

Constraints

What are SQL Constraints?

- We use SQL Constraints to specify the rules for the data in a table.
- Constraints are used to limit which type of data must be stored in the database.
- SQL Constraints increase the accuracy and reliability of the data stored in the database.
- Constraints make sure that there is no violation in terms of a transaction of the data.

Constraints in SQL are:

- ✓ NOT NULL
 - ✓ UNIQUE
 - ✓ PRIMARY KEY
 - ✓ FOREIGN KEY
 - ✓ CHECK
 - ✓ DEFAULT
- 
- A series of three parallel white diagonal lines extending from the bottom right towards the top right of the slide.

NOT NULL


It specifies that column is mandatory. This feature allows you to prevent data from being entered into table without certain columns having data in them.

- "The NOT NULL constraint makes sure that a column cannot have a NULL value.
- We can use the NOT NULL constraint either while creating the table in the database or while modifying it.
- We can have more than one NOT NULL columns in a table.

How to add NOT NULL constraint to column/ columns?

NOT NULL constraint on CREATE TABLE

```
CREATE TABLE Employee (  
    ID int NOT NULL,  
    NAME varchar(10) NOT NULL,  
    ADDRESS varchar(20)  
);
```

Several white lines of varying lengths and slopes are drawn in the bottom right corner of the slide, creating a modern, abstract graphic element.


UNIQUE

- The UNIQUE constraint makes sure that all values in a column must be unique.
- This constraint helps to uniquely identify each row in the table.
- We can have more than one UNIQUE columns in a table.
- We can use this constraint on the CREATE and ALTER table command

❖ How to add UNIQUE constraint to column/columns?

UNIQUE constraint on CREATE TABLE

```
CREATE TABLE employee(  
    ID int UNIQUE,  
    NAME varchar(10) NOT NULL,  
    ADDRESS varchar(20)  
);
```

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PRIMARY KEY


- A primary key is a field which can uniquely identify each row in a table.
- Primary keys must contain UNIQUE values, and cannot contain NULL values.
- A table can have only ONE primary key and this primary key can consist of single or multiple columns
- We can use this constraint on the CREATE and ALTER table command

NOT NULL + UNIQUE = PRIMARY KEY

How to add PRIMARY KEY constraint on a Table?

PRIMARY KEY constraint on CREATE TABLE

```
CREATE TABLE employee(  
    ID int ,  
    NAME varchar(10) NOT NULL,  
    ADDRESS varchar(20),  
    PRIMARY KEY (ID)  
);
```

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FOREIGN KEY

- A foreign key is a field (or collection of fields) points to the PRIMARY KEY of another table.
- Table with the foreign key is called the child table and the table with the primary key is called the referenced or parent table.
- The foreign key constraint is used to prevent actions that would destroy links between tables.
- We can use this constraint on the CREATE and ALTER table command

Employee Table

ID	NAME	ADDRESS	DEPT_ID
10101	GOVIND	PUNE	101
10102	RAMESH	PUNE	102
10103	SANDEEP	MUMBAI	103
10104	RAJIYA	BARAMATI	101
10105	GANESH	BANGLORE	102

Foreign key

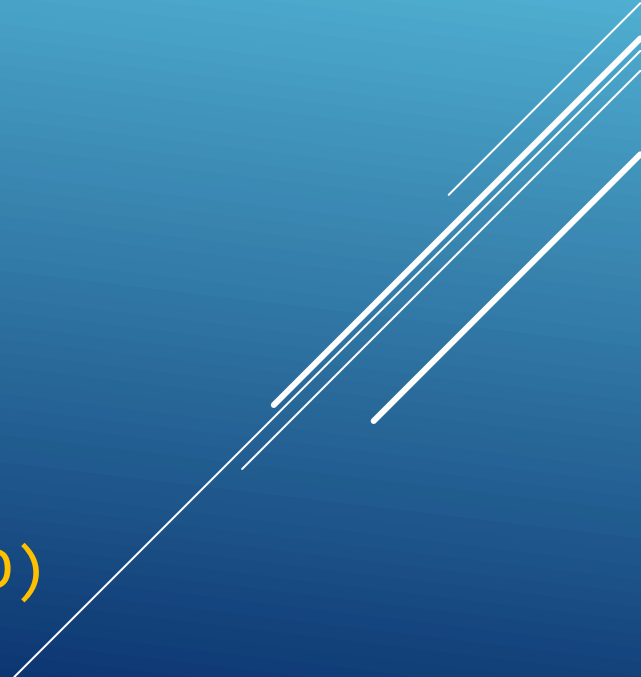
Department

DEPT_ID	DEPT_NAME
101	JAVA DEVELOPER
102	MANAGER
103	DATA SCIENTIST
104	ADMIN

Primary key

```
CREATE TABLE department
(
    D_ID INT PRIMARY KEY,
    D_NAME VARCHAR(40)
);
```

```
CREATE TABLE Employee
(
    Emp_ID int NOT NULL,
    E_Name varchar(30),
    Adress varchar(30),
    d_ID int,
    PRIMARY KEY (Dept_ID),
    FOREIGN KEY (d_ID) REFERENCES Department(D_ID)
);
```



CHECK

- The CHECK constraint makes sure that all values in a column satisfy a specific condition.
- We can use this constraint on the CREATE and ALTER table command

How to add CHECK constraint on a column?

CHECK constraint on CREATE TABLE

```
CREATE TABLE employee(  
    ID int(6),  
    NAME varchar(10) CHECK(NAME != 'Saloni'),  
    ADDRESS varchar(20)  
);
```

ADD Some data to check Constraint A

```
INSERT INTO employee(ID,NAME,ADDRESS)  
VALUES (1, 'Nick', 'Mumbai');
```

```
INSERT INTO employee(ID,NAME,ADDRESS)  
VALUES (2, 'Saloni', 'Mumbai');
```

How to add check constraint on a column?

```
Create table Employee(  
    ID int,  
    Name varchar(10),  
    age int check (age>=18),  
    Address varchar(30)  
);
```

DEFAULT

- The DEFAULT constraint is used to set default values for a column when no value is specified.
- The default value will be added to all new records, if no other value is specified.
- We can use this constraint on the CREATE and ALTER table commands.

How to add **DEFAULT** constraint on a column?

```
CREATE TABLE employee(  
    ID int(6),  
    NAME varchar(30) DEFAULT 'NEW USER',  
    ADDRESS varchar(20)  
);
```

--The End--

