

A DIFFERENCE BETWEEN DELETE AND TRUNCATE IN SQL

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ABSTRACT

While working with the database we often need to delete data, sometimes to create more space, sometimes just remove all data to make table ready for next day's transaction or sometimes just selectively remove stale data. SQL provides a couple of handy commands to remove data e.g. truncate, delete and drop. The last one is bit different because instead of removing data it just deletes table. What is the difference between truncate and delete command in SQL or when to use truncate vs delete is one of the most frequently asked SQL interview question? Knowledge of this critical command is not only useful for interviews, but also while working with a big database with a large number of records, especially while writing SQL scripts for purging transaction databases. An Incorrect choice of SQL command can result in either very slow processor can even blow up the log segment; if too much data needs to be removed and log segment is not enough. That's why it's critical to know when to use truncate and delete command in SQL. In this paper, we will first see few differences between them, and based upon them, you should be able to find out when DELETE is a better option for removing data or TRUNCATE should be used to purge tables.

Keyword: - DDL, DML, DQL, DCL, TCL

1. INTRODUCTION

Structure Query Language(SQL) is a database query language used for storing and managing data in Relational DBMS. SQL was the first commercial language introduced for E.F Codd's Relational model of database. Today almost all RDBMS (MySql, Oracle, Infomix, Sybase, MS Access) use SQL as the standard database query language. SQL is used to perform all types of data operations in RDBMS. Below figure shows the list of SQL commands.

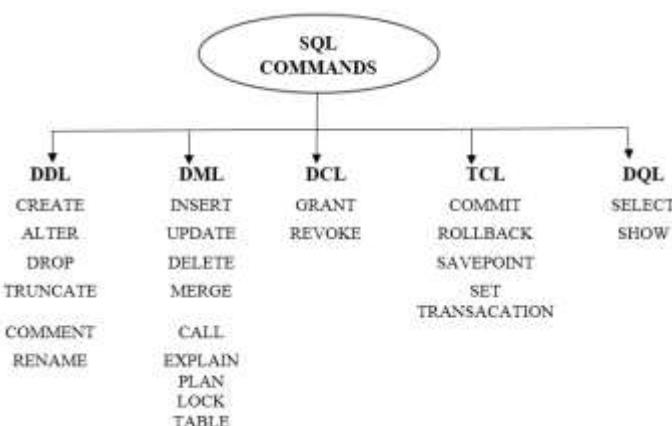


Figure-1: SQL Commands

1.1 DDL (Data Definition Language)

DDL is short name of Data Definition Language, which deals with database schemas and descriptions, of how the data should reside in the database.

CREATE - to create a database and its objects like (table, index, views, store procedure, function, and triggers)

ALTER - alters the structure of the existing database

DROP - delete objects from the database

TRUNCATE - remove all records from a table, including all spaces allocated for the records are removed

COMMENT - add comments to the data dictionary

RENAME - rename an object

1.2 DML (Data Manipulation Language)

DML is short name of Data Manipulation Language which deals with data manipulation and includes most common SQL statements such SELECT, INSERT, UPDATE, DELETE, etc., and it is used to store, modify, retrieve, delete and update data in a database.

INSERT - insert data into a table

UPDATE - updates existing data within a table

DELETE - Delete all records from a database table

MERGE - UPSERT operation (insert or update)

CALL - call a PL/SQL or Java subprogram

EXPLAIN PLAN - interpretation of the data access path

LOCK TABLE - concurrency Control.

1.3 DCL (Data Control Language)

DCL is short name of Data Control Language which includes commands such as GRANT and mostly concerned with rights, permissions and other controls of the database system.

GRANT - allow users access privileges to the database

REVOKE - withdraw user's access privileges given by using the GRANT command

1.4 TCL (Transaction Control Language)

TCL is short name of Transaction Control Language which deals with a transaction within a database.

COMMIT - commits a Transaction

ROLLBACK - rollback a transaction in case of any error occurs

SAVEPOINT - to roll back the transaction making points within groups

SET TRANSACTION - specify characteristics of the transaction

1.5 DQL (Data Query Language)

DQL (Data Query Language) refers to the SELECT, SHOW and HELP statements (queries) SELECT is the main DQL instruction. It retrieves data you need. SHOW retrieves infos about the metadata. HELP... is for people who need help.

2. DIFFERENCE BETWEEN DELETE AND TRUNCATE

DELETE Statement

The DELETE Statement is used to delete rows from a table.

Syntax of a SQL DELETE Statement

DELETE FROM table_Name [WHERE condition];

*table_name -- the table name which has to be updated.

The **WHERE** clause in the sql delete command is optional and it identifies the rows in the column that gets deleted. If you do not include the WHERE clause all the rows in the table is deleted, so be careful while writing a DELETE query without WHERE clause.

SQL DELETE Example

To delete an employee with id E003 from the employee table, the sql delete query would be like,

DELETE FROM EMP WHERE EID = 'E003';

To delete all the rows from the employee table, the query would be like,

DELETE FROM EMP;

TRUNCATE Statement

The SQL TRUNCATE command is used to delete all the rows from the table and free the space containing the table

Syntax of a SQL TRUNCATE Statement

TRUNCATE TABLE table_Name;

*table_name -- the table name which has to be updated.

To delete all the rows from employee table, the query would be like,

TRUNCATE TABLE EMP;

Table -1: DELETE V/S TRUNCATE

TRUNCATE	DELETE
TRUNCATE is a DDL command	DELETE is a DML command.
TRUNCATE is executed using a table lock and whole table is locked for remove all records.	DELETE is executed using a row lock, each row in the table is locked for deletion.
We cannot use Where clause with TRUNCATE.	We can use where clause with DELETE to filter & delete specific records.
TRUNCATE removes all rows from a table.	The DELETE command is used to remove rows from a table based on WHERE condition.
Minimal logging in transaction log, so it is performance wise faster.	It maintain the log, so it slower than TRUNCATE.
TRUNCATE TABLE removes the data by deallocating the data pages used to store the table data and records only the page deallocations in the transaction log.	The DELETE statement removes rows one at a time and records an entry in the transaction log for each deleted row.
Identify column is reset to its seed value if table contains any identity column.	Identity of column keep DELETE retain the identity.
To use Truncate on a table you need at least ALTER permission on the table.	To use Delete you need DELETE permission on the table.
Truncate uses the less transaction space than Delete statement.	Delete uses the more transaction space than Truncate statement.
Truncate cannot be used with indexed views.	Delete can be used with indexed views

3. IMPLEMENTATION

Create following table in Oracle.

```
CREATE TABLE EMP
(SRNO NUMBER(3),
EID VARCHAR2(4) PRIMARY KEY,
ENAME VARCHAR2(20),
DESIGNATION VARCHAR2(20),
SALARY NUMBER(7));
```

The screenshot shows the Oracle XE SQL Commands interface. The URL is 127.0.0.1:8080/hmmlib/Tp=450010035859266801904692956/VC=. The interface includes tabs for Home, SQL, and SQL Commands. The SQL Commands tab is active, showing the query: SELECT * FROM EMP. The results pane displays the following data:

ENO	EID	ENAME	DESIGNATION	SALARY
1	E001	MAHESH.PATEL	TEAM LEADER	25000
2	E002	RAJESH.PATEL	DEVELOPER	35000
3	E003	VINOD.RANDEY	PROJECT MANAGER	50000
4	E004	RAKESH.RANDEY	MANAGER	60000
5	E005	RAKESH.MISTRY	DESIGNER	40000

5 rows returned in 0.00 seconds.

Figure-2: EMP table

Execute the following Query

DELETE FROM EMP WHERE EID = 'E005';

The screenshot shows the Oracle XE SQL Commands interface. The URL is 127.0.0.1:8080/hmmlib/Tp=450010035859266801904692956/VC=. The interface includes tabs for Home, SQL, and SQL Commands. The SQL Commands tab is active, showing the query: DELETE FROM EMP WHERE EID = 'E005';. The results pane displays the output:

```
1 row(s) deleted.
0.00 seconds
```

Figure-3: After delete one row

After deleting one row from the EMP table

SELECT * FROM EMP;

The screenshot shows the Oracle XE Database interface in SQL Commands mode. The command `SELECT * FROM EMP;` has been run, and the results are displayed in a table:

ENO	ENAME	DESIGNATION	VALUER
1	EM01	MAHESH PATEL	28000
2	EM02	RAVIKSH PATEL	38000
3	EM03	VENCO PANDY	56000
4	EM04	RAKESH PANDY	65000

4 rows returned in 0.00 seconds

Figure-4: Table data after the one row delete.

TRUNCATE TABLE EMP;

The screenshot shows the Oracle XE Database interface in SQL Commands mode. The command `TRUNCATE TABLE EMP;` has been run, and the results are displayed:

Table truncated.

0.02 seconds

Figure-4: Truncate Operation.

```
SELECT * FROM EMP;
```

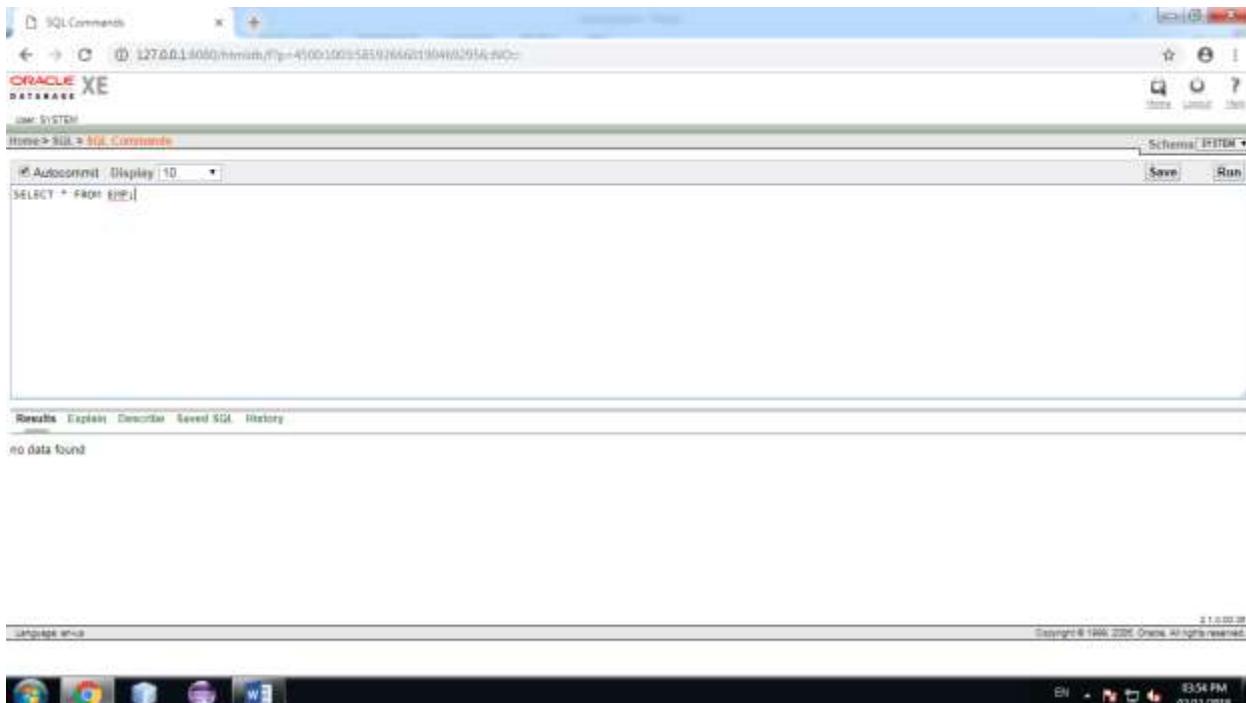


Figure-5: Table data after truncate Operation.

4. CONCLUSIONS

I should point out that TRUNCATE is considered a DDL command; whereas, DELETE is DML. I think this distinction should help you further understand when to use either command or the implications for doing so. If you want to customize the deletion of records from the table then you can use DELETE command. If you want to empty the table i.e. you don't want to leave any data in a table then use TRUNCATE command.

5. REFERENCES

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BIOGRAPHIES (Not Essential)

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