaction management.

Hibernate

- **What it is:**
  Hibernate is a framework (ORM tool) and a JPA implementation.

- **Key point:**
  It provides the actual implementation of the JPA specification, with additional proprietary features.
- **Usage:**
  You write code using JPA (or Hibernate-specific) APIs, and Hibernate translates it into SQL queries and manages database interactions.
- **Features:**
  - Implements JPA.
  - Adds advanced features like caching, lazy/eager loading, batch fetching, criteria API, etc.
  - Requires more boilerplate code than Spring Data JPA.

Spring Data JPA

- **What it is:**
  Spring Data JPA is a Spring project that builds on top of JPA (and its implementation, like Hibernate).
- **Key point:**
  It is not a JPA implementation, but a higher-level abstraction that reduces boilerplate code and simplifies repository and query creation.
- **Usage:**
  You define interfaces that extend `JpaRepository` or `CrudRepository`, and Spring auto-generates implementations at runtime.
- **Features:**
  - Automatically implements CRUD methods.
  - Supports query derivation from method names (`findByName`, `deleteById`, etc.).
  - Manages transactions and sessions for you.
  - Greatly reduces the amount of boilerplate code compared to plain Hibernate.