SQL SERVER INTERVIEW QUESTIONS

www.enosislearning.com

|  |
| --- |
| **What is SQL?**  Structured Query Language (SQL) is a language designed specifically for communicating with databases. SQL is an ANSI (American National Standards Institute) standard. |
| **What are the different types of SQL's statements?**    There are three major types of Languages in SQL.  1. DDL – Data Definition Language  DDL is used to define the structure that holds the data. For example, Create, Alter, Drop and Truncate table.  2. DML– Data Manipulation Language  DML is used for manipulation of the data itself. Typical operations are Insert, Delete, Update and retrieving the data from the table. Select statement is considered as a limited version of DML, since it can't change data in the database. But it can perform operations on data retrieved from DBMS, before the results are returned to the calling function.  3. DCL– Data Control Language  DCL is used to control the visibility of data like granting database access and set privileges to create tables etc. Example - Grant, Revoke access permission to the user to access data in database. |
| **What are the Advantages of SQL?**    1. SQL is not a proprietary language used by specific database vendors. Almost every major DBMS supports SQL, so learning this one language will enable programmers to interact with any database like ORACLE, SQL, MYSQL etc.  2. SQL is easy to learn. The statements are all made up of descriptive English words, and there aren't that many of them.  3. SQL is actually a very powerful language and by using its language elements you can perform very complex and sophisticated database operations." |
| **What is a field in a database?**  "A field is an area within a record reserved for a specific piece of data.  Examples: Employee Name, Employee ID etc" |
| **What is a primary key?**  "A primary key is a column whose values uniquely identify every row in a table. Primary key values can never be reused. If a row is deleted from the table, its primary key may not be assigned to any new rows in the future. To define a field as primary key, following conditions had to be met :  1. No two rows can have the same primary key value.  2. Every row must have a primary key value  3. The primary key field cannot be null  4. Values in primary key columns can never be modified or updated" |
| **What is a Composite Key?**  "A Composite primary key is a type of candidate key, which represents a set of columns whose values uniquely identify every row in a table.  For example - if ""Employee\_ID"" and ""Employee Name"" in a table is combined to uniquely identify a row its called a Composite Key." |
| **What is a Composite Primary Key ?**  "A Composite primary key is a set of columns whose values uniquely identify every row in a table. What it means is that, a table which contains composite primary key will be indexed based on the columns specified in the primary key. This key will be referred in Foreign Key tables.  For example - if the combined effect of columns, ""Employee\_ID"" and ""Employee Name"" in a table is required to uniquely identify a row, its called a Composite Primary Key. In this case, both the columns will be represented as primary key." |
| **What is a Foreign Key ?**  "When a ""one"" table's primary key field is added to a related ""many"" table in order to create the common field which relates the two tables, it is called a foreign key in the ""many"" table.  For example, the salary of an employee is stored in salary table. The relation is established via foreign key column “Employee\_ID\_Ref” which refers “Employee\_ID” field in the Employee table." |
| **What is a Unique Key?**  Unique key is same as primary with the difference being the existence of null. Unique key field allows one value as NULL value. |
| **Define SQL Insert Statement?**  "SQL INSERT statement is used to add rows to a table. For a full row insert, SQL Query should start with “insert into “ statement followed by table name and values command, followed by the values that need to be inserted into the table. The insert can be used in several ways:  1. To insert a single complete row.  2. To insert a single partial row." |
| **Define SQL Update Statement?**  "SQL Update is used to update data in a row or set of rows specified in the filter condition.  The basic format of an SQL UPDATE statement is, Update command followed by table to be updated and SET command followed by column names and their new values followed by filter condition that determines which rows should be updated." |
| **Define SQL Delete Statement?**  "SQL Delete is used to delete a row or set of rows specified in the filter condition.  The basic format of an SQL DELETE statement is, DELETE FROM command followed by table name followed by filter condition that determines which rows should be updated." |
| **What's the difference between a primary key and a unique key?**  Both primary key and unique key enforces uniqueness of the column on which they are defined. But by default primary key creates a clustered index on the column, where are unique creates a nonclustered index by default. Another major difference is that, primary key doesn't allow NULLs, but unique key allows one NULL only. |
| **What is the difference between a HAVING CLAUSE and a WHERE CLAUSE?**  They specify a search condition for a group or an aggregate. But the difference is that HAVING can be used only with the SELECT statement. HAVING is typically used in a GROUP BY clause. When GROUP BY is not used, HAVING behaves like a WHERE clause. Having Clause is basically used only with the GROUP BY function in a query whereas WHERE Clause is applied to each row before they are part of the GROUP BY function in a query. |
| **What's the difference between DELETE TABLE and TRUNCATE TABLE commands?**  DELETE TABLE is a logged operation, so the deletion of each row gets logged in the transaction log, which makes it slow. TRUNCATE TABLE also deletes all the rows in a table, but it won't log the deletion of each row, instead it logs the deallocation of the data pages of the table, which makes it faster. Of course, TRUNCATE TABLE can be rolled back. |
| **What are constraints?**  Explain different types of constraints “Constraints enable the RDBMS enforce the integrity of the database automatically, without needing you to create triggers, rule or defaults.  Types of constraints: NOT NULL, CHECK, UNIQUE, PRIMARY KEY, FOREIGN KEY  For an explanation of these constraints see books online for the pages titled: ""Constraints"" and ""CREATE TABLE"", ""ALTER TABLE""" |
| **What is a join and explain different types of joins ?**  "Joins are used in queries to explain how different tables are related. Joins also let you select data from a table depending upon data from another table.  Types of joins: INNER JOINs, OUTER JOINs, CROSS JOINs.OUTER JOINs are further classified as LEFT OUTER JOINS, RIGHT OUTER JOINS and FULL OUTER JOINS." |
| **What is a stored procedure?**  Stored Procedure is a function which contains a collection of SQL Queries. The procedure can take inputs , process them and send back output. |
| **What are the advantages a stored procedure?**  Stored Procedures are precompiled and stored in the database. This enables the database to execute the queries much faster. Since many queries can be included in a stored procedure, round trip time to execute multiple queries from source code to database and back is avoided. |
| **Explain the difference between DELETE, TRUNCATE and DROP commands?**  "Once delete operation is performed, Commit and Rollback can be performed to retrieve data.  Once the truncate statement is executed, Commit and Rollback statement cannot be performed. Where condition can be used along with delete statement but it can't be used with truncate statement.  Drop command is used to drop the table or keys like primary,foreign from a table." |
| **What is Self-Join?**  Self-join is query used to join a table to itself. Aliases should be used for the same table comparison. |
| **What is Cross Join?**  Cross Join will return all records where each row from the first table is combined with each row from the second table. |
| **When is the use of UPDATE\_STATISTICS command?**    This command is basically used when a large processing of data has occurred. If a large amount of deletions any modification or Bulk Copy into the tables has occurred, it has to update the indexes to take these changes into account. UPDATE\_STATISTICS updates the indexes on these tables accordingly. |
| **What is CHECK Constraint?**  A CHECK constraint is used to limit the values that can be placed in a column. The check constraints are used to enforce domain integrity. |
| **How to implement one-to-one, one-to-many and many-to-many relationships while designing tables?**  One-to-One relationship can be implemented as a single table and rarely as two tables with primary and foreign key relationships. One-to-Many relationships are implemented by splitting the data into two tables with primary key and foreign key relationships. Many-to-Many relationships are implemented using a junction table with the keys from both the tables forming the composite primary key of the junction table. |
| **What are the authentication modes in SQL Server? How can it be changed?**  Windows mode and Mixed Mode - SQL and Windows. To change authentication mode in SQL Server click Start, Programs, Microsoft SQL Server and click SQL Enterprise Manager to run SQL Enterprise Manager from the Microsoft SQL Server program group. Select the server then from the Tools menu select SQL Server Configuration Properties, and choose the Security page. |
| **What's the maximum size of a row?**  8060 bytes. |
| **What is normalization?**  Normalization is the process of minimizing redundancy and dependency by organizing fields and table of a database. The main aim of Normalization is to add, delete or modify field that can be made in a single table. |
| **What is Denormalization ?**  DeNormalization is a technique used to access the data from higher to lower normal forms of database. It is also process of introducing redundancy into a table by incorporating data from the related tables. |
| **What is order by clause?**  ORDER BY clause helps to sort the data in either ascending order to descending order. Ascending order sort query SELECT name,age FROM pcdsEmployee ORDER BY age ASC Descending order sort query |
| **How do we select distinct values from a table?**  "DISTINCT keyword is used to return only distinct values. Below is syntax:- Column age and  Table pcdsEmp  SELECT DISTINCT age FROM pcdsEmp" |
| **What is the SQL " IN " clause?**  SQL IN operator is used to see if the value exists in a group of values. For instance the below  SQL checks if the Name is either 'rohit' or 'Anuradha' SELECT \* FROM pcdsEmployee WHERE  name IN ('Rohit','Anuradha') Also you can specify a not clause with the same.  SELECT \* FROM pcdsEmployee WHERE age NOT IN (17,16) |
| **What are Aggregate and Scalar Functions?**  "Aggregate and Scalar functions are in built function for counting and calculations.  Aggregate functions operate against a group of values but returns only one value.  AVG(column) :- Returns the average value of a column  COUNT(column) :- Returns the number of rows (without a NULL value) of a column  COUNT(\*) :- Returns the number of selected rows  MAX(column) :- Returns the highest value of a column  MIN(column) :- Returns the lowest value of a column  Scalar functions operate against a single value and return value on basis of the single value.  UCASE(c) :- Converts a field to upper case  LCASE(c) :- Converts a field to lower case  MID(c,start[,end]) :- Extract characters from a text field  LEN(c) :- Returns the length of a text" |
| **What is a View?**  "View is a virtual table which is created on the basis of the result set returned by the select  statement.  CREATE VIEW [MyView] AS SELECT \* from pcdsEmployee where LastName = 'singh'  **In order to query the view**  SELECT \* FROM [MyView]" |
| **Advantages of COMMIT and ROLLBACK Statements**  "With COMMIT and ROLLBACK statements, you can:  • Ensure data consistency  • Preview data changes before making changes permanent  • Group logically related operations" |
| **What is Trigger?**  "Trigger will execute a block of procedural code against the database when a table event occurs. A2. A trigger defines a set of actions that are performed in response  to an insert, update, or delete operation on a specified table. When such an SQL operation is executed, in this case the trigger has been activated." |
| **What is transaction?**  "A transaction is a collection of applications code and database manipulation code bound into an indivisible unit of execution.  it consists from:  BEGIN-TRANSACTION Name  Code  END TRANSACTION Name" |
| **What is "index covering" of a query?**    "Index covering means that ""Data can be found only using indexes, without touching the tables""" |
| **What is a "functional dependency"? How does it relate to database table design?**  "Functional dependency relates to how one object depends upon the other in the database.  for example, procedure/function sp2 may be called by procedure sp1. Then we say that  sp1 has functional dependency on sp2." |
| **What are the tradeoffs with having indexes?**  "1. Faster selects, slower updates.  2.Extra storage space to store indexes. Updates are slower because in addition to updating  the table you have to update the index." |
| **What is the difference between where and having clause?**    In SQL Where filters data on lowest row level. Having filters data after group by has been performed so it filters on "groups" |
| **What is normalization? What are different types of normalization?**    "There is set of rules that has been established to aid in the design of tables that are meant to  be connected through relationships. This set of rules is known as Normalization.  Benefits of Normalizing your database include:  =>Avoiding repetitive entries  =>Reducing required storage space  =>Preventing the need to restructure existing tables to accommodate new data.  =>Increased speed and flexibility of queries, sorts, and summaries.  Following are the three normal forms :-  First Normal Form  For a table to be in first normal form, data must be broken up into the smallest un possible.In  addition to breaking data up into the smallest meaningful values, tables first normal form should  not contain repetitions groups of fields.  Second Normal form  The second normal form states that each field in a multiple field primary keytable must be  directly related to the entire primary key. Or in other words,each non-key field should be a fact  about all the fields in the primary key.  Third normal form  A non-key field should not depend on other Non-key field." |
| **What’s the difference between “UNION” and “UNION ALL” ?**  "UNION SQL syntax is used to select information from two tables. But it selects only distinct  records from both the table. , while UNION ALL selects all records from both the tables." |
| **"What is Snow Flake Schema design in database? What’s the difference between Star**  **and Snow flake schema?"**  "Star schema is good when you do not have big tables in data warehousing. But when tables  start becoming really huge it is better to denormalize. When you denormalize star schema it is  nothing but snow flake design. For instance below customer address table is been normalized and  is a child table of Customer table. Same holds true for Salesperson table." |
| **What is a Sub-Query?**  "A query nested inside a SELECT statement is known as a sub query and is an alternative to  complex join statements. A subquery combines data from multiple tables and returns results  that are inserted into the WHERE condition of the main query. A subquery is always enclosed  within parentheses and returns a column. A subquery can also be referred to as an inner query  and the main query as an outer query. JOIN gives better performance than a subquery when  you have to check for the existence of records.  For example, to retrieve all EmployeeID and CustomerID records from the ORDERS table that  have the EmployeeID greater than the average of the EmployeeID field, you can create a nested  query, as shown:  SELECT DISTINCT EmployeeID, CustomerID FROM ORDERS WHERE EmployeeID > (SELECT  AVG(EmployeeID) FROM ORDERS)" |
| **What are cursors and what are the situations you will use them?**  "SQL statements are good for set at a time operation. So it is good at handling set of data. But  there are scenarios where we want to update row depending on certain criteria. we will loop  through all rows and update data accordingly. There’s where cursors come in to picture." |
| **What’s difference between DBMS and RDBMS ?**  "DBMS provides a systematic and organized way of storing, managing and retrieving from  collection of logically related information. RDBMS also provides what DBMS provides but above  that it provides relationship integrity. So in short we can say  RDBMS = DBMS + REFERENTIAL INTEGRITY  These relations are defined by using “Foreign Keys” in any RDBMS.Many DBMS companies  claimed there DBMS product was a RDBMS compliant, but according to industry rules and  regulations if the DBMS fulfills the twelve CODD rules it’s truly a RDBMS. Almost all DBMS (SQL  SERVER, ORACLE etc) fulfills all the twelve CODD rules and are considered as truly RDBMS." |
| **What are the different type of Triggers?**  Threr are three type of triggers  1. DML trigger  a.instead of trigger :- instead of trigger are fired in place of triggering action such as insert,update or delete  b.After Trigger:-After trigger execute following Triggering action such as insert,update or delete  2.DDL trigger:-  This type of trigger is fired against DDL statements like Drop Table,Create Table,or Alter table.DLL triggers are always after triggers.  3.Logon Trigger:-  This type of trigger is fired against a LOGON event befor the user session is established to the sql server |
| **What is a Synonym?**  "A synonym is an alias for a table, view, sequence or program unit.  There are two types of Synonyms Private and Public. A Private Synonyms can be accessed only by the owner. A Public synonyms can be accessed by any user on the database.  Synonyms are used to : Mask the real name and owner of an object. Provide public access to an object Provide location transparency for tables,views or program units of a remote database. Simplify the SQL statements for database user" |
| **What is difference between TRUNCATE & DELETE ?**  "TRUNCATE commits after deleting entire table i.e., cannot be rolled back. Database triggers do not fire on TRUNCATE  DELETE allows the filtered deletion. Deleted records can be rolled back or committed. Database triggers fire on DELETE. " |
| **What is a materialized view?**  Materialized views are also a view but are disk based. Materialized views get updates on specific duration, base upon the interval specified in the query definition. We can index materialized view. |
|  |

**Which TCP/IP port does SQL Server run on? How can it be changed?**

SQL Server runs on port 1433. It can be changed from the Network Utility TCP/IP properties.

**What's the difference between a primary key and a unique key?**

Both primary key and unique key enforces uniqueness of the column on which they are defined. But by default primary key creates a clustered index on the column, where are unique creates a nonclustered index by default. Another major difference is that, primary key doesn't allow NULLs, but unique key allows one NULL only.

**What is normalization?**

Normalization is the process of minimizing redundancy and dependency by organizing fields and table of a database. The main aim of Normalization is to add, delete or modify field that can be made in a single table.

**What is Denormalization.**

DeNormalization is a technique used to access the data from higher to lower normal forms of database. It is also process of introducing redundancy into a table by incorporating data from the related tables.

**What is a relationship and what are they?**

Database Relationship is defined as the connection between the tables in a database. There are various data basing relationships, and they are as follows:.

* One to One Relationship.
* One to Many Relationship.
* Many to One Relationship.
* Self-Referencing Relationship.

**What is a query?**

A DB query is a code written in order to get the information back from the database. Query can be designed in such a way that it matched with our expectation of the result set. Simply, a question to the Database.

**What is subquery?**

A subquery is a query within another query. The outer query is called as main query, and inner query is called subquery. SubQuery is always executed first, and the result of subquery is passed on to the main query.

**What is data Integrity?**

Data Integrity defines the accuracy and consistency of data stored in a database. It can also define integrity constraints to enforce business rules on the data when it is entered into the application or database.

**What is Datawarehouse?**

Datawarehouse is a central repository of data from multiple sources of information. Those data are consolidated, transformed and made available for the mining and online processing. Warehouse data have a subset of data called Data Marts.

**What is collation?**

Collation is defined as set of rules that determine how character data can be sorted and compared. This can be used to compare A and, other language characters and also depends on the width of the characters.

ASCII value can be used to compare these character data.

**What is Online Transaction Processing (OLTP)?**

Online Transaction Processing or OLTP manages transaction based applications which can be used for data entry and easy retrieval processing of data. This processing makes like easier on simplicity and efficiency. It is faster, more accurate results and expenses with respect to OTLP.

Example – Bank Transactions on a daily basis.

**What is an ALIAS command?**

ALIAS name can be given to a table or column. This alias name can be referred in WHERE clause to identify the table or column.

1. How to insert only date into the column of table in sql server.

It should not insert the time along with date.

1. How to disable a identity column
2. How to enable a identity column
3. What is composite primary key
4. How to alter a identity column. I mean to change the identity start value & increment value

How to call a stored procedure inside a view

What is a linked server and how to create a linked server using command?

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Types of index in sql server  Differences between trigger and function  9.   |  |  | | --- | --- | | Table A | Table B | | 1 | 1 | | 1 | 1 | | 1 |  |   For the above tables what will be the output for  a.      Inner Join  b.      Left Join  c.       Right Join  d.      Cross Join  1  What are cursors, and in place of it what can we use?  11.  Indexes, what is clustered index?  12.  Difference between Having clause and Where?  14.   |  | | --- | | Table A | | 10 | | 10 | | 20 | | 20 |   For the above table how we will delete duplicate records?  a.      By using Group by?  b.      By using Where?  Can we call stored procedure inside a view?   |  | | --- | | exec sp\_addlinkedserver @server = 'local',  @srvproduct = '',@provider='SQLNCLI',  @datasrc = @@SERVERNAME  alter procedure MyProc  as  begin  SET NOCOUNT ON;  SET FMTONLY OFF;  select \* from dbo.DEPARTMENT  end  create view MyView  as  select \*  from openquery(local,'exec ef\_mvc.dbo.MyProc')  select \* from dbo.MyView |   <http://www.techbrothersit.com/2014/08/tsql-how-to-execute-stored-procedure-in.html>  Can I call function inside a view?  How to call view within view?  HOW TO ENCRYPT/DECRYPT STORED PROCEDURE?  HOW TO ENCRYPT/DECRYPT task data?  How to make SP as Start up Procedure?  CREATE TABLE EMPLOYEE  (  EMPID INT,  NAME VARCHAR(100),  MANAGERID INT  )  INSERT INTO EMPLOYEE VALUES(1,'A',2)  INSERT INTO EMPLOYEE VALUES(2,'B',3)  INSERT INTO EMPLOYEE VALUES(3,'C',NULL)  SELECT E1.EMPID,M1.NAME,E1.NAME AS MANAGER FROM EMPLOYEE E1 INNER JOIN EMPLOYEE M1  ON E1.EMPID= M1.MANAGERID |  |