

JPA (Java Persistence API)

1. JPA is a specification (JSR 338) provided by Java.
2. It defines how Java objects should be mapped to database tables.
3. It does not provide any implementation by itself.
4. Uses annotations like `@Entity`, `@Table`, `@Id`, `@Column`.
5. Needs an **ORM tool (like Hibernate)** to actually perform database operations.

Hibernate

1. Hibernate is a framework that implements JPA.
2. It is an **ORM tool** that maps Java objects to database tables.
3. Provides features like lazy loading, caching, and transactions.
4. Can be used with or without JPA.
5. Allows writing queries using **HQL (Hibernate Query Language)** or native SQL.

Spring Data JPA

1. Spring Data JPA is a module in the Spring Framework.
2. It provides an abstraction over JPA and Hibernate.
3. Reduces boilerplate code by allowing you to define only repository interfaces.
4. Automatically implements common operations like save, delete, and findAll.
5. Makes it easier and faster to build database applications in Spring Boot.