

1-What is JPA ?

JPA is a standard that emerged in the Java programming language for associating Java classes with relational database tables. The purpose here is to match the class variables with the columns of the table and to perform database operations directly on the objects without writing SQL. At this point, JPA only sets a standard and does not take any action on the data itself. For this, a separate tool that implements these standards is needed. Hibernate, TopLink, EclipseLink and OpenJPA can be counted as the main tools that implement JPA.

2- What is the naming convention for finder methods in the Spring data repository interface ?

Default Naming Convention : Direct use of variables and class names

RDMS Case-Sensitivity : It is sensitive to uppercase and lowercase letters.

Custom Naming Convention : To convert lowercase letters to uppercase, we must use the `.toUpperCase()` command.

3- What is PagingAndSortingRepository ?

It is involved in pagination and sorting operations.

4- Differentiate between `findById()` and `findOne()` ?

Both `findById()` and `findOne()` methods are used to retrieve an object from underlying datastore.

`findOne()` :

Lazily loaded reference to target entity

Useful only when access to properties of object is not required

Throws `EntityNotFoundException` if actual object does not exist at the time of access invocation

Better performance

`findById()` :

Actually loads the entity for the given id

Object is eagerly loaded so all attributes can be accessed

Returns null if actual object corresponding to given Id does not exist

An additional round-trip to database is required

5- What is @Query used for ?

The @Query annotation declares finder queries directly on repository methods. While similar @NamedQuery is used on domain classes, Spring Data JPA @Query annotation is used on Repository interface. This frees the domain classes from persistence specific information.

6- What is lazy loading in hibernate ?

Hibernate now can "lazy-load" the children, which means that it does not actually load all the children when loading the parent. Instead, it loads them when requested to do so. You can either request this explicitly or, and this is far more common, hibernate will load them automatically when you try to access a child.

7- What is SQL injection attack ? Is Hibernate open to SQL injection attack ?

To perform an SQL injection attack, an attacker must locate a vulnerable input in a web application or webpage. When an application or webpage contains a SQL injection vulnerability, it uses user input in the form of an SQL query directly. The hacker can execute a specifically crafted SQL command as a malicious cyber intrusion. Then, leveraging malicious code, a hacker can acquire a response that provides a clear idea about the database construction and thereby access to all the information in the database.

Hibernate does not grant immunity to SQL Injection, one can misuse the api as they please.

There is nothing special about HQL (Hibernates subset of SQL) that makes it any more or less susceptible.

Functions such as createQuery(String query) and createSQLQuery(String query) create a Query object that will be executed when the call to commit() is made. If the query string is tainted you have sql injection.

8- What is criteria API in hibernate ?

In Hibernate, the Criteria API helps us build criteria query objects dynamically. Criteria is another technique of data retrieval apart from HQL and native SQL queries. The primary advantage of the Criteria API is that it is intuitively designed to manipulate data without using any hard-coded SQL statements.

9- What Is Erlang? Why Is It Required For Rabbitmq ?

Erlang is a programming language used to build massively scalable soft real-time systems with requirements on high availability. Some of its uses are in telecoms, banking, e-commerce, computer telephony and instant messaging.

Erlang distribution connections can be used instead of separate TCP connections. This communication method assumes that the application that uses the client runs on the same Erlang cluster as RabbitMQ nodes. The use of direct client should be limited to applications that are deployed side by side with RabbitMQ. Shovel and Federation plugins are two examples of such applications.

In most other cases, developers should prefer the more traditional network client covered above. It will be easier to reason about for operators and developers not familiar with Erlang.

10- What is the JPQL ?

JPQL or Java Persistence Query Language is a query language used to query over SQL-like JPA Entity objects.

11- What are the steps to persist an entity object ?

1-Creating an entity manager factory object. The EntityManagerFactory interface present in java.

2-Obtaining an entity manager from factory.

3-Intializing an entity manager.

4-Persisting a data into relational database.

5-Closing the transaction.

6-Releasing the factory resources.

12- What are the different types of entity mapping ?

1-one-to-one.

A one-to-one relationship is the simplest relationship between two beans. One entity bean relates only to one other entity bean.

2-One-to-many or many-to-one (dependent on the direction)

In a one-to-many relationship, one object can reference several instances of another. A many-to-one relationship is when many objects reference a single object.

3-Many-to-many.

A many-to-many relationship is complex. For example, each employee can be working on several projects. And each projects has multiple employees working on it. Thus, you have a many-to-many cardinality. The direction does not matter in this instance.

13- What are the properties of an entity ?

Entity can be defined as persistent objects that allow us to establish a relationship between our database and our software.

Properties of entity :

- * Persistable: Must be saveable and accessible (public no-arg constructor, getter/setter methods)

- * Identity: Each Entity must have a unique identity (can be expressed as a Primary Key)

- * Transactionality: Adding / deleting / updating the database is a transaction. If the process is not fully completed, rollback should be done and it should be returned to the beginning.

14- Difference between CrudRepository and JpaRepository in Spring Data JPA?

JpaRepository :

JPA extend crudRepository and PagingAndSorting repository

JPA also provides some extra methods related to JPA such as delete records in batch and flushing data directly to a database.

JPA repository also extends the PagingAndSorting repository. It provides all the method for which are useful for implementing pagination.

JpaRepository ties your repositories to the JPA persistence technology so it should be avoided.

CrudRepository :

Crud Repository is the base interface and it acts as a marker interface.

It provides only CRUD functions like findOne, saves, etc.

Crud Repository doesn't provide methods for implementing pagination and sorting.

We should use CrudRepository or PagingAndSortingRepository depending on whether you need sorting and paging or not.