Queries with tables & constraints

Below is customer table with details related to customer:-

id	branch_id	first_name	last_name	DOB	gender

This is the table we want to create with Primary Key as Id, below is the query for it -

```
CREATE TABLE customer(
        id INT          NOT NULL,
        branch_id INT NOT NULL,
        first_name VARCHAR(20),
        last_name VARCHAR(20),
        DOB INT,
        gender CHAR(6),
        PRIMARY KEY(id)
);
```

In the above query we have declared id as PRIMARY KEY.

What is the Primary key?
Ans.
Primary Key helps us to uniquely Identify a tuple in a table. It is NOT NULL and UNIQUE.
Each table has only one primary key. But a primary key can have one or more columns(fields) as part of Primary Key. In case we have multiple fields as Primary key it is called **Composite Key** and all the conditions that apply to single field Primary Key applies to multiple field Composite Key as well.

Let's say for same customer table we want id and branch id as PRIMARY KEY we can use below mentioned declaration if we haven't declared the table yet -

```
CREATE TABLE customer(
        id INT          NOT NULL,
        branch_id INT NOT NULL,
        first_name VARCHAR(20),
        last_name VARCHAR(20),
        DOB INT,
        gender CHAR(6),
        PRIMARY KEY(id, branch_id)
```

);

Let's say we have declared table as mentioned below -

```
CREATE TABLE customer(
        id INT          NOT NULL,
        branch_id INT NOT NULL,
        first_name VARCHAR(20),
        last_name VARCHAR(20),
        DOB INT,
        gender CHAR(6)
);
```

In case we want to make any attribute as Primary Key we need to use ALTER keyword for that as mentioned below -

ALTER TABLE CUSTOMER ADD PRIMARY KEY (ID);

Note:- Primary Key column should already have been declared as NOT NULL at the time of creating the table.

Similarly, we can declare composite primary key(assuming columns or attributes we want to use are declared as NOT NULL) as done below -

ALTER TABLE CUSTOMERS ADD CONSTRAINT Pkey_Custid PRIMARY KEY(ID, NAME);

We have learnt to declare primary key and all the conditions associated for column(s) to be Primary key now let us discuss **how to delete a primary key** -

Let us say have declared a table as below mentioned -

```
CREATE TABLE customer(
        id INT          NOT NULL,
        branch_id INT NOT NULL,
        first_name VARCHAR(20),
        last_name VARCHAR(20),
        DOB INT,
        gender CHAR(6),
        PRIMARY KEY(id)
);
```

Now we want to delete id primary key we will use ALTER and DROP keyword as mentioned below -

ALTER TABLE CUSTOMERS DROP PRIMARY KEY;

What is Foreign Key?
Foreign Key refers to the Primary Key of another table. Each table can have any number of foreign key(s).

Lets us say we have customer and account table with details mentioned below -

customer table-

id	branch_id	first_name	last_name	DOB	gender

account table-

id	balance	customer_id

Declaring customer table -

```
CREATE TABLE customer(
        id INT          NOT NULL,
        branch_id INT NOT NULL,
        first_name VARCHAR(20),
        last_name VARCHAR(20),
        DOB INT,
        gender CHAR(6),
        PRIMARY KEY(id)
);
```

Declaring account table with Primary Key and Foreign Key -

```
CREATE TABLE account(
        id INT NOT NULL,
        balance INT,
        customer_id INT NOT NULL,
        PRIMARY KEY(id),
        FOREIGN KEY(customer_id) REFERENCES customer(id)
);
```

What is UNIQUE constraint?

UNIQUE constraints make sure that all the values in a column which is declared UNIQUE are different.
Then, what is the difference between UNIQUE and PRIMARY KEY.

UNIQUE	PRIMARY KEY
UNIQUE constraint column need not be a PRIMARY KEY.	PRIMARY KEY constraint automatically has a UNIQUE constraint.
Multiple column in a table can have UNIQUE constraint	There is only one PRIMARY KEY in a table

Below we have mentioned example of UNIQUE Constraint -

```
CREATE TABLE customer(
        id INT NOT NULL ,
        name VARCHAR(255) NOT NULL,
        UNIQUE(id)
);
```

Using UNIQUE constraint in multiple columns-

```
CREATE TABLE customer(
        id INT NOT NULL ,
        name VARCHAR(255) NOT NULL,
        CONSTRAINT UNIQUE(id, name)
);
```

What is the CHECK constraint?
The CHECK is used to put limitations on the value range that we can put in a column.

For example let say we have account table as given below,

account_id	balance	customer_id

If we want only customers with a minimum balance of let us say 3000 or more we can use CHECK constraint to ensure that.

```
CREATE TABLE account(
        account_id INT NOT NULL,
        balance INT NOT NULL,
        customer_id INT NOT NULL,
        CHECK(balance >= 3000)
);
```

What is the DEFAULT constraint?
DEFAULT constraint sets a default value for a column.

This default value is added to all the new records, unless other value is specified.

Let us say for all the account we want to have balance 100 when an account is added we can make sure this by using DEFAULT constraint -

```
CREATE TABLE account(
        account_id INT NOT NULL,
        balance INT DEFAULT 100,
        customer_id INT NOT NULL,

);
```

We can drop the default constraint by using DROP keyword -

```
ALTER TABLE account ALTER balance DROP DEFAULT;
```

Also, if suppose we haven't initialise the balance we can later modify as done below-

```
ALTER TABLE account MODIFY balance DEFAULT 100;
```

Below mentioned table summarise the constraint -
Constraints:

Constraint	Description
CHECK	determines whether the value is valid or not from a logical expression.

FOREIGN KEY	Link between two tables by one specific column of both tables. The specified column in one table must be a PRIMARY KEY and referred by the column of another table known as FOREIGN KEY.
UNIQUE	Maintains the uniqueness of a column in a table. More than one UNIQUE column can be used in a table.
NOT NULL	column can not contain any NULL value
PRIMARY KEY	Enforces the table to accept unique data for a specific column and is a unique index for accessing the table faster.

What is TRUNCATE? How is it different from DROP and DELETE?

TRUNCATE removes all the records from the table.
Below is given general form -

```
TRUNCATE TABLE account;
```

After running this query all the data from the account table will be cleared but the table will still exist.

Whereas in case of DROP the whole table will be dropped from the database i.e table record and schema will be cleared from the database.

Also, DELETE is used to delete record of a particular row or conditionals -

DELETE FROM account where account_id = XYZ;

★ **Difference between Delete, Drop and Truncate:**

Delete	Drop	Truncate
DML command	DDL command	DDL command

Removes one, some or all the records in the table.	Removes the entire table structure.	Removes all the records from the table.
Is a slow operation	Relatively faster	Fastest of all.

How to rename the table and column?

Rename a table from cust to customers -

```
ALTER TABLE  cust  RENAME TO customers;
```

Rename column name to surname in customers table

```
ALTER TABLE customers RENAME name TO surname;
```