

INTRODUCTION TO SQL & DDL

- **What is SQL Constraints ?**

- SQL constraints are used to specify rules for the data in a table.
- Constraints are used to limit the type of data that can go into a table. This ensures the accuracy and reliability of the data in the table. If there is any violation between the constraint and the data action, the action is aborted.
- Constraints can be column level or table level. Column level constraints apply to a column, and table level constraints apply to the whole table.

- **Explain all type of SQL Constraint in brief?**

- The following constraints are commonly used in SQL:
- **NOT NULL** - Ensures that a column cannot have a NULL value
- **UNIQUE** - Ensures that all values in a column are different
- **PRIMARY KEY** - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table
- **FOREIGN KEY** - Prevents actions that would destroy links between tables
- **CHECK** - Ensures that the values in a column satisfies a specific condition
- **DEFAULT** - Sets a default value for a column if no value is specified
- **CREATE INDEX** - Used to create and retrieve data from the database very quickly

- **Difference between Primary key and Unique key?**

Comparison Basis	Primary Key	Unique Key
Basic	The primary key is used as a unique identifier for each record in the table.	The unique key is also a unique identifier for records when the primary key is not present in the table.
NULL	We cannot store NULL values in the primary key column.	We can store NULL value in the unique key column, but only one NULL is allowed.
Purpose	It enforces entity integrity.	It enforces unique data.
Index	The primary key, by default, creates clustered index.	The unique key, by default, creates a non-clustered index.
Number of Key	Each table supports only one primary key.	A table can have more than one unique key.
Value Modification	We cannot change or delete the primary key values.	We can modify the unique key column values.
Uses	It is used to identify each record in the table.	It prevents storing duplicate entries in a column except for a NULL value.
Syntax	We can create a primary key column in the table using the below syntax: CREATE TABLE Employee (Id INT PRIMARY KEY, name VARCHAR(150), address VARCHAR(250))	We can create a unique key column in the table using the below syntax: CREATE TABLE Person (Id INT UNIQUE, name VARCHAR(150), address VARCHAR(250))

- **Difference between drop and truncate?**

S.No	DROP	TRUNCATE
1.	It is used to eliminate the whole database from the table.	It is used to eliminate the tuples from the table.
2.	Integrity constraints get removed in the DROP command.	Integrity constraint doesn't get removed in the Truncate command.
3.	The structure of the table does not exist.	The structure of the table exists.
4.	Here the table is free from memory.	Here, the table is not free from memory.
5.	It is slow as compared to the TRUNCATE command.	It is fast as compared to the DROP command.

- **Difference between truncate and delete?**

Topic	DELETE	TRUNCATE
Definition	DELETE is a SQL command that removes one or multiple rows from a table using conditions.	TRUNCATE is a SQL command that removes all the rows from a table without using any condition.
Language	It is a DML(Data Manipulation Language) command.	It is a DDL(Data Definition Language) command.
Commit	We have to manually COMMIT the changes in the DELETE command.	The changes are automatically COMMIT in the TRUNCATE command.

Process	It deletes rows one by one with conditions.	It deletes all the data at once.
Condition	It uses the WHERE clause as a condition.	It does not take any condition i.e. does not use WHERE clause.
Lock	It locks all the rows for deletion.	It uses table lock to lock the pages for deletion.
Log	It logs every single record in the transaction log.	It only logs the deallocation of the pages where the data is stored.
Transaction space	It uses more transaction space compared to the TRUNCATION command.	It uses less transaction space compared to the DELETE command.
Identity	It does not reset the table identity to its seed value if there is an identity column.	It resets the table identity to its seed value.
Permission	It needs delete permission.	It needs alter table permission.
Speed	It is much slower when comes to big databases.	It is faster or in other words, instant.

- **What is alter command? Explain each sub command of alter with example?**

The SQL **ALTER TABLE** command is used to add, delete or modify columns in an existing table. You should also use the ALTER TABLE command to add and drop various constraints on an existing table.

Syntax

1).The basic syntax of an ALTER TABLE command to add a **New Column** in an existing table is as follows.

```
ALTER TABLE table_name ADD column_name datatype;
```

2).The basic syntax of an ALTER TABLE command to **DROP COLUMN** in an existing table is as follows.

```
ALTER TABLE table_name DROP COLUMN column_name;
```

3).The basic syntax of an ALTER TABLE command to change the **DATA TYPE** of a column in a table is as follows.

```
ALTER TABLE table_name MODIFY COLUMN column_name datatype;
```

4).The basic syntax of an ALTER TABLE command to add a **NOT NULL** constraint to a column in a table is as follows.

```
ALTER TABLE table_name MODIFY column_name datatype NOT NULL;
```

5).The basic syntax of ALTER TABLE to **ADD UNIQUE CONSTRAINT** to a table is as follows.

```
ALTER TABLE table_name
```

```
ADD CONSTRAINT MyUniqueConstraint UNIQUE(column1, column2...);
```

6).The basic syntax of an ALTER TABLE command to **ADD CHECK CONSTRAINT** to a table is as follows.

```
ALTER TABLE table_name
```

```
ADD CONSTRAINT MyUniqueConstraint CHECK (CONDITION);
```

7).The basic syntax of an ALTER TABLE command to **ADD PRIMARY KEY** constraint to a table is as follows.

```
ALTER TABLE table_name
```

```
ADD CONSTRAINT MyPrimaryKey PRIMARY KEY (column1, column2...);
```

8).The basic syntax of an ALTER TABLE command to **DROP CONSTRAINT** from a table is as follows.

ALTER TABLE table_name

DROP CONSTRAINT MyUniqueConstraint;