1) What is JPA?

Java nesnelerini veritabanı tablolarına eşlemeye ve bunun tersi, Nesne-ilişkisel eşleme (ORM) olarak adlandırılır. Java Kalıcılık API'si (JPA), ORM'ye olası bir yaklaşımdır. Geliştirici, JPA aracılığıyla ilişkisel veritabanlarından Java nesnelerine veya tam tersine veri eşleyebilir, depolayabilir, güncelleyebilir ve alabilir. JPA, Java-EE ve Java-SE uygulamalarında kullanılabilir.

JPA bir belirtimdir ve çeşitli uygulamalar mevcuttur. Popüler uygulamalar Hibernate, EclipseLink ve Apache OpenJPA'dır. JPA'nın referans uygulaması EclipseLink'tir.

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.

3) What is PagingAndSortingRepository?

PagingAndSortingRepository is an extension of CrudRepository to provide additional methods to retrieve entities using the pagination and sorting abstraction.

- Page findAll(Pageable pageable) → returns a Page of entities meeting the paging restriction provided in the Pageable object.
- Iterale findAll(Sort sort) → returns all entities sorted by the given options.

4) Differentiate between findById() and getOne() ?

getOne() method :

getOne() returns a reference to the entity with the given identifier. getOne internally invokes EntityManager.getReference() method. As per docs, this method will always return a proxy without hitting the database (lazily fetched). This method will throw EntityNotFoundException at the time of actual access if the requested entity does not exist in the database.

This method will actually hit the database and return the real object mapping to a row in the database. It is EAGER loaded operation that returns null if no record exists in database.

getOne()	findById()
Lazily loaded reference to target entity	Actually loads the entity for the given id
Useful only when access to properties of object is not required	Object is eagerly loaded so all attributes can be accessed
Throws EntityNotFoundException if actual object does not exist at the time of access invocation	Returns null if actual object corresponding to given Id does not exist
Better performance	An additional round-trip to database is required

5) What is @Query used for?

Query annotation is used to create queries over objects created from classes called Entities that are mapped to database tables.Spring Data JPA @Query annotation is used on Repository interface.The @Query annotation contains the custom JPQL querty.For our methods, we can write sql-like queries in query annotation with Jpql.

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.

For example, we have a parent class, and that parent has a collection of child classes. Now, Hibernate can use lazy loading, which means it will load only the required classes, not all classes. It prevents a huge load since the entity is loaded only once when necessary. Lazy loading improves performance by avoiding unnecessary computation and reduce memory requirements.

Lazy loading can be used with all types of Hibernate mapping, i.e., one-to-one, one-to-many, many-to-one, and many-to-many.

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

SQL injection, also known as SQLI, is a common attack vector that uses malicious SQL code for backend database manipulation to access information that was not intended to be displayed. This information may include any number of items, including sensitive company data, user lists or private customer details.The impact SQL injection can have on a business is far-reaching. A successful attack may result in the unauthorized viewing of user lists, the deletion of entire tables and, in certain cases, the attacker gaining administrative rights to a database, all of which are highly detrimental to a business.When calculating the potential cost of an SQLi, it's important to consider the loss of customer trust should personal information such as phone numbers, addresses, and credit card details be stolen.While this vector can be used to attack any SQL database, websites are the most frequent targets.

8) What is criteria API in hibernate?

In this tutorial, we are going to learn about Hibernate Criteria API. While working with Hibernate Query Language (HQL), we manually prepare the HQL queries for reading the data from database. For the better performance, it is always recommended to write a query as tuned query.In the case of HQL, we need to prepare the tuned queries. Hibernate will only translate HQL into SQL and then executes it, but it will not tune the queries. Here (HQL) the responsibility of tuning the queries on the developer.Instead of writing the HQL queries and tuning them explicitly, we can use Hibernate Criteria API.In the Hibernate Criteria API, there is no need to create a query. Instead, hibernate itself will prepare a tuned query. So that we can get better performance with criteria while reading the data from the database.Query tuning is required only while selecting the data, so hibernate Criteria API is for select operations only.

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. Named for the Danish mathematician Agner Krarup Erlang, the language was developed by the Ericsson Computer Sciences Lab to build software for its own telecommunication products. In use for a number of years at Ericsson and other companies, Erlang is taught in over 80 universities and colleges world-wide and is freely available as Open Source code. RabbitMQ is an open source message broker software (sometimes called message-oriented middleware) that implements the Advanced Message Queuing Protocol (AMQP). The RabbitMQ server is written in the Erlang programming language and 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.

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

1) Creating an entity manager factory object

   The EntityManagerFactory interface present in java.persistence package is used to provide an entity manager.
   - Persistence - The Persistence is a bootstrap class which is used to obtain an EntityManagerFactory interface.
   - createEntityManagerFactory() method - The role of this method is to create and return an EntityManagerFactory for the named persistence unit. Thus, this method contains the name of persistence unit passed in the Persistence.xml file.

2) Obtaining an entity manager from factory.

   - EntityManager - An EntityManager is an interface
   - createEntityManager() method - It creates new application-managed EntityManager

3) Intializing an entity manager

   - getTransaction() method - This method returns the resource-level EntityTransaction object.
   - begin() method - This method is used to start the transaction.

4) Persisting a data into relational database.

   persist() - This method is used to make an instance managed and persistent. An entity instance is passed within this method.

5) Closing the transaction

6) Releasing the factory resources.

- **close()** - This method is used to releasing the factory resources.

12) What are the different types of entity mapping?

1. Basic mapping
2. Element collection mapping
3. Embedded mapping
4. Embedded ID mapping
5. ID mapping
6. Many-to-many mapping
7. Many-to-one mapping
8. One-to-many mapping
9. One-to-one mapping
10. Transient mapping
11. Version mapping

13) What are the properties of an entity?

Properties that an entity must have:

Persistability: This is how the entity stored in database is called.

Persistant Identity: This identity is equavalent to primary key in database

Transactionality: An entity can perform crud operations like create,delete.

Granuality: Entities should not be primitive.

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.

JPA repository extends CrudRepository and PagingAndSorting repository. It inherits some finders from crud repository such as findOne, gets and removes an entity. It also provides some

extra methods related to JPA such as delete records in batch, flushing data directly to a database base and methods related to pagination and sorting.

We need to extend this repository in our application and then we can access all methods which are available in these repositories. We can also add new methods using named or native queries based on business requirements.

Key	JPARepository	CrudRepository
Hierarchy	JPA extend crudRepository and PagingAndSorting repository	Crud Repository is the base interface and it acts as a marker interface.
Batch support	JPA also provides some extra methods related to JPA such as delete records in batch and flushing data directly to a database.	It provides only CRUD functions like findOne, saves, etc.
Pagination support	JPA repository also extends the PagingAndSorting repository. It provides all the method for which are useful for implementing pagination.	Crud Repository doesn't provide methods for implementing pagination and sorting.
Use Case	JpaRepository ties your repositories to the JPA persistence technology so it should be avoided.	We should use CrudRepository or PagingAndSortingRepository depending on whether you need sorting and paging or not.