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Lab – 02

Table Creation, Table Definition Modification, Data Insertion and Deletion

Objective:

- ✓ Students will be able to describe the main database objects, create tables, alter table definition, drop, rename and truncate tables. They will also learn how to insert and modify the data in database.

SQL TABLE:

The database table columns (called also table fields) have their own unique names and have a pre-defined data types. Table columns can have various attributes defining the column functionality (the column is a primary key, there is an index defined on the column, the column has certain default value, etc.).
While table columns describe the data types, the table rows contain the actual data for the columns.
Here is an example of a simple database table, containing customers' data. The first row, listed in bold, contains the names of the table columns:

Table: **Customers**

FirstName	LastName	Email	DOB	Phone
John	Smith	John.Smith@yahoo.com	2/4/1968	626 222-2222
Steven	Goldfish	goldfish@fishhere.net	4/4/1974	323 455-4545
Paula	Brown	pb@herowndomain.org	5/24/1978	416 323-3232
James	Smith	jim@supergig.co.uk	20/10/1980	416 323-8888

CREATE TABLE:

The CREATE TABLE statement is used to create a new table in a database. In that table, if you want to add multiple columns, use the below syntax.

```
01. CREATE TABLE table_name (
02.     column1 datatype,
03.     column2 datatype,
04.     column3 datatype,
05.    ....
06. );
```

The column parameters specify the names of the columns of the table.

The data type parameter specifies the type of data the column can hold (e.g. varchar, integer, date, etc.).

Create Table Example

```
CREATE TABLE Employee(
    EmpId int,
    LastName varchar(255),
    FirstName varchar(255),
    Address varchar(255),
    City varchar(255)
);
```

The EmpId column is of type int and will hold an integer.

The LastName, FirstName, Address, and City columns are of type varchar and will hold characters and the maximum length for these fields is 255 characters.

Insert Value in this Table

The INSERT INTO statement is used to insert new records in a table.
It is possible to write the INSERT INTO statement in two ways.

Syntax

The first way specifies both the column names and the values to be inserted.

If you are adding values for all the columns of the table, then no need to specify the column names in the SQL query. However, make sure that the order of the values is in the same order as the columns in the table.

```
INSERT INTO table_name (column1, column2, column3, ...)
VALUES (value1, value2, value3, ...);

  '2nd way
INSERT INTO table_name
VALUES (value1, value2, value3, ...);
```

Example

Insert value in a 1st way. The column names are used here

```
INSERT INTO Employee    (EmpId,LastName,FirstName,ADDRESS,City)
VALUES (1, 'XYZ', 'ABC', 'India', 'Mumbai' );
  INSERT INTO Employee (EmpId,LastName,FirstName,ADDRESS,City)
VALUES (2, 'X', 'A', 'India', 'Pune' );
```

Insert value in a 2nd way.

```
INSERT INTO Employee
VALUES (3, 'XYZ', 'ABC', 'India', 'Mumbai' );
```

Alter Table Definition:

The `ALTER TABLE` command adds, deletes, or modifies columns in a table.

The `ALTER TABLE` command also adds and deletes various constraints in a table.

The following SQL adds an "Email" column to the "Customers" table:

Example

```
ALTER TABLE Customers
ADD Email varchar(255);
```

The following SQL deletes the "Email" column from the "Customers" table:

Example

```
ALTER TABLE Customers
DROP COLUMN Email;
```

DROP TABLE:

The `DROP TABLE` command deletes a table in the database.

The following SQL deletes the table "Shippers":

Example

```
DROP TABLE Shippers;
```

TRUNCATE TABLE:

The `TRUNCATE TABLE` command deletes the data inside a table, but not the table itself.

The following SQL truncates the table "Categories":

Example

```
TRUNCATE TABLE Categories;
```

UPDATE TABLE:

The UPDATE statement is used to modify the existing records in a table.

Syntax

```
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition;
```

Example

```
UPDATE Employee
SET FirstName= 'KS', City= 'Pune'
WHERE EmpId= 1;
```

If the above query is executed then for EmpId= 1, "Firstname" and "City" column data will be updated.

UPDATE MULTIPLE ROWS:

It is the WHERE clause that determines how many records will be updated.

```
UPDATE Employee
SET City='Pune'
```

DELETE STATEMENT IN SQL:

The DELETE statement is used to delete existing records in a table for a particular Record.

Syntax

```
DELETE FROM table_name WHERE condition;
```

Example

```
01. DELETE FROM Employee WHERE EmpId=1;
```

In Employee table EmpId = 1 record gets deleted.

DELETE ALL RECORDS:

It is possible to delete all rows in a table without deleting the table. This means that the table structure, attributes, and indexes will be intact,

```
01. DELETE FROM table_name;
02.
03. DELETE From Employee  ;
```

When the above query is executed, only table Data gets deleted.

CREATE TABLE

```
SQL> CREATE TABLE Customers(
  2  ID int,
  3  FirstName varchar(255),
  4  LastName varchar(255),
  5  Address varchar(255),
  6  DOB varchar(255),
  7  Phone varchar(255)
  8  );

Table created.
```

INSERT INTO

```
SQL> INSERT INTO Customers
  2  VALUES (1,'Saad','Ahmad','Islamabad','14/03/2004','03247901706');

1 row created.

SQL>  INSERT INTO Customers VALUES(2,'Ada','Arif','Karachi','22/08/2004','03351991668');

1 row created.

SQL>  INSERT INTO Customers VALUES(3,'Haris','Asghar','Islamabad','25/12/2001','123456789');

1 row created.

SQL>  INSERT INTO Customers VALUES(4,'Ahsan','Ashraf','Islamabad','20/12/2005','1234567987');

1 row created.

SQL>  INSERT INTO Customers VALUES(5,'Sohaib','Ahmed','Islamabad','19/02/2003','123456789');

1 row created.

SQL>  INSERT INTO Customers VALUES(6,'Ahmed','Imran','Islamabad','25/08/2003','123456789');

1 row created.

SQL>  INSERT INTO Customers VALUES(
  2  7,'Saim','Ranazai','Kabul','5/08/2003','123456789');

1 row created.

SQL>  INSERT INTO Customers VALUES(8,'Talha','Umer','Sargodha','24/08/2004','123456789');

1 row created.

SQL>  INSERT INTO Customers VALUES(9,'Saad','Hanif','Sargodha','05/08/2003','0335546512');

1 row created.

SQL>  INSERT INTO Customers VALUES(10,'Khizer','Qureshi','Karachi','28/09/2003','031234654');

1 row created.
```

ALTER TABLE

```
SQL> ALTER TABLE Customers
  2  ADD Email varchar(255);

Table altered.
```

UPDATE

```
SQL> UPDATE Customers SET Email='saad.ahmad90090@gmail.com' WHERE Email IS NULL;

10 rows updated.
```

DELETE

```
SQL> DELETE FROM Customers WHERE ID=10;

1 row deleted.
```

DROP TABLE

```
SQL> DROP TABLE Customers;

Table dropped.
```

SELECT

```
FIRSTNAME
--------------------------------------------------------------------------------------------------------------
LASTNAME
--------------------------------------------------------------------------------------------------------------
ADDRESS
--------------------------------------------------------------------------------------------------------------
DOB
--------------------------------------------------------------------------------------------------------------
PHONE
--------------------------------------------------------------------------------------------------------------
EMAIL
--------------------------------------------------------------------------------------------------------------

        9
Saad
Hanif
Sargodha
05/08/2003
0335546512
saad.ahmad90090@gmail.com
```