SQL Concepts

Some Important concepts based on difference between functionalities of two or more Commands

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1. Difference between Alter & Update Command

Alter	Update
It is used for changing the structure or schema of the existing table in the databases.	It is used for modification in the existing records of the data not dealing with the change in the structure of data.
Since it deals with the structure of table, it is a Data Definition Language (DDL) command.	Since it deals with the Data Manipulation, it is DML command.
Following actions can be performed with alter Command. • Adding & Removing Columns using ADD/DROP function • Modifying, adding and dropping features of columns like constraints, datatypes, default value etc. using MODIFY function. *Syntax:* *ALTER TABLE* table_name *ADD* column_name datatype*;* *ALTER TABLE table_name* *DROP COLUMN column_name;* *ALTER TABLE* table_name *ALTER COLUMN* column_name datatype*;*	Conditions can be imposed during update for updating only certain data which meets the conditions specified. Syntax: UPDATE *table_name* SET *column1 = value1, column2 = value2* WHERE *condition*; On omitting where clause, all records will be updated.

2. Difference Between Drop, Delete & Truncate?

Drop	Truncate	Delete
It is for dropping the table in one-go i.e., both Data records and structure/ definition of table would be deleted.	It is used for deleting the all records in one go from the table but not the schema/structure of the table.	It is for deleting the existing records from the table based on certain condition. Where Clause Used specify, which record should be deleted. If not mentioned, all the records will be deleted.
Irreversible Process i.e., once dropped user cannot retrieve table.	All the rows will get emptied (Delete with no where clause) and it can't be roll back. It is fast process if records are to be deleted from a big table.	It is flexible, only specified rows will get deleted specified by certain conditions. Also, data can be rolled back & retrieved as it empties the rows one by one, create log of rows and then perform delete operation. It is slow process.
It will throw error that table doesn't exist if user try to query the table after dropping	On querying the table, it will only show schema of the table.	It will result in output after deleting the specified data.
DROP TABLE *table_name*;	TRUNCATE TABLE *table_name*;	DELETE FROM *table_name* WHERE *condition*;

3. Difference between Having & where?

Where	Having
It is used for filtering & applying condition on ungrouped data.	It is used for filtering the aggregated data and applies on top of grouped data.
It can be used with SELECT, UPDATE, INSERT & DELETE.	Having is only used with Select
Aggregate functions can not be used with where clause in the statement.	It can include aggregate function in query / statement.
Can be used without Group by clause.	It only gets used with GROUPBY clause to filter the grouped/aggregated values.

4. Difference Between Primary Key, Foreign Key & Unique Key?

Primary Key (P.K)	Unique Key	Foreign Key (F.K)
It uniquely identifies each row in the database table. It automatically has unique constraint i.e., it must contain unique values.	It ensures all the values in the columns are different and prevents the duplicate values stored in the specified column.	It is column or combination of columns which is used to link one table with another. F.K in one table is Primary Key for another table for creating link between the tables. Table having F.K is child table. Table having P.K is Parent or reference table.
Only one PK constraint is possible for each table which consists of single or multiple columns.	Multiple Columns can have unique constraint in the table.	Multiple F.K can be there in one table. F.K in one table is Primary Key for another table. Hence it prevents invalid data from getting inserted into F.K column.
It cannot take NULL values.	It allows one NULL value as distinct value.	It allows NULL and duplicate values.

5. Difference between Full Outer Join & Cross Join?

Full Outer Join	Cross Join
Full outer join combines all rows from the joined tables whether or not the other table has the matching row. **It's a combination of LEFT & RIGHT JOIN.** If rows in join tables do not matches, result would contain NULL values for every column of table that lacks matching rows.	It produces the cartesian product of two tables i.e., each row in first table is paired with each row in the second table. If A table have n rows, B table have m rows then result table would have m*n rows. It doesn't require joining condition i.e., ON condition.
SELECT *column_name(s)* FROM *table1* FULL OUTER JOIN *table2* ON *table1.column_name = table2.column_name* WHERE *condition*;	SELECT *column_name(s)* FROM *table1* CROSS JOIN *table2*

6. Difference between Join & Set Operations?

Join	Set Operations
Join merges the columns of the data from two or more tables on basis of some common fields.	It is used to combine the output of two select statements.
Types: INNER JOIN, LEFT JOIN, RIGHT JOIN, CROSS JOIN	Types: UNION, UNION ALL, INTERSECT, MINUS

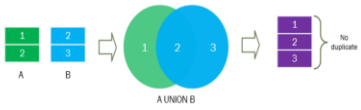
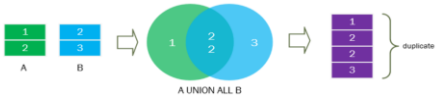
7. Difference between Union & Union ALL?

Union is use to combine result set of two or more select queries into a single result set.

Select *column1, column2* ***from*** *table1*

UNION/UNION ALL

Select *column1, column2* ***from*** *table2*

Union	Union All
Union will remove the duplicate rows from the final output.	UNION ALL will retain the duplicate rows in the final result set.
	

8. What is Union Compatibility in Query?

i. The number & order of the columns must be same in all queries.
ii. The data type of corresponding columns must be compatible.

9. Difference Between DDL Commands & DML Commands

Data Definition Language (DDL)	Data Manipulation Language (DML)
DDL deals with defining & changing the schema/structure of the table like creating, deleting and altering a table etc.	DML used to modify the records in databases. It is responsible for all types of changes in the databases.
Commands: **Create, Alter, Drop, Truncate, Rename**	Commands: **Select, Insert, Update, Delete**
DDL Commands are auto committed, it means it saves all the changes in the database.	DML commands are not auto-committed i.e., it can not permanently save all the changes in a database and can be rolled back.

10. Difference between ROW_NUMBER (), RANK (), DENSE_RANK ()

ROW_NUMBER ()	RANK ()	DENSE_RANK ()
It assigns sequential number to each row in the query's result set.	It assigns rank to each row in the partition of a result set.	It assigns ranking to rows in the partition with no gaps in ranking values.
It adds sequential integer number to each row hence rows with equal values will be assigned different row numbers.	It will assign same rank to same value and will skip the next ranking and would assign next rank as previous rank + 1.	If two rows have same value then it will assign same rank to both values and next row will have rank increased by 1 so it will generate consecutive rank values.