**Compare SQL Server with Oracle.**

|  |  |  |
| --- | --- | --- |
| **Criteria** | **SQL Server** | **Oracle** |
| Supported platforms | Windows and Linux | Windows, Solaris, Linux, and Unix |
| Language used | T-SQL (Transact-SQL) | PL/SQL (Procedural Language/ SQL) |
| Usage | Simpler and easy to use | Complex but powerful |
| Syntax | Simple | Complex |

### ****How can SQL Server instances be hidden?****

To hide a SQL Server instance, we need to make a change in SQL Server Configuration Manager. To do this, we have to follow the below steps:

* First, in SQL Server Configuration Manager, we have to expand ‘SQL Server Network Configuration’
* Right-click on Protocols for <server instance> and select ‘Properties’
* Once we do that, we will find a ‘HideInstance’ box in which, on the ‘Flags’ tab, we have to select ‘Yes’
* After that, click on ‘OK’

**Which TCP/IP port does SQL Server run on?**

**Answer:** By default SQL Server runs on port 1433.

**What is the difference between clustered and non-clustered index?**

**Answer:**A **clustered index**is an index that rearranges the table in the order of the index itself. Its leaf nodes contain data pages. A table can have only one clustered index.

A**non-clustered index** is an index that does not re-arrange the table in the order of the index itself. Its leaf nodes contain index rows instead of data pages**.**A table can have many non-clustered indexes.

**List the different index configurations possible for a table?**

**Answer:** **A table can have one of the following index configurations:**

* No indexes
* A clustered index
* A clustered index and many non-clustered indexes
* A non-clustered index
* Many non-clustered indexes

**What is the recovery model? List the types of recovery models available in SQL Server?**

**Answer:** The recovery model tells SQL Server what data should be kept in the transaction log file and for how long. A database can have only one recovery model. It also tells SQL server which backup is possible in a particular selected recovery model.

**There are three types of recovery models:**

* Full
* Simple
* Bulk-Logged

**What are the different backups available in**[**SQL Server**](http://www.microsoft.com/en-in/server-cloud/products/sql-server/)**?**

**Answer:**  **Different possible backups are:**

* Full backup
* Differential Backup
* Transactional Log Backup
* Copy Only Backup
* File and Filegroup backup

**What is a Full Backup?**

**Answer:** A full backup is the most common type of backup in SQL Server. This is the complete backup of the database. It also contains part of the transaction log so that it can be recovered.

**What is OLTP?**

**Answer:** OLTP means Online Transaction Processing which follows rules of data normalization to ensure data integrity. Using these rules, complex information is broken down into a most simple structure.

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

**Answer: The differences between the primary key and a unique key are:**

* The primary key is a column whose values uniquely identify every row in a table. Primary key values can never be reused. They create a clustered index on the column and cannot be null.
* A Unique key is a column whose values also uniquely identify every row in a table but they create a non-clustered index by default and it allows one NULL only.

**When is the UPDATE\_STATISTICS command used?**

**Answer:** As the name implies UPDATE\_STATISTICS command updates the statistics used by the index to make the search easier.

**What is the difference between a HAVING CLAUSE and a WHERE CLAUSE?**

**Answer:  The differences between HAVING CLAUSE and WHERE CLAUSE is:**

* Both specify a search condition but the HAVING clause is used only with the SELECT statement and typically used with GROUP BY clause.
* If the GROUP BY clause is not used, then the HAVING clause behaves like a WHERE clause only.

**What is Mirroring?**

**Answer:**Mirroring is a high availability solution. It is designed to maintain a hot standby server which is consistent with the primary server in terms of a transaction. Transaction Log records are sent directly from the principal server to a secondary server which keeps a secondary server up to date with the principal server.

**What are the advantages of the Mirroring?**

**Answer: Advantages of Mirroring are:**

* It is more robust and efficient than Log shipping.
* It has an automatic failover mechanism.
* The secondary server is synced with the primary in near real-time.

**What is Log Shipping?**

**Answer:** Log shipping is nothing but the automation of backup and restores the database from one server to another standalone standby server. This is one of the disaster recovery solutions. If one server fails for some reason we will have the same data available on the standby server.

**What are the advantages of Log shipping?**

**Answer: Advantages of Log Shipping includes:**

* Easy to set up.
* The secondary database can be used as a read-only purpose.
* Multiple secondary standby servers are possible
* Low maintenance.

**Can we take the full database backup in Log shipping?**

**Answer:** Yes, we can take the full database backup. It won’t affect the log shipping.

**What is the Stored Procedure?**

**Answer:** A stored procedure is a set of SQL queries that can take input and send back output. And when the procedure is modified, all clients automatically get the new version. Stored procedures reduce network traffic and improve performance. Stored procedures can be used to help ensure the integrity of the database.

**List the advantages of using Stored Procedures?**

**Answer: Advantages of using Stored procedures are:**

* Stored procedure boosts application performance.
* Stored procedure execution plans can be reused as they cached in SQL Server's memory which reduces server overhead.
* They can be reused.
* It can encapsulate logic. You can change the stored procedure code without affecting clients.
* They provide better security for your data.

**What is identity in SQL?**

**Answer:** An identity column in the SQL automatically generates numeric values. We can be defined as a start and increment value of the identity column. Identity columns do not need to be indexed.

**What are the common performance issues in SQL Server?**

**Answer: Following are the common performance issues:**

* Deadlocks
* Blocking
* Missing and unused indexes.
* I/O bottlenecks
* Poor Query plans
* Fragmentation

**List the various tools available for performance tuning?**

**Answer: Various tools available for performance tuning are:**

* Dynamic Management Views
* SQL Server Profiler
* Server Side Traces
* Windows Performance monitor.
* Query Plans
* Tuning advisor

**What is a performance monitor?**

**Answer:** Windows performance monitor is a tool to capture metrics for the entire server. We can use this tool for capturing events of the SQL server also.  
Some useful counters are – Disks, Memory, Processors, Network, etc.

**Can we rename a column in the output of the SQL query?**

**Answer:** Yes, by using the following syntax we can do this.

|  |
| --- |
| SELECT column\_name AS new\_name FROM table\_name; |

**What is the difference between a Local and a Global temporary table?**

**Answer:** If defined inside a compound statement a local temporary table exists only for the duration of that statement but a global temporary table exists permanently in the database but its rows disappear when the connection is closed.

**What do you mean by authentication modes in SQL Server?**

**Answer:** **There are two authentication modes in SQL Server.**

* Windows mode
* Mixed Mode – SQL and Windows.

**What is the SQL Profiler?**

**Answer:** SQL Profiler provides a graphical representation of events in an instance of SQL Server for monitoring and investment purpose. We can capture and save the data for further analysis. We can put filters as well to captures the specific data we want.

**How can we check the SQL Server version?**

**Answer:** By running the following command:

**SELECT @@Version**

**Is it possible to call a stored procedure within a stored procedure?**

**Answer:** Yes, we can call a stored procedure within a stored procedure. It is called the recursion property of the SQL server and these types of stored procedures are called nested stored procedures.

**What is the SQL Server Agent?**

**Answer:** SQL Server agent allows us to schedule the jobs and scripts. It helps in implementing the day to day DBA tasks by automatically executing them on a scheduled basis.

**What is the PRIMARY KEY?**

**Answer:** The primary key is a column whose values uniquely identify every row in a table. Primary key values can never be reused.

**What is a UNIQUE KEY constraint?**

**Answer:** A UNIQUE constraint enforces the uniqueness of the values in a set of columns, so no duplicate values are entered. The unique key constraints are used to enforce entity integrity as the primary key constraints.

**What is FOREIGN KEY**

**Answer:** When a one table’s primary key field is added to related tables to create the common field which relates the two tables, it called a foreign key in other tables.

Foreign Key constraints enforce referential integrity.

**What is a CHECK Constraint?**

**Answer:** A CHECK constraint is used to limit the values or type of data that can be stored in a column. They are used to enforce domain integrity.

**What are a Scheduled Jobs?**

**Answer:** The scheduled job allows a user to run the scripts or SQL commands automatically on a scheduled basis. The user can determine the order in which command executes and the best time to run the job to avoid the load on the system.

**What is a heap?**

**Answer:** A heap is a table that does not contain any clustered index or non-clustered index.

**What is BCP?**

**Answer:** BCP or Bulk Copy is a tool by which we can copy a large amount of data to tables and views. BCP does not copy the structures the same as source to destination. BULK INSERT command helps to import a data file into a database table or view in a user-specified format.

**What is Normalization?**

**Answer:** The process of table design to minimize the data redundancy is called normalization. We need to divide a database into two or more tables and define relationships between them. Normalization usually involves dividing a database into two or more tables and defining relationships between the tables.

**What is De-normalization?**

**Answer:** De-normalization is the process of adding redundant data to a database to enhance the performance of it. It is a technique to move from higher to lower normal forms of database modeling to speed up database access.

**What is a Trigger and types of a trigger?**

**Answer:** The trigger allows us to execute a batch of SQL code when table event occurs (INSERT, UPDATE or DELETE command executed against a specific table). Triggers are stored in and managed by DBMS. It can also execute a stored procedure.

**3 types of triggers that are available in the SQL Server are as follows:**

* **DML Triggers:** DML or Data Manipulation Language triggers are invoked whenever any of the DML commands like INSERT, DELETE or UPDATE happens on the table or the view.
* **DDL Triggers:** DDL or Data Definition Language triggers are invoked whenever any changes occur in the definition of any of the database objects instead of actual data. These are very helpful to control the production and development of database environments.
* **Logon Triggers:** These are very special triggers that fire in case of the logon event of the SQL Server. This is fired before the setup of a user session in the SQL Server.

**What is the Subquery?**

**Answer:** A Subquery is a subset of SELECT statements, whose return values are used in filtering conditions of the main query. It can occur in a SELECT clause, FROM clause and WHERE clause. It nested inside a SELECT, INSERT, UPDATE, or DELETE statement or inside another subquery.

**Types of Sub-query:**

* **Single-row sub-query:** The subquery returns only one row
* **Multiple-row sub-query:** The subquery returns multiple rows
* **Multiple column sub-query:** The subquery returns multiple columns

**What is a Linked Server?**

**Answer:** Linked Server is a concept by which we can connect another SQL server to a Group and query both the SQL Servers database using **T-SQL Statements sp\_addlinkedsrvloginisssed** to add link server.

**Where SQL server usernames and passwords are stored in a SQL server?**

**Answer:** They get stored in System Catalog Views sys.server\_principals and sys.sql\_logins.

**What is View?**

**Answer:** A view is a virtual table that contains data from one or more tables. Views restrict data access of the table by selecting only required values and make complex queries easy.

Rows updated or deleted in the view are updated or deleted in the table the view was created with. It should also be noted that as data in the original table changes, so does data in the view, as views are the way to look at part of the original table. The results of using a view are not permanently stored in the database

**What are the properties of a transaction?**

**Answer:** Generally, these properties are referred to as ACID properties.

**They are:**

* Atomicity
* Consistency
* Isolation
* Durability

**Define UNION, UNION ALL, MINUS, INTERSECT?**

**Answer:**

* **UNION –** returns all distinct rows selected by either query.
* **UNION ALL –** returns all rows selected by either query, including all duplicates.
* **MINUS –** returns all distinct rows selected by the first query but not by the second.
* **INTERSECT –** returns all distinct rows selected by both queries.

**Explain the creation and execution of a user-defined function in the SQL Server?**

**Answer:** A User-Defined function can be created in the following way:

|  |
| --- |
| CREATE Function fun1(@num int)  returns table  as  return SELECT \* from employee WHERE empid=@num; |

This function can be **executed** as follows:

|  |
| --- |
| SELECT \* from fun1(12); |

So, in the above case, a function with the name of ‘fun1’ is created to fetch employee details of an employee having empid=12.

**What is TCL in SQL Server?**

**Answer:** TCL is **Transaction Control Language Commands**which are used to manage the transactions in the SQL Server.

**Which TCL Commands are available on the SQL Server?**

**Answer:** There are 3 TCL Commands in the SQL Server. These are as follows:

* **Commit:** This command is used to save the transaction permanently in the database.
* **Rollback:** This is used to roll back the changes that are done i.e. to restore the database in the last committed state.
* **Save Tran:** This is used for saving the transaction to provide the convenience that the transaction can be rolled back to the point wherever required.

**What are the advantages of having an index on the SQL Server?**

**Answer: The index has the following advantages:**

* Index supports the mechanism of having faster data retrieval from the database.
* This forms a data structure in a way that helps in minimizing data comparisons.
* This improves the performance of the retrieval of the data from the database.

### What is normalization? Explain different levels of normalization?

**Ans.** It is the way to eliminate redundant data

1. Reduces null value
2. Enables efficient indexing
3. 1NF – Removes duplicated attributes, Attribute data should be atomic, and attribute should be same kind.
4. 2NF – Should be in 1NF and each non-key is fully dependent on the primary key.
5. 3NF – Should be in 2NF and all the non-key attributes which are not dependent on the primary key should be removed. All the attributes which are dependent on the other non-key attributes should also be removed. Normalization is done in OLTP.

### ****What is a transaction and what are ACID properties?****

**Ans.** A transaction is a logical unit of work in which, all the steps must be performed or none. ACID stands for Atomicity, Consistency, Isolation, and Durability. These are the properties of a transaction.

### What are cursors? Explain different types of cursors. What are the disadvantages of cursors? How can you avoid cursors?

**Ans.** Cursors allow row-by-row processing of the result sets.

**Types of cursors:**

Static – Makes a temporary copy of the data and stores in tempdb and any modifications on the base table does not reflect in data returned by fetches made by the cursor.  
Dynamic – Reflects all changes in the base table.  
Forward-only – specifies that cursor can only fetch sequentially from first to last.  
Keyset-driven – Keyset is the set of keys that uniquely identifies a row is built in a tempdb.

**How to find 6th highest salary from Employee table?**

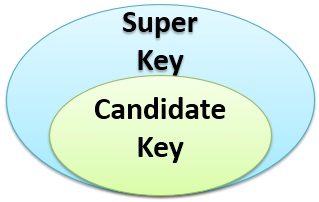
|  |  |
| --- | --- |
| 1 | SELECT TOP 1 salary FROM (SELECT DISTINCT TOP 6 salary FROM employee ORDER BY salary DESC) a ORDER BY salary |

##### What is the transaction log?

It keeps a record of all activities that occur during a transaction and is used to roll back changes.

# **Difference Between Super Key and Candidate Key**

December 6, 2016 [Leave a Comment](https://techdifferences.com/difference-between-super-key-and-candidate-key.html#respond)

Keys are the essential elements of any relational database. It identifies each tuple in a relation uniquely. Keys are also used to establish the relationship among the tables in a schema. In this article, we will discuss two basic keys of any database that is super key and candidate key.

Every candidate key is a super key but, every super key may or may not be a candidate key. There many other distinguishing factors between super key and candidate key, which I have briefly discussed in the comparison chart below.

## **Content: Super Key Vs Candidate Key**

1. [Comparison Chart](https://techdifferences.com/difference-between-super-key-and-candidate-key.html#ComparisonChart)
2. [Definition](https://techdifferences.com/difference-between-super-key-and-candidate-key.html#Definition)
3. [Key Differences](https://techdifferences.com/difference-between-super-key-and-candidate-key.html#KeyDifferences)
4. [Conclusion](https://techdifferences.com/difference-between-super-key-and-candidate-key.html#Conclusion)

### Comparison Chart

| **BASIS FOR COMPARISON** | **SUPER KEY** | **CANDIDATE KEY** |
| --- | --- | --- |
| Basic | A single attribute or a set of attributes that uniquely identifies all attributes in a relation is super key. | A proper subset of a super key, which is also a super key is a candidate key. |
| One in other | It is not compulsory that all super keys will be candidate keys. | All candidate keys are super keys. |
| Selection | The set of super keys forms the base for selection of candidate keys. | The set of candidate keys form the base for selection of a single primary key. |
| Count | There are comparatively more super keys in a relation. | There are comparatively less candidate keys in a relation. |

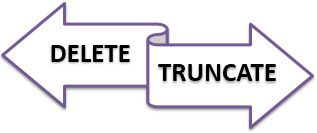
### Definition of Super key

A **super key** is a **basic** key of any relation. It is defined as a key that can identify all other attributes in a relation. Super key can be a single attribute or a set of attributes. Two entities do not have the same values for the attributes that compose a super key. There is at least one or more that one super keys in a relation.

A minimal super key is also called candidate key. So we can say some of the super keys get verified for being a candidate key. We will see later how a superkey is checked to become a candidate key.

# **Difference Between DELETE and TRUNCATE in SQL**

November 22, 2016 [2 Comments](https://techdifferences.com/difference-between-delete-and-truncate-in-sql.html#comments)

DELETE and TRUNCATE are the commands use to remove tuples from a relation, but they differ in many contexts. In SQL, DELETE command is a **Data Manipulation Language** command whereas, TRUNCATE command is a  **Data Definition Language** command.

However, the point that allows us to differentiate between DELETE and TRUNCATE is that DELETE is able to remove specified tuples from a relation, Whereas, the TRUNCATE command removes entire tuples from a relation.

We should not stop here, there are many other differences between DELETE and TRUNCATE. Let us discuss them with the help of comparison chart shown below.

## **Content: DELETE Vs TRUNCATE in SQL**

1. [Comparison Chart](https://techdifferences.com/difference-between-delete-and-truncate-in-sql.html#ComparisonChart)
2. [Definition](https://techdifferences.com/difference-between-delete-and-truncate-in-sql.html#Definition)
3. [Key Differences](https://techdifferences.com/difference-between-delete-and-truncate-in-sql.html#KeyDifferences)
4. [Conclusion](https://techdifferences.com/difference-between-delete-and-truncate-in-sql.html#Conclusion)

### Comparison Chart

| **BASIS FOR COMPARSION** | **DELETE** | **TRUNCATE** |
| --- | --- | --- |
| Basic | You can specify the tuple that you want to delete. | It deletes all the tuples from a relation. |
| Language | DELETE is a Data Manipulation Language command. | TRUNCATE is a Data Definition Language command. |
| WHERE | DELETE command can have WHERE clause. | TRUNCATE command do not have WHERE clause. |
| Trigger | DELETE command activates the trigger applied on the table and causes them to fire. | TRUNCATE command does not activate the triggers to fire. |
| Deletion | DELETE command eliminate the tuples one-by-one. | TRUNCATE delete the entire data page containing the tuples. |
| Lock | DELETE command lock the row/tuple before deleteing it. | TRUNCATE command lock data page before deleteing table data. |
| Speed | DELETE command acts slower as compared to TRUNCATE. | TRUNCATE is faster as compared to DELETE. |
| Transaction | DELETE records transaction log for each deleted tuple. | TRUNCATE record transaction log for each deleted data page. |
| Restore | DELETE command can be followed either by COMMIT or ROLLBACK. | TRUNCATE command can't be ROLLBACK. |

## **Key Differences Between DELETE and TRUNCATE in SQL**

1. The main difference between DELETE and TRUNCATE is that using DELETE you can delete specified tuple from a relation. But the use of TRUNCATE will delete entire tuples from a relation.
2. DELETE is DML command whereas, TRUNCATE is DDL command.
3. DELETE uses WHERE clause to filter the record/tuples that are to be deleted. However, TRUNCATE does not require WHERE clause as it deletes all tuples, so no need to filter the tuples.
4. DELETE activates referential triggers applied to the tables. But TRUNCATE does not fire any triggers on the table.
5. DELETE command eliminates the tuples one-by-one from the table, in the order, they are processed. However, TRUNCATE does not operate on tuples one-by-one. Instead, TRUNCATE operates on data page that stores table data.
6. DELETE acquire the lock on the tuple before deleting it whereas, TRUNCATE acquire the lock on the data page before deleting data page.
7. TRUNCATE is faster as compared to DELETE command.
8. DELETE record transaction log for each tuple whereas, TRUNCATE record transaction log for each data page.
9. Once you delete data using TRUNCATE, it can never be recovered back whereas, you can recover your data back which you deleted using DELETE command.

## **Key Differences Between Backup and Recovery**

1. The backup is a copy of a content which is further used in the recovery of the original content in case of any failure.
2. Just taking backups does not decide the duration and systematic usage of backups where recovery strategies are very useful. There are several strategies used for recovery, such as continuous replication or snapshot, image-based backup, etcetera.

## **Key Differences Between Mirroring and Replication**

1. Mirroring involves the duplication of a database stored at different machines where original database is known as primary database and copied database is known as a mirror. On the other hand, replication is the duplication of data and database objects stored at the different location to improve the performance of the distribution database.
2. Mirroring is performed on the database while replication is implemented on data and database objects.
3. The mirror database can usually be found in the different machine from its primary database. As against, the replicated data and database objects are stored in another database.
4. The mirroring of database costs higher than replication.
5. Mirroring doesn’t support distributed environment whereas replication was devised for the distributed database.

## **Key Differences Between Clustered and Non-clustered index**

1. The number of clustered index that a table can have is only one. Whereas a table can have multiple non-clustered indices.
2. A clustered index is faster than non-clustered index because the non-clustered index has to refer back to the base table. On the contrary, this is not the case in the clustered index.
3. In a non-clustered index, the index is stored in a separate location which requires additional storage space. In contrast, clustered index stores the base table data in same physical order as index’s logical order, so it does not require additional storage space.

## **Key Differences Between Primary key and Unique key**

1. When an attribute declared as primary key, it will not accept NULL values. On the other hand, when an attribute declared as Unique it can accept one NULL value.
2. A table can have only primary key whereas there can be multiple unique constraints on a table.
3. A Clustered index automatically created when a primary key is defined. In contrast, Unique key generates the non-clustered index.

## **Key Differences Between Where and Having Clause**

1. WHERE clause is employed in row operations and applied on a single row whereas HAVING clause is used in column operations and can be applied to summarized rows or groups.
2. In WHERE clause the desired data is fetched according to the applied condition. In contrast, HAVING clause fetch whole data then separation is done according to the condition.
3. Aggregate functions like min, sum, max, avg can never appear along with WHERE clause. As against, these functions can appear in HAVING clause.
4. HAVING clause can not use without a SELECT statement. Conversely, WHERE can be used with SELECT, UPDATE, DELETE, etc.
5. WHERE clause behaves as a pre-filter while HAVING clause acts as a post-filter.
6. WHERE clause when used with GROUP BY, comes before GROUP BY. This signifies that WHERE filter rows before aggregate calculations are performed. On the other hand, HAVING comes after GROUP BY, which means it filters after aggregate calculations are performed.

## **Key Differences Between T-SQL and PL-SQL**

1. The basic difference between T-SQL and PL-SQL is that T-SQL is a Microsoft product whereas, PL-SQL is an Oracle product.
2. The full form of T-SQL is Transact-SQL whereas, the full form of PL-SQL is Procedural Language SQL.
3. T-SQL focuses on the degree of control on how an application works whereas, the PL-SQL is a natural programming language that blends well with the SQL.
4. You can not convert the code of T-SQL to PL-SQL as they have different features, syntax, they differ in a way how they handle their variables, stored procedures, and built-in function.
5. T-SQL performs best with Microsoft SQL server whereas,the PL-SQL performs best with Oracle database server.
6. T-SQL is simpler and easier whereas, PL-SQL is complex, but it is potentially more powerful.

## **Key Differences Between COMMIT and ROLLBACK in SQL**

1. The main difference between the COMMIT and ROLLBACK statements of SQL is that the execution of COMMIT statement makes all the modification made by the current transaction become permanent. On the other hands, the execution of ROLLBACK erases all the modification made by the current transaction.
2. Once COMMIT statement has executed the modification made by the transaction can not be ROLLBACK. However, once the ROLLBACK statement is executed the database reaches its previous state.
3. COMMIT gets executed on the successful execution of the transaction statements. However, the ROLLBACK is executed when the transaction does not get executed successfully.

## **Key Differences Between Trigger and Procedure**

1. The primary difference between trigger and procedure is that a trigger is a statement that gets invoked automatically when an event has occurred. On the other hand, the procedure is invoked whenever it is required.
2. One can define procedure inside a trigger. But, a trigger is never defined inside a procedure as the trigger has to be invoked automatically on the occurrence of any event.
3. We can pass parameters to procedures, but we can not pass parameters to trigger as it is not invoked by us.
4. A procedure can return parameter values or code but, a trigger can not.

## **Key Differences Between DDL and DML in DBMS**

1. The basic difference between DDL and DML is that DDL (Data Definition Language) is used to define the schema or the structure of Database which means it is used to create the Table (Relation) and the DML (Data Manipulation Language) is used to access, or modify the schema or Table created by DDL
2. DML is classified in two types Procedural and Declarative DMLs whereas the DDL is not classified further.
3. CREATE, ALTER, DROP, TRUNCATE, COMMENT and RENAME, etc. are the commands of DDL. On the other hand, SELECT, INSERT, UPDATE, DELETE, MERGE, CALL, etc. are the commands of DML.