Java - JPA vs Hibernate

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JPA stands for Java Persistence API (Application Programming Interface). It was initially released on 11 May 2006. It is a Java specification that provides functionality and standards for ORM tools. It is used to examine, control, and persist data between Java objects and relational databases. It is regarded as a standard technique for Object Relational Mapping.

The main difference between JPA and Hibernate is that,

- JPA is a specification that defines how ORM tools should function.
- Hibernate is an actual implementation of JPA that provides ORM capabilities.

Differences Between JPA and Hibernate

JPA is described in **javax.persistence** package.	Hibernate is described in **org.hibernate** package.
It describes the handling of relational data in Java applications.	Hibernate is an Object-Relational Mapping (ORM) tool that is used to save Java objects in the relational database system.
It is not an implementation. It is only a Java specification.	Hibernate is an implementation of JPA. Hence, the common

JPA	Hibernate
	standard which is given by JPA is followed by Hibernate.
It is a standard API that permits to perform database operations.	It is used in mapping Java data types with SQL data types and database tables.
As an object-oriented query language, it uses Java Persistence Query Language (JPQL) to execute database operations.	As an object-oriented query language, it uses Hibernate Query Language (HQL) to execute database operations.
To interconnect with the entity manager factory for the persistence unit, it uses the **EntityManagerFactory** interface. Thus, it gives an entity manager.	To create Session instances, it uses the **SessionFactory** interface.
To make, read, and remove actions for instances of mapped entity classes, it uses the **EntityManager** interface. This interface interconnects with the persistence condition.	To make, read, and remove actions for instances of mapped entity classes, it uses **Session** interface. It acts as a runtime interface between a Java application and Hibernate.

Now you must be wondering why there is a need for JPA, right? So let us discuss the need for JPA. So as illustrated, JPA is a specification. It gives common functionality and prototypes to ORM tools. All ORM tools (such as Hibernate) follow the common standards, by executing the same specification. Subsequently, if we need to switch our application from one ORM tool to another then we can easily do it.

JPA

JPA is only a specification, not an implementation. It defines a set of rules and guidelines for ORM tools. Since it is just a specification, it does not perform any operations itself. It needs an implementation, such as Hibernate, for actual data persistence. The javax.persistence package contains the required JPA classes and interfaces.

Key Features of JPA
- It is a lightweight persistence API.
- Supports object-relational mapping with simple annotations.
- Provides support for polymorphism and inheritance.
- Allows dynamic and named queries.
- Enables seamless switching between different ORM implementations.

Now we need to incorporate a framework to be discussed. Yes, you guessed it right, hibernate. It is a Java framework, open-source, lightweight, and ORM (Object Relational Mapping) tool for the Java language which simplifies the buildout of Java application to interact with the database. It is used to save the Java objects in the relational database system.

Hibernate

Hibernate is an open-source, lightweight ORM framework that simplifies database interactions for Java applications. It is an implementation of the JPA specification and provides additional features beyond JPA.

Key Features of Hibernate
- Implements JPA specifications.
- Supports mapping Java classes to database tables.
- Provides caching mechanisms to optimize performance.
- Supports different databases without changing code.
- Offers Hibernate Query Language (HQL) for querying.

Note: *Hibernate ORM framework is designed by Red Hat. It was initially released on 23 May 2007. It supports a cross-platform JVM and is written in Java.*

The major difference between Hibernate and JPA is that Hibernate is a framework while JPA is API specifications. Hibernate is the implementation of all the JPA guidelines.

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