**Interview Questions**

**SQL Questions:**

1. **What are different categories of SQL commands?**

SQL command falls into following four categories:

* DML (Data Manipulation Language) which provides data manipulation features
* DDL (Data Definition Language) which is used to manipulate database structures
* TCL (Transaction Control Language) that takes in charge data transaction verification and error handling
* DCL (Data Control Language) are security statements that feature user restrictions and data access permissions to promote security of your data.

1. **What is the difference between UNION and UNION ALL**

The UNION operator in SQL combines multiple sets highlighted in the SELECT statements. The restrictions of the set are: (1) column number must be identical, (2) Data Types in the set must be the same, and (3) the order of the column highlighted in the SELECT statement must be the same. It automatically eliminates duplicate rows within the results highlighted in the SELECT statement.

UNION ALL does the same function as the UNION, but it includes all, including the duplicate rows

1. **What are the different types of joins in SQL?**

The join keyword queries entries from multiple tables. It is used with different keys to find these entries and is conscious on the link between fields.

Inner Join: Returns rows which are common between the tables

Right Join: Returns rows of the right-hand side table, including the common rows.

Left Join: Returns rows of the left-hand side table, including the common rows.

Full Join: Returns all rows, regardless if common or not.

1. **What is Normalization and Denormalization?**

Normalization arranges the existing tables and its fields within the database, resulting in minimum duplication. It is used to simplify a table as much as possible while retaining the unique fields.

Denormalization allows the retrieval of fields from all normal forms within a database. With respect to normalization, it does the opposite and puts redundancies into the table**.**

### What is the difference among UNION, MINUS and INTERSECT?

The **UNION** keyword is used in SQL for combining multiple tables but deletes duplicates from the result set.

The **INTERSECT** keyword is only used for retrieving common rows between multiple tables.

The **MINUS** keyword essentially subtracts between two tables. Where any common rows which also exist on the latter table is deleted from the former table.

### What does the acronym ACID stand for in Database Management?

The ACID Acronym stands for Atomicity, Consistency, Isolation, and Durability. This property primarily takes charge of the process integrity of the database system. This means that whatever the user issues as a data transaction to the database must be done completely, accurately, and has withstanding property.

**Java Questions**

### Why Char array is preferred over String for storing password?

String is immutable in java and stored in String pool. Once it’s created it stays in the pool until unless garbage collected, so even though we are done with password it’s available in memory for longer duration and there is no way to avoid it. It’s a security risk because anyone having access to memory dump can find the password as clear text.  
If we use char array to store password, we can set it to blank once we are done with it. So we can control for how long it’s available in memory that avoids the security threat with String.

### Why can’t we write code as

### List<Number> numbers = new ArrayList<Integer>();?

Generics doesn’t support sub-typing because it will cause issues in achieving type safety. That’s why List<T> is not considered as a subtype of List<S> where S is the super-type of T. To understanding why it’s not allowed, let’s see what could have happened if it has been supported.

List<Long> listLong = new ArrayList<Long>();

listLong.add(Long.valueOf(10));

List<Number> listNumbers = listLong; // compiler error

listNumbers.add(Double.valueOf(1.23));

As you can see from above code that IF generics would have been supporting sub-typing, we could have easily add a Double to the list of Long that would have caused ClassCastException at runtime while traversing the list of Long.