Q. Difference between JPA, Hibernate and Spring Data JPA

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| Feature / Aspect | JPA | Hibernate | Spring Data JPA |
| Type | Specification / Interface | Implementation of JPA + Extra Features | Abstraction over JPA with Spring support |
| Provided By | Java EE / Jakarta EE | Red Hat / Hibernate Team | Spring Framework (Pivotal/VMware) |
| Implements JPA? | No No (just defines it) | Yes Yes | Yes Uses JPA underneath |
| Depends on JPA? | Yes Is the API itself | Yes Implements it | Yes Relies on JPA + provider like Hibernate |
| Boilerplate Code | Yes Yes | Yes Yes | No Minimal (auto-generated queries, repositories, etc.) |
| Ease of Use | Moderate | Moderate | Yes High (Spring Boot integration) |
| Custom Query Support | Yes JPQL | Yes JPQL + Native SQL | Yes JPQL, Native SQL, Derived Queries, @Query |
| Extra Features | No No | Yes Yes (2nd level cache, filters, etc.) | Yes Yes (paging, sorting, query derivation, etc.) |
| Usage | Define entity mappings & persistence rules | Full ORM engine with JPA support | Simplified Spring-based JPA data access layer |
| Common Use With | Hibernate, EclipseLink | JPA (as implementation) | JPA + Hibernate in Spring Boot |
| Configuration Complexity | Medium Medium | Medium Medium | Yes Low (especially with Spring Boot) |