

HW#4 Mustafa Selim GUNAYDIN

1 - What is JPA ?

- The Java Persistence API (JPA) is a specification of Java. It is used to persist data between Java object and relational database.
- JPA acts as a bridge between object-oriented domain models and relational database systems.
- It requires an implementation. ORM tools like Hibernate, TopLink and iBatis implements JPA specifications for data persistence.

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

- This is another key feature of Spring Data JPA API which makes writing query method really easy. The finder method should use a special keyword which is "find", followed by the name of the variable. For example, `findByLastName()`.

3 - What is PagingAndSortingRepository ?

- Extension of `CrudRepository` to provide additional methods to retrieve entities using the pagination and sorting abstraction. It provides two methods :
- `Page findAll(Pageable pageable)` – returns a `Page` of entities meeting the paging restriction provided in the `Pageable` object.
- `Iterable findAll(Sort sort)` – returns all entities sorted by the given options. No paging is applied here.

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

- The `findById()` is available in `CrudRepository` while `findOne()` is available in `JpaRepository`. The `findById()` returns null if record does not exist while the `findOne()` will throw an exception called `EntityNotFoundException`.

5 - What is `@Query` used for ?

- Using named queries to declare queries for entities is a valid approach and works fine for a small number of queries.
- As the queries themselves are tied to the Java method that runs them, you can actually bind them directly by using the Spring Data JPA `@Query` annotation rather than annotating them to the domain class.
- This frees the domain class from persistence specific information and co-locates the query to the repository interface.

6 - What is lazy loading in hibernate ?

- Lazy loading is a fetching technique used for all the entities in Hibernate. It decides whether to load a child class object while loading the parent class object.
- When we use association mapping in Hibernate, it is required to define the fetching technique. The main purpose of lazy loading is to fetch the needed objects from the database.

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

- SQL injection is a web security vulnerability that allows an attacker to interfere with the queries that an application makes to its database. It generally allows an attacker to view data that they are not normally able to retrieve.
- This might include data belonging to other users, or any other data that the application itself is able to access. In many cases, an attacker can modify or delete this data, causing persistent changes to the application's content or behavior.
- Hibernate does not grant immunity to SQL Injection, one can misuse the api as they please.

8 - What is criteria API in hibernate ?

- Hibernate provides alternate ways of manipulating objects and in turn data available in RDBMS tables. One of the methods is Criteria API, which allows you to build up a criteria query object programmatically where you can apply filtration rules and logical conditions.
- The Hibernate Session interface provides createCriteria() method, which can be used to create a Criteria object that returns instances of the persistence object's class when your application executes a criteria query.

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

- Erlang is a programming language designed for developing robust systems of programs that can be distributed among different computers in a network.
- Erlang is similar to Java in that it uses a virtual machine and supports Multithreading . However, whereas the Java development community focuses on Web applications, Erlang is aimed at the market for extremely robust servers and embedded systems.
- Written in Erlang, the RabbitMQ server is built on the Open Telecom Platform framework for clustering and failover. Client libraries to interface with the broker are available for all major programming languages.

10 – What is the JPQL ?

- JPQL is Java Persistence Query Language defined in JPA specification. It is used to create queries against entities to store in a relational database. JPQL is developed based on SQL syntax. But it won't affect the database directly.

➤ JPQL can retrieve information or data using SELECT clause, can do bulk updates using UPDATE clause and DELETE clause. EntityManager.createQuery() API will support for querying language. JPQL syntax is very similar to the syntax of SQL.

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

- Creating an entity manager factory object.
- Obtaining an entity manager from factory.
- Initializing an entity manager.
- Persisting a data into relational database.
- Closing the transaction.
- Releasing the factory resources.

12 – What are the different types of entity mapping ?

➤ There are four different types of mapping and they are One-To-One, One-To-Many, Many-To-One and Many-To-Many.

13 - What are the properties of an entity ?

➤ The data values associated with an entity consist of one or more properties. Each property has a name and one or more values. A property can have values of more than one type, and two entities can have values of different types for the same property.

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

- CrudRepository and JPA repository both are the interface of the spring data repository library. Spring data repository reduces the boilerplate code by providing some predefined finders to access the data layer for various persistence layers.
- JpaRepository extends PagingAndSortingRepository and QueryByExampleExecutor interface where CrudRepository extends Repository interface.
- CrudRepository provides methods to perform CRUD operations, JpaRepository provides additional methods like flush(), saveAndFlush(), deleteInBatch() etc.
- If we have to perform mainly CRUD operation, define our repository using CrudRepository.
- If we have to perform CRUD as well as Batch operation define our repository extending JpaRepository.