HW#4   **Talha Alçorba**

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?

Spring uses lower snake case by default, which means it uses only lower case letters and separates words with underscores.

3-) What is PagingAndSortingRepository ?

PagingAndSortingRepository is an 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 getOne() ?

The difference between them is: getOne Returns a reference to an entity, and no result throws an exception. findById Return to one Optional Object; findOne Return to one Optional Object can realize dynamic query.

5-) What is @Query used for ?

A query is a request for data or information from a database table or combination of tables. This data may be generated as results returned by Structured Query Language (SQL) or as pictorials, graphs or complex results, e.g., trend analyses from data-mining tools.

One of several different query languages may be used to perform a range of simple to complex database queries. SQL, the most well-known and widely-used query language, is familiar to most database administrators (DBAs).

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.

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

Some common SQL injection examples include: Retrieving hidden data, where you can modify an SQL query to return additional results. Subverting application logic, where you can change a query to interfere with the application's logic. UNION attacks, where you can retrieve data from different database tables. Hibernate does not grant immunity to SQL Injection, one can misuse the api as they please.

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.

Applications that are deployed inside the same Erlang cluster as the RabbitMQ, such as RabbitMQ plugins, can start a direct connection that bypasses network serialisation and relies on Erlang distribution for data transfers.

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.

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 ?

There are three types of entity mapping:
   1- one-to-one.
   2- one-to-many or many-to-one (dependent on the direction)
   3- many-to-many.

13-) What are the properties of an entity ?

Persistability: This is how the entity stored in the database is expressed.
Persistent ID: This ID is equivalent to the primary key in the database
Transactionality: Rough operations such as creating, deleting an entity can be performed.
Granuality: Entities are not primitivized.

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

CrudRepository provides CRUD functions. PagingAndSortingRepository provides methods to do pagination and sort records. JpaRepository provides JPA related methods such as flushing the persistence context and delete records in a batch.