

Exercise 2: Difference Between JPA, Hibernate, and Spring Data JPA

1. What is JPA?

- JPA is like a **set of rules** (a guideline), not a working tool.
- It tells Java developers **how to save objects into a database** and how to read them back.
- JPA itself does **not do the work**, it just defines what needs to be done.

2. What is Hibernate?

- Hibernate is a **tool (framework)** that **follows JPA's rules** and actually performs the database work.
- It converts Java objects into database tables and vice versa.
- Hibernate also gives **extra features** like faster data access (caching) and its own special query language (**HQL**).

3. What is Spring Data JPA?

- Spring Data JPA is a part of Spring Framework that **makes database work even easier**.
- Instead of writing lots of code to save or fetch data, Spring Data JPA lets us just write an **interface**, and it automatically creates the database code.
- Example: If you write `findByName()`, it will automatically search by the name column—no need to write SQL!

Simple Comparison

Feature	JPA	Hibernate	Spring Data JPA
Type	Rules/Guideline	Tool/Framework	Spring Module
Can run directly?	No	Yes	Yes
Who does the real work?	Needs another tool	Hibernate itself	Uses Hibernate under the hood
Code needed to save data	A lot	Less than JDBC	Very little
Example usage	@Entity, @Id	SessionFactory, HQL queries	<code>findAll()</code> , <code>save()</code> , etc.