1. *batch, script and transaction*

***Batch Processing*** *means things are put into queue and it is processed when a certain amount if items is reached, or when a certain period has passed. You can do undo/rollback in this.*

***Transaction*** *is like real time processing that allows you to rollback/undo changes.*

*In TRANSACTIONS, it's just like the batch, but you have the option to "cancel" it.*

***Script***

*Is a file which contains a sequence of command needs to be executed on windows command prompt,*

*A SQL script can contain one or more SQL statements or PL/SQL blocks. You can use SQL Scripts to create, edit, view, run, and delete database object*

1. *trigger and stored procedure*

*A stored procedure is a user defined piece of code written in the local version of PL/SQL, which may return a value (making it a function) that is invoked by calling it explicitly.*

*A trigger is a stored procedure that runs automatically when various events happen (eg update, insert, delete).*

*3- stored procedure and functions*

***Stored procedures*** *are pre-compiled objects which are compiled for the first time and its compiled format is saved. It will execute whenever it is called.*

*Advantage: Performance, Security Control , Productivity and Ease of Use*

***Functions*** *Like functions in programming languages, SQL Server user-defined functions are routines that accept parameters, perform an action such as a complex calculation, and return the result of that action as a value. The return value can either be a single scalar value or a result set*

*Types Of functions Built-in functions, User-defined functions*

*Difference between Stored procedure and Functions*

* *A procedure allows both input and output parameters, but* a procedure allows both input and output parameters.
* Cannot use a function with Data Manipulation queries. Only Select queries are allowed in functions,
* Can use DML queries such as insert, update, select etc… with procedures.
* Cannot call stored procedures from a function, but can call a function from a stored procedure.
* *Can call a function using a select statement,* cannot call a procedure using select statements.

1. drop, truncate and delete statement

*DELETE is a DML (Data Manipulation Language) command. This command removes records from a table. It is used only for deleting data from a table, not to remove the table from the database.*

*TRUNCATE TABLE is similar to DELETE, but this operation is a DDL (Data Definition Language) command. It also deletes records from a table without removing table structure, but it doesn’t use the WHERE clause*

*The DROP TABLE is another DDL (Data Definition Language) operation. But it is not used for simply removing data from a table; it deletes the table structure from the database, along with any data stored in the table.*

1. select and select into statement

*The SELECT statement is used to select data from a database, the data returned is stored in a result table, called the result-set*

*SELECT INTO statement creates the destination table and copies rows, which satisfy the WHERE condition, from the source table to the destination table:*

*Differences*

*INSERT INTO SELECT inserts into an existing table. SELECT INTO creates a new table and puts the data in it*

6. local and global variables

*Local variable:*

* *A user declares the local variable.*
* *By default, a local variable starts with @.*
* *Every local variable scope has the restriction to the current batch or procedure within any given session.*

*Global variable:*

* *The system maintains the global variable. A user cannot declare them.*
* *The global variable starts with @@*
* *It stores session related information.*

7- convert and cast statements

The T-SQL language offers two functions to convert data from one data type to a target data type: CAST and CONVERT. In many ways, they both do the exact same thing in a SELECT statement or stored procedure, but the SQL Server CONVERT function has an extra parameter to express style.

*The Convert() function can be used to display date/time data in various formats in sql datatype.*

*when converting a DateTime datatype to Varchar, you can specify the resulting date’s format, such as YYYY/MM/DD or MM/DD/YYYY.*

1. DDL,DML,DCL,DQL and TCL

[*DDL*](https://www.geeksforgeeks.org/features-of-structured-query-language-sql/)*or Data Definition Language actually consists of the SQL commands that can be used to define the database schema.*

*Like Create ,drop , alter ,truncate*

***DQL****statements are used for performing queries on the data within schema objects.*

*DML :deals with the manipulation of data present in the database*

*Like insert update delete*

*DCL includes commands such as GRANT and REVOKE which mainly deal with the rights, permissions, and other controls of the database system. Like grant and revoke*

*9-*

***FOR XML RAW***

*Construct at the end of the Select query is responsible for generating the XML content. Even though the output is XML, it looks like the data returned in row and column format that we usually see the output window of the SQL Server Management Studio (SSMS). The Example 1 query code is shown here*

***For XML Auto***

*Returns query results in a simple, nested XML tree. Each table in the FROM clause for which at least one column is listed in the SELECT clause is represented as an XML element. The columns listed in the SELECT clause are mapped to the appropriate element attributes*

*10.Table valued and multi statemcent function*

*Table valued : table is specified in the return clause ,and doesn’t have associated return variables ,*

*Select stmt is the single select statement that defines the return values*

*multi statemcent function: table is specified in the return clause ,function body is used as transact sql statements that populate a table return type*

*,@return variable is used to store and accumulate rows that are reyurned as a value*

1. Varchar(50) and varchar(max)

***Varchar(50)*** *stores a maximum of 50 characters.* ***Varchar(max****) stores a maximum of 2,147,483,647 characters. But, varchar(50) keeps the 50 character space even if you don't store 50 characters. but varchar(max) is flexible to any size. size doesn't matter.*

*12. Datetime, datetime2(7) and datetimeoffset(7)*

***Datetime2*** *can be considered as an extension of the existing datetime type that has a larger date range, a larger default fractional precision, and optional user-specified precision.*

***The DateTimeOffset*** *structure represents a date and time value, together with an offset that indicates how much that value differs from UTC. Thus, the value always unambiguously identifies a single point in time*

*13-* Default instance and named instance

***Difference Between Default Instance and Named*** *Instance A default instance is a type of instance that is used when installing a single instance of SQL server. In contrast, a named instance is a type of instance where the user specifies an instance name when installing the instance.*

*14. SQL and windows Authentication*

***SQL Authentication****: Database administrators create SQL logins and provide appropriate permissions for users to authenticate themselves to SQL Server. Users need to specify the login and password while connecting to SQL Server*

***windows Authentication*** *: , the user should first authenticate himself within Active Directory. SQL Server authenticates users through the Windows principal token in the OS. With that, SQL Server does not ask for a password for identity validation. Therefore, Windows confirms users’ identities for authentication. SQL Server does not store the credentials in the Windows authentication. The connection using Windows authentication is called a trusted or integrated connection.*

15.Clustered and non-clustered index

* *A cluster index is a type of index that sorts the data rows in the table on their key values, whereas the Non-clustered index stores the data at one location and indices at another location.*
* *Clustered index stores data pages in the leaf nodes of the index, while the Non-clustered index method never stores data pages in the leaf nodes of the index*

*16.Group by rollup and group by cube*

***ROLLUP operators*** *let you extend the functionality of* ***GROUP BY*** *clauses by calculating subtotals and grand totals for a set of columns. The CUBE operator is similar in functionality to the ROLLUP operator; however, the CUBE operator can calculate subtotals and grand totals for all permutations of the columns specified in it.*

17. Sequence object and identity

*SEQUENCE object are define by the user and can be share by multiple tables since is it is not tie to any table.*

*IDENTITY property ties to a particular table and cannot be shared among multiple tables since it is a table column property.*

*18.Inline function and view*

***A view*** *in SQL is a virtual table based on the result-set of an SQL statement. A view contains rows and columns, just like a real table. The fields in a view are fields from one or more real tables in the database.*

***The Inline table*** *valued function can be built with a parameter where a view cannot*

19 .Table variable and temporary table

*Temporary Tables are real tables so you can do things like CREATE INDEXes, etc. If you have large amounts of data for which accessing by index will be faster then temporary tables are a good option.*

*Table variables can have indexes by using PRIMARY KEY or UNIQUE constraints. (If you want a non-unique index just include the primary key column as the last column in the unique constraint*

*20.* Row\_number() and dense\_Rank() function

*ROW\_Number() SQL RANK function to get a unique sequential number for each row in the specified data. It gives the rank one for the first row and then increments the value by one for each row. We get different ranks for the row having similar values as well.*

*We use DENSE\_RANK() function to specify a unique rank number within the partition as per the specified column value. It is similar to the Rank function with a small difference.*

*In the SQL RANK function DENSE\_RANK(), if we have duplicate values, SQL assigns different ranks to those rows as well. Ideally, we should get the same rank for duplicate or similar values.*