**SQL Assignment 5**

1. Explain how SQL Query keyword statements are executed in order.

|  |  |
| --- | --- |
| Writing Order | Execution Order |
| From | Select |
| Where | Top |
| Group By | From |
| Having | Where |
| Select | Group By |
| Order By | Having |
| Top | Order By |

1. Explain the advantages of stored procedures and their syntax in relation to recompiling stored procedures.

* SQL Server Stored procedures are the make-ready T-SQL codes that can be executed again and again by the database users to perform data manipulation commands and data definition commands. We can list the following 4 features as the benefits of the stored procedures that come to our mind first:

Code reuse

Performance

Maintainability

Security

The main performance advantage of a stored procedure is that they can reuse compiled and cached query plans. In the first execution of a stored procedure, its execution plan is stored in the query plan cache and this query plan is used in the next execution of the procedure. However, some factors can lead to recompilation of the cached stored procedure query plans and this process is called stored procedure recompilation. Recompilation of a stored procedure has some advantages and disadvantages. Such as, after the index, is rebuilt or statistics are updated a stored procedure query plan may be recompiled and this new plan will usually be more effective. On the other hand, redundant high recompilation operations can increase the CPU overhead and may affect the database engine performance negatively.

To monitor the SQL Server stored procedure recompilation events, we can use the **sql\_statement\_recompile**event of the Extended Events and this event helps to capture when a statement-level recompilation is performed by the query optimizer.

Indexes are used to improve the query performance and after the creation of an index may lead to recompile the stored procedure.

With help of **SET option,** we can determine the behavior of SQL Server at the session level. Changing the set options will cause to recompile the stored procedures.

1. Give an example of the derived table.

* A derived table is an expression that generates a table within the scope of a query FROM clause. For example, a subquery in a SELECT statement FROM clause is a derived table:

1. What is the database's trigger? Explain the different forms of triggers that can be found in the database.

* A trigger is a stored procedure in database which automatically invokes whenever a special event in the database occurs. For example, a trigger can be invoked when a row is inserted into a specified table or when certain table columns are being updated. DDL Trigger, DML Trigger and Logon Trigger.

1. What are the benefits and drawbacks of triggers?

|  |  |
| --- | --- |
| benefits | drawbacks |
| Triggers allow you to create basic auditing. | When you use BULK INSERT to insert data into a table, triggers are not fired unless you include the FIRE\_TRIGGERS option in your bulk insert statement. |
| You can call stored procedures and functions from inside a trigger. | Triggers are difficult to locate unless you have proper documentation because they are invisible to the client. |
| Triggers are useful when you need to validate inserted or updated data in batches instead of row by row. | Triggers add overhead to DML statements. |
| You can use triggers to implement referential integrity across databases. | The problem of using triggers for audit purposes is that when triggers are enabled, they execute always regardless of the circumstances that caused the trigger to fire. |
| Triggers are useful if you need to be sure that certain events always happen when data is inserted, updated or deleted. | If there are many nested triggers it could get very hard to debug and troubleshoot, which consumes development time and resources. |
| Triggers can be nested (up to 32 levels) | Recursive triggers are even harder to debug than nested triggers. |
| Triggers allow recursion. | Triggers used to enforce referential integrity, be aware that triggers can be disabled by users having the ALTER permission on the table or view on which the trigger was created. |