SQL Interview Questions

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Question 1: What is the purpose of the group functions in SQL?

Give some examples of group functions.Group functions are necessary to get summary statistics of a data set. COUNT, MAX, MIN, AVG, SUM, and DISTINCT are all group functions.

Question 2: Tell me the difference between an inner join, left join/right join, and union.

“In a Venn diagram the inner join is when both tables have a match, a left join is when there is a match in the left table and the right table is null, a right join is the opposite of a left join, and a full join is all of the data combined.”

Question 3: What does UNION do?]

What is the difference between UNION and UNION ALL?“UNION removes duplicate records (where all columns in the results are the same), UNION ALL does not.”

Question 4: What is the difference between SQL and MySQL or SQL Server?

“SQL stands for Structured Query Language. It’s a standard language for accessing and manipulating databases. MySQL is a database management system, like SQL Server, Oracle, Informix, Postgres, etc.”

Question 5: If a table contains duplicate rows, does a query result display the duplicate values by default?

How can you eliminate duplicate rows from a query result?Yes. One way you can eliminate duplicate rows with the DISTINCT clause.

Question 6: What are the different types of keys in a relational database?

There are a variety of keys in a relational database, including:Alternate keys are candidate keys that exclude all primary keys.Artificial keys are created by assigning a unique number to each occurrence or record when there aren’t any compound or standalone keys.Compound keys are made by combining multiple elements to develop a unique identifier for a construct when there isn’t a single data element that uniquely identifies occurrences within a construct. Also known as a composite key or a concatenated key, compound keys consist of two or more attributes.Foreign keys are groups of fields in a database record that point to a key field or a group of fields that create a key of another database record that’s usually in a different table. Often, foreign keys in one table refer to primary keys in another. As the referenced data can be linked together quite quickly, it can be critical to database normalization.Natural keys are data elements that are stored within constructs and utilized as primary keys.Primary keys are values that can be used to identify unique rows in a table and the attributes associated with them. For example, these can take the form of a Social Security number that’s related to a specific person. In a relational model of data, the primary key is the candidate key. It’s also the primary method used to identify a tuple in each possible relation.Super keys are defined in the relational model as a set of attributes of a relation variable. It holds that all relations assigned to that variable don’t have any distinct tuples. They also don’t have the same values for the attributes in the set.

Super keys also are defined as a set of attributes of a relational variable upon which all of the functionality depends.

Question 7: What is the difference between SQL and MySQL or SQL Server?

SQL or Structured Query Language is a language; language that communicates with a relational database thus providing ways of manipulating and creating databases. MySQL and Microsoft's SQL Server both are relational database management systems that use SQL as their standard relational database language.

Question 8: What is the difference between SQL and PL/SQL?

PL/SQL is a dialect of SQL that adds procedural features of programming languages in SQL. It was developed by Oracle Corporation in the early 90's to enhance the capabilities of SQL.

Question 9: What are various DDL commands in SQL?

Give brief description of their purposes.Following are various DDL or Data Definition Language commands in SQL –CREATE – it creates a new table, a view of a table, or other object in database.ALTER – it modifies an existing database object, such as a table.DROP – it deletes an entire table, a view of a table or other object in the database.

Question 10: What are various DML commands in SQL?

Give brief description of their purposes.Following are various DML or Data Manipulation Language commands in SQL –SELECT – it retrieves certain records from one or more tables.INSERT – it creates a record.UPDATE – it modifies records.DELETE – it deletes records.

Question 11: What are various DCL commands in SQL?

Give a brief description of their purposes.Following are various DCL or Data Control Language commands in SQL –GRANT – it gives a privilege to the user.REVOKE – it takes back privileges granted from the user.

Question 12: Can you sort a column using a column alias?

Yes. A column alias could be used in the ORDER BY clause.

Question 13: Is a NULL value the same as zero or a blank space?

If not then what is the difference?A NULL value is not the same as zero or a blank space. A NULL value is a value that is 'unavailable, unassigned, unknown or not applicable'. Whereas, zero is a number and blank space is a character.

Question 14: Say True or False. Give an explanation if False.

If a column value taking part in an arithmetic expression is NULL, then the result obtained would be NULLM.True.

Question 15: If a table contains duplicate rows, does a query result display the duplicate values by default?

How can you eliminate duplicate rows from a query result?A query result displays all rows including the duplicate rows. To eliminate duplicate rows in the result, the DISTINCT keyword is used in the SELECT clause.

Question 16: What is the purpose of the condition operators BETWEEN and IN?

The BETWEEN operator displays rows based on a range of values. The IN condition operator checks for values contained in a specific set of values.

Question 17: How do you search for a value in a database table when you don't have the exact value to search for?

In such cases, the LIKE condition operator is used to select rows that match a character pattern. This is also called 'wildcard' search.

Question 18: What is the default ordering of data using the ORDER BY clause? How could it be changed?

The default sorting order is ascending. It can be changed using the DESC keyword, after the column name in the ORDER BY clause.

Question 19: What are the specific uses of SQL functions?

SQL functions have the following uses –Performing calculations on dataModifying individual data itemsManipulating the outputFormatting dates and numbersConverting data types

Question 20: What are the case manipulation functions of SQL?

LOWER, UPPER, INITCAP

Question 21: Which function returns the remainder in a division operation?

The MOD function returns the remainder in a division operation.

Question 22: What is the purpose of the NVL function?

The NVL function converts a NULL value to an actual value.

Question 23: What is the difference between the NVL and the NVL2 functions?

The NVL(exp1, exp2) function converts the source expression (or value) exp1 to the target expression (or value) exp2, if exp1 contains NULL. The return value has the same data type as that of exp1.The NVL2(exp1, exp2, exp3) function checks the first expression exp1, if it is not null then, the second expression exp2 is returned. If the first expression exp1 is null, then the third expression exp3 is returned.

Question 24: What is the use of the NULLIF function?

The NULLIF function compares two expressions. If they are equal, the function returns null. If they are not equal, the first expression is returned.

Question 25: Which expressions or functions allow you to implement conditional processing in a SQL statement?

There are two ways to implement conditional processing or IF-THEN-ELSE logic in a SQL statement.Using CASE expressionUsing the DECODE function

Question 26: You want to display a result query from joining two tables with 20 and 10 rows respectively. Erroneously you forget to write the WHERE clause. What would be the result?

The result would be the Cartesian product of two tables with 20 x 10 = 200 rows.

Question 27: What is the difference between cross joins and natural joins?

The cross join produces the cross product or Cartesian product of two tables. The natural join is based on all the columns having same name and data types in both the tables.

Question 28: What is the purpose of the group functions in SQL?

Give some examples of group functions.Group functions in SQL work on sets of rows and returns one result per group. Examples of group functions are AVG, COUNT, MAX, MIN, STDDEV, SUM, VARIANCE.

Question 29: Say True or False. Give explanation if False.

By default the group functions consider only distinct values in the set.By default, group functions consider all values including the duplicate values.

Question 30: Say True or False. Give explanation if False.

The DISTINCT keyword allows a function consider only non-duplicate values.True.

Question 31: Say True or False. Give explanation if False.

All group functions ignore null values.True.

Question 32: Say True or False. Give explanation if False.

COUNT(*) returns the number of columns in a table.False. COUNT(*) returns the number of rows in a table.

Question 33: What's wrong in the following query?

SELECT subject_code, count(name) FROM students;It doesn't have a GROUP BY clause. The subject_code should be in the GROUP BY clause. SELECT subject_code, count(name) FROM students GROUP BY subject_code;

Question 34: What's wrong in the following query?

SELECT subject_code, AVG (marks) FROM students WHERE AVG(marks) > 75 GROUP BY subject_code;The WHERE clause cannot be used to restrict groups. The HAVING clause should be used. SELECT subject_code, AVG (marks) FROM students HAVING AVG(marks) > 75 GROUP BY subject_code;

Question 35: Say True or False.

Give explanation if False.Group functions cannot be nested.False. Group functions can be nested to a depth of two.

Question 36: What do you understand by a subquery?

When is it used?A subquery is a SELECT statement embedded in a clause of another SELECT statement. It is used when the inner query, or the subquery returns a value that is used by the outer query. It is very useful in selecting some rows in a table with a condition that depends on some data which is contained in the same table.

Question 37: Say True or False. Give explanation if False.

A single row subquery returns only one row from the outer SELECT statementFalse. A single row subquery returns only one row from the inner SELECT statement.

Question 38: Say True or False.

Give explanation if False.A multiple row subquery returns more than one row from the inner SELECT statement.True.

Question 39: Say True or False. Give explanation if False.Multiple column subqueries return more than one column from the inner SELECT statement.True.

Question 40: What's wrong in the following query?

SELECT student_code, name FROM students WHERE marks = (SELECT MAX(marks) FROM students GROUP BY subject_code);Here a single row operator = is used with a multiple row subquery.

Question 41: What are the various multiple row comparison operators in SQL?

IN, ANY, ALL.

Question 42: What is the pupose of DML statements in SQL?

The DML statements are used to add new rows to a table, update or modify data in existing rows, or remove existing rows from a table.

Question 43: Which statement is used to add a new row in a database table?

The INSERT INTO statement.

Question 44: Say True or False. Give explanation if False.While inserting new rows in a table you must list values in the default order of the columns.True.

Question 45: How do you insert null values in a column while inserting data?

Null values can be inserted into a table by one of the following ways –Implicitly by omitting the column from the column list.Explicitly by specifying the NULL keyword in the VALUES clause.

Question 46: Say True or False.

Give explanation if False.INSERT statement does not allow copying rows from one table to another.False. INSERT statement allows to add rows to a table copying rows from an existing table.

Question 47: How do you copy rows from one table to another?

The INSERT statement can be used to add rows to a table by copying from another table. In this case, a subquery is used in the place of the VALUES clause.

Question 48: What happens if you omit the WHERE clause in the UPDATE statement?

All the rows in the table are modified.

Question 49: Can you modify the rows in a table based on values from another table?

Explain.Yes. Use of subqueries in UPDATE statements allow you to update rows in a table based on values from another table.

Question 50: Say True or False. Give explanation if False.

The DELETE statement is used to delete a table from the database.False. The DELETE statement is used for removing existing rows from a table.

Question 51: What happens if you omit the WHERE clause in a delete statement?

All the rows in the table are deleted.

Question 52: Can you remove rows from a table based on values from another table?

Explain.Yes, subqueries can be used to remove rows from a table based on values from another table.

Question 53: Say True or False.

Give explanation if False.Attempting to delete a record with a value attached to an integrity constraint, returns an error.True.

Question 54: Say True or False. Give explanation if False.

You can use a subquery in an INSERT statement.True.

Question 55: What is the purpose of the MERGE statement in SQL?

The MERGE statement allows conditional update or insertion of data into a database table. It performs an UPDATE if the rows exists, or an INSERT if the row does not exist.

Question 56: Say True or False. Give explanation if False.

A DDL statement or a DCL statement is automatically committed.True.

Question 57: What is the difference between VARCHAR2 AND CHAR datatypes?

VARCHAR2 represents variable length character data, whereas CHAR represents fixed length character data.

Question 58: Say True or False. Give explanation if False.

A DROP TABLE statement can be rolled back.False. A DROP TABLE statement cannot be rolled back.

Question 59: Which SQL statement is used to add, modify or drop columns in a database table?The ALTER TABLE statement.

Question 60: What is a view? Why should you use a view?

A view is a logical snapshot based on a table or another view. It is used for –Restricting access to data;Making complex queries simple;Ensuring data independency;Providing different views of same data.

Question 61: Discuss the syntax and use of the COALESCE function?

The COALESCE function has the expression COALESCE(exp1, exp2, ... expn)It returns the first non-null expression given in the parameter.