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1) JPA is a Java specification that describes how to manage relational data in Java applications. It enables data to be accessed and stored between Java objects/classes and relational databases. Object-Relation Mapping (ORM) is used by JPA. It's a collection of user interfaces. It also has a runtime EntityManager API for performing database queries and transactions on objects. It makes use of JPQL, a platform-independent object-oriented query language.

2)We can use “find” keyword as a finder methods specification. For example, findAuctionByUserId() is a method name that querying and get auctions by user identity number as foreign key.

3)PagingAndSortingRepository is an interface that extended from CrudRepository. It provides to add more methods to the pagination and sorting abstraction for retrieving entities There are two types of usage such as findAll(Pageable) and findAll(Sort). These methods enable to us that manageable list object with page numbers and sorting options.

4) The getOne() function returns the object reference for the specified id. The EntityManager.getReference function is called. It is not always directed to the database. EntityNotFoundException is thrown if the Entity isn't found in the database. FindByld(), on the other hand, looks to the database every time it is invoked. The item is retrieved from the database. If the item doesn't exist in the database, it returns null. getOne() retrieves the target's reference, whereas findByld retrieves the requested id. In terms of performance, getOne() is better. EntityNotFoundException is raised if getOne() fails to locate an object in Database, but findByld() returns null.

5)In the @Query, we can write JPQL. Sometimes, use-ready methods are not enough in spring boot so we can write own queries with @Query annotation.

6) Let's say you have a parent who has a number of children. Hibernate may now "lazy-load" the children, which implies that when the parent is loaded, it does not really load all of the children. Instead, it just loads them when asked to. You may either request this directly or hibernation will load them automatically when you attempt to access a child, which is significantly more typical.

7) SQL injection is a type of data security flaw that allows an attacker to interact with a web application's database queries. It allows an attacker to see data that they wouldn't normally be able to see. This might include data belonging to other users or any other information that the app has access to. In many circumstances, an attacker can edit or remove this data, causing the application's content or behaviour to be permanently altered. We must use HQL for protection from this problem. We mustn’t use user entered parameters.

8) We have three options for data retrieving as SQL, HQL and Criteria API. The main advantage of Criteria API is that running on compiler-time.

9) The Erlang programming language is a runtime system and a general-purpose, concurrent, and garbage-collected programming language. RabbitMQ is an open-source, Erlang-based message queue structure that can be constructed on the Open Telecom Platform framework, which is becoming increasingly popular for today's server-to-server/app-to-app communication needs and also messaging systems are required because of microservice architecture. Because microservices communicate with messaging systems.

10) The Java Persistence Query Language (JPQL) is a query language described in the JPA standard. It's used to build queries against things that will be stored in a relational database. JPQL was created using SQL syntax. However, it will have no direct impact on the database.

The SELECT clause in JPQL may be used to get information or data, while the UPDATE and DELETE clauses can be used to do mass modifications. The querying language will be supported through the EntityManager.createQuery() API.

11)

- Creating an entity manager factory object.
- The EntityManagerFactory interface present in java.
- Obtaining an entity manager from factory.
- Intializing an entity manager.
- Persisting a data into relational database. ...
- Closing the transaction.
- Releasing the factory resources.

12) One to One: only one column accessible for each table and these columns are special for each different column.

One to Many: One column can access multiple columns on other table or entity.

Many to Many: Multiple access can be provided for each column

13) Persistability: A database object is persistent and may be retrieved at any moment.

Persistent Identity - Each entity is identified by an object ID that is unique to it.

Transactionality - An entity may conduct a variety of activities, including creating, deleting, and updating data. Each operation modifies the database in some way. It assures that any database updates are either successful or unsuccessful atomically.

Granuality - Entities should not be single-dimensional primitives, primitive wrappers, or built-in objects.

14) CrudRepository is responsible from create, read, update and delete functionalities but JpaRepository provides both crud operations and paging and sorting repository functionalities.