**Difference Between JPA, Hibernate, and Spring Data JPA**

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1. **JPA (Java Persistence API)**
2. A Java specification (standard API) for object-relational mapping (ORM)
3. Defines a set of interfaces and annotations for managing relational data in Java applications
4. Just a specification, not an implementation
5. Provides standard annotations like @Entity, @Table, @Id
6. Defines EntityManager interface for CRUD operations
7. Part of the Java EE (now Jakarta EE) specification
8. **Hibernate**
9. The most popular implementation of the JPA specification
10. Provides the actual functionality described by JPA
11. Implements JPA specification plus offers additional features
12. Provides its own APIs beyond JPA (like Criteria API)
13. Handles database operations, caching, lazy loading
14. Can be used with or without JPA annotations
15. **Spring Data JPA**
    1. An abstraction layer on top of JPA (which may use Hibernate as the implementation)
    2. Simplifies JPA usage and reduces boilerplate code
    3. Part of the Spring Data family
    4. Provides repository abstraction (just define interfaces)
    5. Generates JPA queries from method names
    6. Offers pagination, auditing, and other convenient features
    7. Still uses Hibernate (or another JPA provider) under the hood