iNeuron

Python

Interview Questions

1. Distinguish between OLTP and OLAP.

OLTP: This acronym stands for Online Transaction Processing, and it refers to a class of software applications that effectively facilitate transaction-based programs. One of the most critical characteristics of an OLTP framework is the ability to maintain consistency. The OLTP method often uses decentralized preparation to avoid single points of failure. This system is typically intended for a vast number of end-users to conduct brief transactions. Additionally, queries in such databases are generally basic, provide a quick response time, and return a small number of records compared to other databases. As a result, the amount of transactions per second serves as a useful metric for such programs.

OLAP: OLAP is an acronym for Online Analytical Processing. It refers to a class of software systems characterized by a relatively low volume of online transactions. The reliability of OLAP systems is strongly dependent on response time. As a result, such frameworks are often used for data mining and the maintenance of aggregated historical data, and they are often integrated into multi-dimensional schemas.

2. What is the ideal way to use a cursor?

A database cursor is a control that lets one move along the rows of a database. It can be thought of as a reference to a specific row within the collection of rows. Cursors come in handy when doing database

operations like extraction, addition, and removal. Here's how we should bring it to use:

● DECLARE a cursor after every variable declaration. The cursor declaration must always be consistent with the SELECT argument.
● Until fetching rows from the result array, OPEN statements must be called to initialize the result collection.
● Use the FETCH statement to catch and move to the next row in the result range.
● Use the CLOSE term to deactivate the cursor.
● Finally, use the DEALLOCATE clause to remove the cursor definition and clear all related properties.

3. What does the Intersect operator do?

The Intersect operator joins two select statements together, returning only documents that are common to each of them. So, if we have Table A and Table B over here and then use the Intersect operator on these two tables, we'll just get documents that are common to the select statements of these two tables.

4. What is the aim of the lock escalation?

As SQL Server performs a transaction, the lock manager can lock database items to maintain database integrity. On the other hand, the lock manager uses 96 bytes of memory for each locked entity it manages. When dealing with many rows, this situation will necessitate a large amount of memory to lock the rows. SQL Server

employs a method known as lock escalation to reduce memory usage. As row or page locks reach a certain threshold, the lock escalation function transforms row or page locks to table locks, reducing memory consumption.

5. What is the best way to convert between Unix and MySQL timestamps?

UNIX TIMESTAMP's command translates MySQL timestamps to Unix timestamps, and the command FROM UNIXTIME converts Unix timestamps to MySQL timestamps.

6. What kinds of Collation Sensitivity are there?

● Case sensitivity: A and an are treated differently due to case sensitivity.

● Accent sensitivity: the letters a and á are given different treatment.

● Kana sensitivity: Hiragana and Katakana, two Japanese kana characters, are treated differently.

● Width sensitivity: A single-byte (half-width) and a double-byte (full-width) representation of the same character are treated differently.

7. What is the meaning of a NULL value?

A field with a NULL value is the same as one that has no value. A NULL value is not the same as a zero value or an area of spaces. A NULL value indicates that a field was left unused during record creation. Assume that a table field is optional. And if you insert a record without a value for the optional field, the field will be saved with a NULL value.

8. What SQL are operators available?

SQL Operator is a reserved term used in the WHERE clause of a SQL declaration to execute operations like arithmetic and comparisons. In a SQL statement, these are used to define requirements.

Operators are divided into three categories:

- Arithmetic Operators
- Comparison Operators
- Logical Operators

9. Define the statement SELECT INTO.

The SELECT INTO statement is used to copy data from one table to another. The old table's column names and forms would be carried over to the current table. The AS clause may be used to construct new column titles.

10. What is the difference between a Where clause and a Having clause?

The Where clause is used to retrieve data from a database that meets specific criteria. In contrast, the Having clause is used in conjunction with the ‘GROUP BY' feature to retrieve data that meets specific criteria defined by the Aggregate functions. If the Where clause isn't compatible with Aggregate features, the Having clause works.

11. In SQL, what are aggregate functions?

SQL aggregate functions evaluate a single value from the values in a column and return it. The below are some of SQL's aggregate functions:

- AVG()- This function returns the average value.
- COUNT()- Returns the number of rows in a table.
- MAX()- This function returns the highest value.
- MIN()- The smallest value is returned by the MIN() algorithm.
- ROUND()- This method rounds a number to the required number of decimals.
- SUM()- This method returns the sum of two numbers.

12. In SQL, what are string functions?

String manipulation is the primary use of SQL string functions. The following are some of the most commonly used SQL string functions:

- LEN()- This function returns the length of a text field's length.
- LOWER()- This function lowers the case of character data.
- UPPER()- This function transforms data to upper case.
- SUBSTRING()- It extracts characters from a text sector using SUBSTRING().
- LTRIM()- This is a function that removes all whitespace from the start of a string.
- RTRIM()- This is a function that removes all whitespace from the end of a string.
- CONCAT()- The concatenate method joins together several character strings.
- REPLACE()- Replaces a string's text.

13. What is the concept of collation?

The expression "collation" refers to a collection of regulations that specify how character data is sorted and compared. Character data is filtered using regulations that determine case sensitivity, character width, accent marks, and kana character types, as well as choices for determining case sensitivity, character width, accent marks, and kana character types.

14. What is the distinction between the NVL, IFNULL, and ISNULL functions?

All three functions are identical in their activity. These functions are used to substitute a value for a NULL value. Oracle developers use NVL, MySQL developers use IFNULL, and SQL Server developers use ISNULL.

15. What is the distinction between GUI and Database Testing?

● User interface research, also known as front-end testing, is a form of GUI testing. Back-end research, also known as data testing, is a form of database testing.

● GUI Testing is concerned about all testable items available for user engagement, such as menus, forms, and so on. Database testing encompasses all testable items that are typically shielded from the individual.

● The GUI tester does not need to be familiar with Structured Query Language. Database Testing necessitates the knowledge of Structured Query Language.

16. What's the difference between a clustered table and a heap table? What is the best way to tell whether the table is a heap table?

A heap table is when the data rows inside each data page are not contained in any specific order. Furthermore, since the data page

series is not linked in a linked list, there is no specific order to manage it. This is attributed to the lack of a clustered index in the heap table.

A clustered table has a predefined clustered index on one or more columns that determines the storage order of rows within data pages and the order of pages within the table depending on the clustered index key.

By querying the sys.partitions system object, which has one row for each partition with index id equal to 0, the heap table can be identified. You may also use the sys.indexes system object to get information about the heap table indexes. For example, the id of that index is 0, and its type is HEAP.

17. What exactly is the "Forwarding Pointers issue," and how can it be resolved?

Forwarding Pointers are introduced into the heap as data modification operations are done on heap table data sections, pointing to the new position of the transferred data. Due to accessing the old/original position vs the current location defined by the forwarding pointers to get a certain value, these forwarding pointers will trigger performance errors across time.

With SQL Server 2008, they introduced a new approach for dealing with the forwarding pointers performance problem: the ALTER TABLE REBUILD order, which rebuilds the heap table.

18. Describe the configuration of a SQL Server Index that allows you to navigate the table's data more quickly.

A SQL Server index is built in the form of a B-Tree layout. It consists of 8K pages, each of which is referred to as an index node. The B-Tree layout gives the SQL Server Engine a quick way to pass between table rows based on an index key that determines whether to traverse left or right, allowing it to extract the requested values without searching any of the underlying table rows. You can imagine the possible performance impact that scanning a huge database table might cause.

The index's B-Tree structure is divided into three levels:

● SQL Server starts its data quest from the Root Level, which is the top node that includes a single index page.

● The Leaf level is the lowest level of nodes in the tree that holds the data pages we're searching for, with the number of leaf pages being determined by the amount of data in the index.

● Finally, there is the Intermediate Level, which is one or more steps between the root and the leaf levels and contains the main index values and references to the next intermediate level or leaf data pages. The index’s data storage capacity determines the number of intermediate levels.

19. What is Index in SQL?

With the help of Indexes, information retrieval from the database happens faster and with greater efficiency. Thus, indexes improve performance. There are three types of indexes:

Clustered: Used for reordering tables and searching information with key values.
Non-clustered: Used for maintaining the order of the tables.
Unique: They ban fields from having duplicate values.
There can be many non-clustered indexes in a table, however, there can be only one clustered index.

20. What is a Synonym in SQL?
As the name suggests, a synonym is used to give different names to the same object in the database. In the case of object-renaming or object schema-change, existing applications can continue to use older names because of synonyms. A synonym must only reference an object and not another synonym. Additionally, synonyms can also be used to reference objects in different databases or servers, by using 3 or 4 part object names. There can be many names for a single database object as long as all the names directly refer to the same database object.

You must ensure that you know answers to such SQL interview questions as answering them correctly will give you the much-needed confidence for the more difficult ones.