Part2: What is the difference between the following objects in SQL Server

* batch, script and transaction

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| Batch | Script | Transaction |
| A Set of queries executed together but no one of them affects the result of any other query.  Some of them may fail and doesn’t affect others | A Set of queries only can be executed together when separated with “GO” keyword | A Set of queries must be executed either all together or none of them executed at all.  All as one unit, if one failed  The rest transaction rolled back then, |

* trigger and stored procedure

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| Stored Procedure | Trigger |
| A piece of code by developer to present a specific design, executed when called. | a special type of stored procedure structure, executed explicitly when a related event occurs. |

* stored procedure and functions

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| Stored Procedure | Function |
| -has an only one and integer data typed return value  -receive input, output and input-output parameters.  -Contains DML queries  -only called in select phrase in a query. | -has return value(s) which can be represented by any data type.  -receive only input parameter  -Contains only Select statements.  -can be called in any phrase in the query. |

* drop, truncate and delete statement

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| Drop | Truncate | delete |
| -DDL query  -Remove the table from the DB  (delete table’s data and metadata) | -DDL query  -Remove the table ‘s data but keeps table’s metadata.  - Does reset table’s identity column values. | -DML query  -Remove a certain data from the table by where condition.  - Doesn’t reset table’s identity column values. |

* select and select into statement

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| Select | Select into |
| To retrieve data from table. | To insert selected data into a new table |

* local and global variables

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| Local Variable | Global Variable |
| -Starts with @  -can be declared and assigned as per developer  -has local scope (batch, function, sp) | -Starts with @@  -Can’t be declared nor assigned  -has global scope and affected by last query |

* convert and cast statements

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| Convert | Cast |
| Used for converting a variable data type from one to another, accepts optional formatting argument | Used for converting a variable data type from one to another. |

1. DDL,DML,DCL,DQL and TCL

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| DDL | DML | DCL | DQL | TCL |
| Data Definition Language  SQL command used to define descriptions of the database schema and to create and modify the structure of database objects in the database. (create, drop, alter...etc) | Data Manipulation Language  SQL command used to deal with the data manipulation  in the database and to control the data access and modifying (insert, update, delete…etc) | Data Control Language  SQL commands used to deal with the permissions and other controls of the database system. (grant, deny and revoke) | Data Query Language  SQL command used to make queries on the data (Select) | Transaction Control Language  SQL command used to control the transactions in database (commit, Rollback .. etc) |

* For xml raw and for xml auto

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| XML Raw | XML Auto |
| Used in process to represent data from SQL to xml File  By default, represent columns of table as tag attributes, “ELEMENTS” clause can be used to represent them in separated tags | Used in process to represent data from SQL to xml File  Used to represent joined tables |

* Table valued and multi statement function

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| Table Valued | Multi Statement |
| Generally, returns a table as a return value which is structured based on selected statement values | Returned table generally specified by return syntax |

* Varchar (50) and varchar(max)

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| Varchar(50) | Varchar(max) |
| Character data type. Used with character data type with maximum of 50  Used when the input size is almost specified | Column will store the entered value and resize itself upon it.  Used when the input size couldn’t be specified. |

Datetime(3), datetime2(7) and datetimeoffset(7)

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| Datetime(3) | Datetime2(7) | Datetimeoffset(7) |
| - Size: 8 bytes  - Char length: 19  - Date range is 1753-01-01 through 9999-12-3. - Time range is 00:00:00 through 23:59:59.997.  - No Time Zone Offset. | Size :6 to 8 bytes, depends on precision + 1-byte stores precision. - Char length: 19  - Date range is 0001-01-01 through 9999-12-31. - Time range is 00:00:00 through 23:59:59.9999999  - No Time Zone Offset | -Size :8 to 10 bytes, depends on precision + 1-byte stores precision  - Char length: 26  - Date range is 0001-01-01 through 9999-12-31 - Time range is 00:00:00 through 23:59:59.9999999  - Time zone offset |

* Default instance and named instance

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| Default Instance | Named Instance |
| - Installed by default when installing a single instance of SQL server. - Only one default instance | - When Naming the Instance.  - Could be multiple named instances |

* SQL and windows Authentication

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| Windows Auth. | SQL Auth |
| Authentication of the administrator of the Operating system, so SQL Server on this operation system doesn’t require any additional confirmation to give access | There could be many sql users on the same server differ from the windows authorized users, so it is set to require password, in addition it can be connected remotely from the server. |

* Clustered and non-clustered index

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| Clustered Index | Non Clustered Index |
| - Created by default on primary key column so it’s on the actual data.  -Faster than non-clustered index - Better towards memory wise -only one clustered index - In Clustered index leaf nodes are actual data itself. - In Clustered index, Clustered key defines order of data within table. - A Clustered index is a type of index in which table records are physically reordered to match the index. | -Table can have multiple non-clustered indexes.  -Slower than clustered index.  -stores pointers to actual data  - In Non-Clustered index, index key defines order of data within index. - A Non-Clustered index is a special type of index in which logical order of index does not match physical stored order of the rows on disk. |

* Group by rollup and group by cube

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| Group by rollup | Group by cube |
| used to calculate sub-totals and grand totals for a set of columns passed to the “GROUP BY ROLLUP” clause. Can also be used to calculate sub-totals for each column, based on grouping. | CUBE operator produces results by generating all combinations of columns specified in the GROUP BY CUBE clause. |

* Inline function and view

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| Inline | View |
| Have return value, Takes Parameters | No parameters  Automate many complex, repeatable queries  Can be used by server engine optimizer |

* Table variable and temporary table

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| Table variable | Temp Table |
| Has Variable scope and life time  Not physical but memory located table  Can be passed to function or stored procedure | Physical table created in tempdb  Lifetime depends on its type  Can have indexes and constrains  Can’t passed to function or sp |

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

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| Row\_number() | Desne\_rank() |
| Creates unique rank however replicated records | Creates unique ranks but replicated records |