**mICROsOFT SQL sERVER**

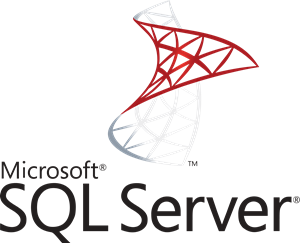
QUERIES AND NOTES

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***B.C.A. III Semester***

NATIONAL POST GRADUATE COLLEGE,

LUCKNOW



**Create Database**

CREATE DATABASE <Database\_name>;

***CREATE DATABASE npgcbca3;***

**Listing Databases/Tables**

***SHOW DATABASES***

***SHOW TABLES***

**Selecting database**

USE <database\_name>

***Use npgcbca3;***

**Deleting database**

DROP <database\_name>;

***Drop npgcbca3;***

**Creating table**

CREATE TABLE <Table\_name>

(<Column\_name\_1> <data\_type> <constraints>,

<Column\_name\_2> <data\_type> <constraints>,

..);

***CREATE TABLE Employee***

***(emp\_id INT PRIMARY KEY,***

***dept\_id INT,***

***emp\_name VARCHAR(30),***

***emp\_address VARCHAR(30),***

***emp\_sal INT);***

Constraints :

● ***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*** - Uniquely identifies a row/record in another table. The FOREIGN KEY constraint is used to prevent actions that would destroy links between tables. E.g.

CREATE TABLE Orders (

OrderID int NOT NULL PRIMARY KEY,

PersonID int FOREIGN KEY REFERENCES Persons(PersonID));

● ***CHECK*** - Ensures that all values in a column satisfies a specific condition

CREATE TABLE Persons (

ID int NOT NULL,

LastName varchar(255) NOT NULL,

FirstName varchar(255),

Age int CHECK (Age>=18));

● ***DEFAULT*** - Sets a default value for a column when no value is specified

CREATE TABLE Persons (

ID int NOT NULL,

LastName varchar(255) NOT NULL,

FirstName varchar(255),

Age int,

City varchar(255) DEFAULT 'Sandnes');

● ***INDEX*** - Used to create and retrieve data from the database very quickly

CREATE INDEX idx\_lastname ON Persons (LastName);

-- TO REMOVE INDEX USE

DROP INDEX table\_name.index\_name;

● ***AUTO\_INCREMENT*** - Auto-increment allows a unique number to be generated automatically when a new record is inserted into a table.

CREATE TABLE Persons (

ID int NOT NULL AUTO\_INCREMENT = 100,

LastName varchar(255) NOT NULL,

FirstName varchar(255),

Age int,

PRIMARY KEY (ID));

-- INITIAL VALUE IS 100. SQL SETS IT TO 1 IF NOT SPECIFIED

**Delete Table**

DROP <table\_name>

***DROP Employee***

**Truncate Table (Deletes only data but not table)**

TRUNCATE <table\_name>

***TRUNCATE Employee***

**Alter Table**

1. Inserting new column

ALTER TABLE <table\_name> Add <column\_name> <data\_type>

***ALTER TABLE Employee Add DOB datetime***

2. Deleting a column

ALTER TABLE <table\_name> DROP COLUMN <column\_name>

***ALTER TABLE Employee DROP COLUMN DOB***

3. Changing datatype of column

ALTER TABLE <table\_name> ALTER COLUMN <column\_name> <data\_type>

***ALTER TABLE Employee ALTER COLUMN emp\_salary BIGINT***

4. Changing column name

EXEC sp\_RENAME ‘<table\_name.old\_column\_name>’, ‘<new\_name>’, ‘COLUMN’

5. Change table name

EXEC sp\_RENAME ‘<table\_name.old\_table\_name>’, ‘<new\_name>’, ‘COLUMN’

**Create View**

In SQL, a view is a virtual table based on the result-set of an SQL statement.

A view contains rows and columns, just like a real table. The fields in a view are fields from one or more real tables in the database.

CREATE VIEW [<view\_name>] AS

SELECT column1, column2, ...

FROM table\_name

WHERE condition;

Examples :

The view "Current Product List" lists all active products (products that are not discontinued) from the "Products" table. The view is created with the following SQL:

CREATE VIEW [Current Product List] AS

SELECT ProductID, ProductName

FROM Products

WHERE Discontinued = No;

Then, we can query the view as follows:

SELECT \* FROM [Current Product List];

Another view in the Northwind sample database selects every product in the "Products" table with a unit price higher than the average unit price:

CREATE VIEW [Products Above Average Price] AS

SELECT ProductName, UnitPrice

FROM Products

WHERE UnitPrice > (SELECT AVG(UnitPrice) FROM Products);

We can query the view above as follows:

SELECT \* FROM [Products Above Average Price];

Another view in the Northwind database calculates the total sale for each category in 1997. Note that this view selects its data from another view called "Product Sales for 1997":

CREATE VIEW [Category Sales For 1997] AS

SELECT DISTINCT Category\_Name, Sum(Product\_Sales) AS Category\_Sales

FROM [Product Sales for 1997]

GROUP BY CategoryName;

We can query the view above as follows:

SELECT \* FROM [Category Sales For 1997];

We can also add a condition to the query. Let's see the total sale only for the category "Beverages":

SELECT \* FROM [Category Sales For 1997]

WHERE CategoryName = 'Beverages';

**Inserting data into table**

INSERT INTO <table\_name> VALUES(<column1\_value>, <column2\_value>, ..);

INSERT INTO <table\_name> (<Column\_name1>, <column\_name\_2>, …)

Values (<column1\_value>, <column2\_value>, …);

***INSERT INTO Department VALUES(100, 'SALES');***

***INSERT INTO Department VALUES(200, 'MARKETING');***

***INSERT INTO Department VALUES(300, 'ADMINISTRATION');***

***INSERT INTO Department VALUES(400, 'PRODUCTION');***

***INSERT INTO Employee VALUES(1000, 100, 'Satish Kumar', 'Lucknow', 10000);***

***INSERT INTO Employee VALUES(1001, 100, 'Abhay Bhist', 'Delhi', 12000);***

***INSERT INTO Employee VALUES(1002, 100, 'Kapil Rajput', 'Mumbai', 15000);***

***INSERT INTO Employee VALUES(1003, 100, 'Ravi Mishra', 'Kanpur', 11400);***

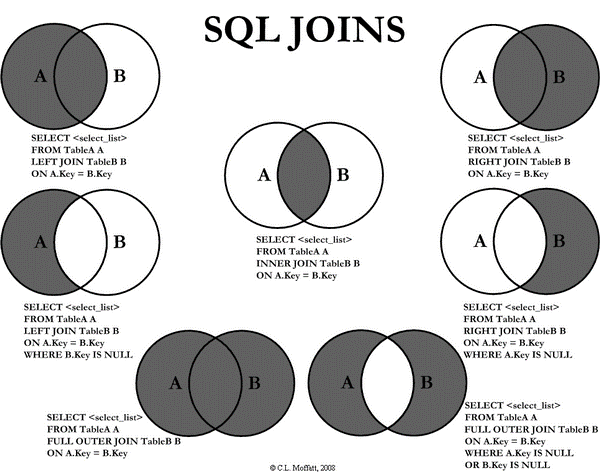
***INSERT INTO Employee VALUES(1004, 100, 'Neeraj Yadav', 'Banaras', 16500);***

**Printing String/Expression**

SELECT “String”;

SELECT <Expression>

**Joins**



***Exercise***

# Retrieve data from tables

Write a SQL statement to display all the information of all salesmen.

SELECT \* FROM Salesman;

Write a SQL statement to display a string "This is SQL Exercise, Practice and Solution".

SELECT "This is SQL Exercise, Practice and Solution";

Write a query to display three numbers in three columns.

SELECT 1,2,3;

Write a query to display the sum of two numbers 10 and 15 from RDMS server.

SELECT 10+15;

Write a query to display the result of an arithmetic expression.

SELECT (10+1)\*5/3+2;

Write a SQL statement to display specific columns like name and commission for all the salesmen.

SELECT Name, Commission FROM Salesman;

Write a query to display the columns in a specific order like order date, salesman id, order number and purchase amount from for all the orders.

SELECT \* From Orders ORDER BY Ord\_Date DESC;

SELECT \* From Orders ORDER BY Salesman\_ID;

Write a query which will retrieve the value of salesman id of all salesmen, getting orders from the customers in orders table without any repeats.

SELECT DISTINCT (Salesman\_id) FROM Orders;

Write a SQL statement to display names and city of salesman, who belongs to the city of Paris.

SELECT Name, City FROM Salesman WHERE city = 'Paris';

Write a SQL statement to display all the information for those customers with a grade of 200.

SELECT \* FROM CUSTOMER WHERE Grade = 200;

Write a SQL query to display the order number followed by order date and the purchase amount for each order which will be delivered by the salesman who is holding the ID 5001.

SELECT Ord\_No, Ord\_Date, Purch\_Amt FROM Orders WHERE Salesman\_ID = 5001;

Write a SQL query to display the Nobel prizes for 1970.

SELECT \* FROM Nobel\_Win Where Year = 1970;

Write a SQL query to know the winner of the 1971 prize for Literature.

SELECT \* FROM Nobel\_Win Where Year = 1971 AND Subject = 'Literature';

Write a SQL query to display the year and subject that won 'Dennis Gabor' his prize.

SELECT Year, Subject FROM Nobel\_Win Where Winner = 'Dennis Gabor';

Write a SQL query to give the name of the 'Physics' winners since the year 1950.

SELECT Name FROM Nobel\_Win WHERE Year >= 1950 AND Subject = ‘Physics’;

Write a SQL query to Show all the details (year, subject, winner, country ) of the Chemistry prize winners between the year 1965 to 1975 inclusive.

SELECT \* FROM Nobel\_Win

WHERE Year BETWEEN 1965 AND 1975 AND Subject = 'Chemistry';

Write a SQL query to show all details of the Prime Ministerial winners after 1972 of Menachem Begin and Yitzhak Rabin.

SELECT \* FROM Nobel\_Win

WHERE Year > 1972 AND Winner IN('Menachem Begin', 'Yitzhak Rabin');

Write a SQL query to show all the details of the winners with first name Louis.

SELECT \* FROM Nobel\_Win WHERE Winner LIKE 'Louis%';

Write a SQL query to show all the winners in Physics for 1970 together with the winner of Economics for 1971.

SELECT \* FROM Nobel\_Win

WHERE (Year = 1970 AND Subject = 'Physics')

OR (Year = 1971 AND Subject = 'Economics');

**OR**

SELECT \* FROM Nobel\_Win

WHERE (Year = 1970 AND Subject = 'Physics')

**UNION**

SELECT \* FROM Nobel\_Win

WHERE (Year = 1971 AND Subject = 'Economics')

Write a SQL query to show all the winners of nobel prize in the year 1970 except the subject Physiology and Economics.

SELECT \* FROM Nobel\_Win WHERE Subject NOT IN('Physiology', 'Economics');

Write a SQL query to show the winners of a 'Physiology' prize in an early year before 1971 together with winners of a 'Peace' prize in a later year on and after the 1974.

SELECT \* FROM Nobel\_Win

WHERE(Year < 1971 AND Subject = 'Physiology')

UNION

SELECT \* FROM Nobel\_Win

WHERE (Year > 1974 AND Subject = 'Peace')

Write a SQL query to find all details of the prize won by Johannes Georg Bednorz.

SELECT \* FROM Nobel\_Win Where Winner = 'Johannes Georg Bednorz';

Write a SQL query to find all the details of the nobel winners for the subject not started with the letter 'P' and arranged the list as the most recent comes first, then by name in order.

SELECT \* FROM Nobel\_Win

WHERE Subject Not Like 'P%' ORDER BY Year DESC, Winner;

Write a SQL query to find all the details of 1970 winners by the ordered to subject and winner name; but the list contain the subject Economics and Chemistry at last.

SELECT \* FROM Nobel\_Win

WHERE YEAR = 1970 ORDER BY

CASE WHEN Subject IN ('Chemistry', 'Economics') THEN 1 ELSE 0

END, Subject, Winner;

Write a SQL query to find all the products with a price between Rs.200 and Rs.600

SELECT \* FROM Item\_Mast WHERE Pro\_Price BETWEEN 200 AND 600;

Write a SQL query to calculate the average price of all products of the manufacturer which code is 16.

SELECT AVG(Pro\_Price) FROM Item\_Mast Where Pro\_Com = 16;

Write a SQL query to find the item name and price in Rs.

SELECT Pro\_Name AS "Item Name", Pro\_Price AS "Price In Rs." From Item\_Mast;

Write a SQL query to display the name and price of all the items with a price is equal or more than Rs.250, and the list contain the larger price first and then by name in ascending order.

SELECT Pro\_Name, Pro\_Price FROM Item\_Mast

WHERE Pro\_Price >= 250 ORDER BY Pro\_Price DESC, Pro\_Name;

Write a SQL query to display the average price of the items for each company, showing only the company code.

SELECT Pro\_Com, AVG(Pro\_Price) FROM Item\_Mast GROUP BY Pro\_Com;

Write a SQL query to find the name and price of the cheapest item(s).

SELECT Pro\_Price, Pro\_Name FROM Item\_Mast

Where Pro\_Price = (SELECT MIN(Pro\_Price) FROM Item\_Mast);

Write a query in SQL to find the last name of all employees, without duplicates.

SELECT DISTINCT Emp\_Lname FROM EMP\_DETAILS

Write a query in SQL to find the data of employees whose last name is 'Snares'

SELECT \* FROM EMP\_DETAILS WHERE Emp\_Lname = 'Snares'

Write a query in SQL to display all the data of employees that work in the department 57.

SELECT \* FROM EMP\_DETAILS WHERE Emp\_Dept = 57

Write a query in SQL to display name, salary and department ID of employees having maximum salary in their respective department.

SELECT Emp\_Name, Emp\_Sal, Dept\_ID FROM Employee

WHERE Emp\_Sal IN (Select MAX(Emp\_Sal) FROM Employee GROUP BY Dept\_ID);

# Boolean and Relational operators

Write a query to display all customers with a grade above 100.

SELECT \* FROM Customer WHERE Grade > 100;

Write a query statement to display all customers in New York who have a grade value above 100.

SELECT \* FROM Customer WHERE Grade > 100 AND City = 'New York';

Write a SQL statement to display all customers, who are either belongs to the city New York or had a grade above 100.

SELECT \* FROM Customer WHERE Grade > 100 OR City = 'New York';

Write a SQL statement to display all the customers, who are either belongs to the city New York or not had a grade above 100.

SELECT \* FROM Customer WHERE City = 'New York' OR NOT GRADE > 100;

Write a SQL query to display those customers who are neither belongs to the city New York nor grade value is more than 100.

SELECT \* FROM Customer WHERE Grade <= 100 AND City <> 'New York';

OR

SELECT \* FROM Customer WHERE NOT (Grade > 100 OR City = 'New York');

Write a SQL statement to display either those orders which are not issued on date 2012-09-10 and issued by the salesman whose ID is 505 and below or those orders which purchase amount is 1000.00 and below.

SELECT \* FROM Orders

WHERE NOT ((Ord\_Date = '2012-09-10' AND Salesman\_ID > 505)

OR Purch\_Amt > 1000);

Write a SQL statement to display salesman\_id, name, city and commission who gets the commission within the range more than 0.10% and less than 0.12%.

SELECT Salesman\_ID, Name, City, Commission FROM Salesman

WHERE Commission > 0.10 AND Commission < 0.12;

Write a SQL query to display all orders where purchase amount less than 200 or exclude those orders which order date is on or greater than 10th Feb,2012 and customer id is below 3009.

SELECT \* FROM Orders

WHERE (Purch\_Amt < 200) OR

NOT (Ord\_Date >= '2012/02/10' AND Customer\_ID < 3009);

Write a SQL statement where

i) order dates are anything but 2012-08-17, or customer id is not greater than 3005

ii) and purchase amount is not below 1000.

SELECT \* FROM Orders

WHERE NOT ((Ord\_Date = '2012/08/17' OR Customer\_ID > 3005)

AND Purch\_Amt < 1000)

Write a SQL query to display order number, purchase amount, archived, the unachieved percentage for those order which exceeds the 50% of the target value of 6000.

SELECT Ord\_No, Purch\_Amt,

(100 \* Purch\_Amt)/6000 AS ‘Achieved %’,

(100 \* (6000 - Purch\_Amt))/6000 AS ‘Unachieved %’

FROM Orders

WHERE (100 \* Purch\_Amt)/6000 > 50

***NOTE : (Achieved And Unachieved % are calculated using purchase amount)***

Write a query in SQL to find the data of employees whose last name is Dosni or Mardy.

SELECT \* FROM Emp\_Details WHERE Emp\_Lname IN ('Dosni', 'Mardy')

Write a query in SQL to display all the data of employees that work in department 47 or department 63.

SELECT \* FROM Emp\_Details WHERE Emp\_Dept IN (47, 63)

Wildcard and Special operators

Write a SQL statement to find those salesmen with all information who come from the city either Paris or Rome.

SELECT \* FROM Salesman WHERE City IN ('Paris', 'Rome');

Write a query to filter those salesmen with all information who comes from any of the cities Paris and Rome.

SELECT \* FROM Salesman WHERE City = 'Paris' OR City = 'Rome';

Write a query to produce a list of salesman\_id, name, city and commision of each salesman who live in cities other than Paris and Rome.

SELECT Salesman\_ID, Name, City, Commission FROM Salesman

WHERE NOT City IN ('Paris', 'Rome');

Write a query to sort out those customers with all information whose ID value is within any of 3007, 3008 and 3009.

SELECT \* FROM Customer WHERE Customer\_ID IN(3007, 3008, 3009);

Write a SQL statement to find those salesmen with all information who gets the commission within a range of 0.12 and 0.14.

SELECT \* FROM Salesman WHERE Commission BETWEEN 0.12 AND 0.14

Write a query to filter all those orders with all information which purchase amount value is within the range 500 and 4000 except those orders of purchase amount value 948.50 and 1983.43.

SELECT \* FROM Orders WHERE (Purch\_Amt BETWEEN 500 AND 4000)

AND NOT Purch\_Amt IN (948.50, 1983.43);

Write a SQL statement to find those salesmen with all other information and name started with any latter within 'A' and 'K'.

SELECT \* FROM Salesman WHERE Name BETWEEN 'A%'AND 'K%'

Write a SQL statement to find those salesmen with all other information and name started with other than any latter within 'A' and 'L'.

SELECT \* FROM Salesman WHERE NOT Name BETWEEN 'A%'AND 'L%'

Write a SQL statement to find that customer with all information whose name begin with the letter 'B'.

SELECT \* FROM Customer WHERE Cust\_Name LIKE 'B%'

Write a SQL statement to find all those customers with all information whose names are ending with the letter 'n'.

SELECT \* FROM Customer WHERE Cust\_Name LIKE '%n'

Write a SQL statement to find those salesmen with all information whose name containing the 1st character is 'N' and the 4th character is 'l' and rests may be any character.

SELECT \* FROM Salesman WHERE Name LIKE 'N\_\_l%'

Write a SQL statement to find those rows from the table testtable which contain the escape character underscore ( \_ ) in its column 'col1'.

SELECT \* FROM TestTable WHERE Col1 Like '%/\_%' ESCAPE '/'

Write a SQL statement to find those rows from the table testtable which does not contain the character underscore ( \_ ) in its column 'col1'.

SELECT \* FROM TestTable WHERE NOT Col1 Like '%/\_%' ESCAPE '/'

Write a SQL statement to find those rows from the table testtable which contain the escape character ( / ) in its column 'col1'.

SELECT \* FROM TestTable WHERE Col1 Like '%//%' ESCAPE '/'

Write a SQL statement to find those rows from the table testtable which does not contain the escape character ( / ) in its column 'col1'.

SELECT \* FROM TestTable WHERE NOT Col1 Like '%//%' ESCAPE '/'

Write a SQL statement to find those rows from the table testtable which contain the string ( \_/ ) in its column 'col1'.

SELECT \* FROM TestTable WHERE Col1 Like '%/\_//%' ESCAPE '/'

Write a SQL statement to find those rows from the table testtable which does not contain the string ( \_/ ) in its column 'col1'.

SELECT \* FROM TestTable WHERE NOT Col1 Like '%/\_//%' ESCAPE '/'

Write a SQL statement to find those rows from the table testtable which contain the character ( % ) in its column 'col1'.

SELECT \* FROM TestTable WHERE Col1 Like '%/%%' ESCAPE '/'

Write a SQL statement to find those rows from the table testtable which does not contain the character ( % ) in its column 'col1'.

SELECT \* FROM TestTable WHERE NOT Col1 Like '%/%%' ESCAPE '/'

Write a SQL statement to find that customer with all information who does not get any grade except NULL.

SELECT \* FROM Customer WHERE Grade IS NULL

Write a SQL statement to find that customer with all information who gets a grade except NULL value.

SELECT \* FROM Customer WHERE NOT Grade IS NULL

Write a query in SQL to display all the data of employees whose last name begins with an 'D'.

SELECT \* FROM Emp\_Details WHERE Emp\_Lname LIKE 'D%'

Aggregate Functions

 Write a SQL statement to find the total purchase amount of all orders.

SELECT SUM(Purch\_Amt) FROM Orders

Write a SQL statement to find the average purchase amount of all orders.

SELECT AVG(Purch\_Amt) FROM Orders

Write a SQL statement to find the number of salesmen currently listing for all of their customers.

SELECT COUNT(DISTINCT Salesman\_ID) FROM Orders

Write a SQL statement know how many customer have listed their names.

SELECT COUNT(\*) FROM Customer

Write a SQL statement find the number of customers who gets at least a gradation for his/her performance.

SELECT COUNT (ALL GRADE) FROM CUSTOMER

Write a SQL statement to get the maximum purchase amount of all the orders.

SELECT MAX(Purch\_Amt) FROM Orders

Write a SQL statement to get the minimum purchase amount of all the orders.

SELECT MIN(Purch\_Amt) FROM Orders

Write a SQL statement which selects the highest grade for each of the cities of the customers.

SELECT MAX(Grade), City FROM Customer GROUP BY City

Write a SQL statement to find the highest purchase amount ordered by the each customer with their ID and highest purchase amount.

SELECT MAX(Purch\_Amt), Customer\_ID FROM Orders GROUP BY Customer\_ID

Write a SQL statement to find the highest purchase amount ordered by the each customer on a particular date with their ID, order date and highest purchase amount.

SELECT MAX(Purch\_Amt), Customer\_ID, Ord\_Date FROM Orders

GROUP BY Customer\_ID, Ord\_Date

Write a SQL statement to find the highest purchase amount on a date '2012-08-17' for each salesman with their ID.

SELECT MAX(Purch\_Amt), Salesman\_ID FROM Orders

WHERE Ord\_Date = '2012-08-17' GROUP BY Salesman\_ID

Write a SQL statement to find the highest purchase amount with their ID and order date, for only those customers who have highest purchase amount in a day is more than 2000.

SELECT MAX(Purch\_Amt), Customer\_ID, Ord\_Date FROM Orders

GROUP BY Customer\_ID, Ord\_Date HAVING MAX(Purch\_Amt) > 2000

Write a SQL statement to find the highest purchase amount with their ID and order date, for those customers who have a higher purchase amount in a day is within the range 2000 and 6000.

SELECT MAX(Purch\_Amt), Customer\_ID, Ord\_Date FROM Orders

GROUP BY Customer\_ID, Ord\_Date HAVING MAX(Purch\_Amt) BETWEEN 2000 AND 6000

Write a SQL statement to find the highest purchase amount with their ID and order date, for only those customers who have a higher purchase amount in a day is within the list 2000, 3000, 5760 and 6000.

SELECT MAX(Purch\_Amt), Customer\_ID, Ord\_Date FROM Orders

GROUP BY Customer\_ID, Ord\_Date HAVING MAX(Purch\_Amt) IN(2000, 3000, 5760, 6000)

Write a SQL statement to find the highest purchase amount with their ID, for only those customers whose ID is within the range 3002 and 3007.

SELECT MAX(Purch\_Amt), Customer\_ID FROM Orders

WHERE Customer\_ID BETWEEN 3002 AND 3007 GROUP BY Customer\_ID

Write a SQL statement to display customer details (ID and purchase amount) whose IDs are within the range 3002 and 3007 and highest purchase amount is more than 1000.

SELECT MAX(Purch\_Amt), Customer\_ID FROM Orders

WHERE Customer\_ID BETWEEN 3002 AND 3007

GROUP BY Customer\_ID HAVING Max(Purch\_Amt) > 1000

Write a SQL statement to find the highest purchase amount with their ID, for only those salesmen whose ID is within the range 5003 and 5008.

SELECT MAX(Purch\_Amt), Salesman\_ID FROM Orders

WHERE Salesman\_ID BETWEEN 5003 AND 5008 GROUP BY Salesman\_ID

Write a SQL statement that counts all orders for a date August 17th, 2012.

SELECT COUNT(\*) FROM Orders WHERE Ord\_Date = '2012/08/17'

Write a SQL statement that count the number of salesmen for whom a city is specified. Note that there may be spaces or no spaces in the city column if no city is specified.

SELECT COUNT(\*) FROM Salesman WHERE City IS NOT NULL

Write a query that counts the number of salesmen with their order date and ID registering orders for each day.

SELECT Ord\_Date, Salesman\_ID, COUNT(\*) FROM Orders

GROUP BY Ord\_Date, Salesman\_ID

 Write a SQL query to calculate the average price of all the products.

SELECT AVG(Pro\_Price) FROM Item\_Mast

Write a SQL query to find the number of products with a price more than or equal to Rs.350.

SELECT COUNT(\*) FROM Item\_Mast WHERE Pro\_Price >= 350

Write a SQL query to display the average price of each company's products, along with their code.

SELECT AVG(Pro\_Price), Pro\_Com From Item\_Mast GROUP BY Pro\_Com

Write a query in SQL to find the sum of the allotment amount of all departments.

SELECT SUM(Dpt\_Allotment) FROM Emp\_Department

Write a query in SQL to find the number of employees in each department along with the department code.

SELECT COUNT(\*), Emp\_Dept FROM Emp\_Details GROUP BY Emp\_Dept

Formatting Output

Write a SQL statement to display the commission with the percent sign ( % ) with salesman ID, name and city columns for all the salesmen.

SELECT Salesman\_ID, Name, City, CONCAT((100 \* Commission),'%') AS "% Commission" FROM Salesman

Write a SQL statement to find out the number of orders booked for each day and display it in such a format like "For 2001-10-10 there are 15 orders".

SELECT CONCAT('For ', Ord\_Date, ' there are ', COUNT(\*), ' Orders')

AS "Number Of Orders" FROM Orders GROUP BY Ord\_Date

Write a query to display the orders according to the order number arranged by ascending order.

SELECT \* FROM Orders ORDER BY Ord\_No

Write a SQL statement to arrange the orders according to the order date in such a manner that the latest date will come first then previous dates.

SELECT \* FROM Orders ORDER BY Ord\_Date DESC

Write a SQL statement to display the orders with all information in such a manner that, the older order date will come first and the highest purchase amount of same day will come first.

SELECT \* FROM Orders ORDER BY Ord\_Date ASC, Purch\_Amt DESC

Write a SQL statement to display the customer name, city, and grade, etc. and the display will be arranged according to the smallest customer ID.

SELECT Cust\_Name, City, Grade FROM Customer ORDER BY Customer\_ID

Write a SQL statement to make a report with salesman ID, order date and highest purchase amount in such an arrangement that, the smallest salesman ID will come first along with their smallest order date.

SELECT Salesman\_ID, Ord\_Date, MAX(Purch\_Amt) FROM Orders

GROUP BY Salesman\_ID, Ord\_Date

ORDER BY Salesman\_ID, Ord\_Date

Write a SQL statement to display customer name, city and grade in such a manner that, the customer holding highest grade will come first.

SELECT Cust\_Name, City, Grade FROM Customer ORDER BY Grade DESC

Write a SQL statement to make a report with customer ID in such a manner that, the largest number of orders booked by the customer will come first along with their highest purchase amount.

SELECT Customer\_ID, COUNT(\*), MAX(Purch\_Amt) FROM Orders

GROUP BY Customer\_ID ORDER BY COUNT DESC

Write a SQL statement to make a report with order date in such a manner that, the latest order date will come last along with the total purchase amount and total commission (15% for all salesmen) for that date.

SELECT Ord\_Date, SUM(Purch\_Amt), ((SUM(Purch\_Amt)/100) \* 15) AS "Commission" FROM Orders GROUP BY Ord\_Date ORDER BY Ord\_Date

# Query on Multiple Tables

Write a query to find those customers with their name and those salesmen with their name and city who lives in the same city.

SELECT Customer.Cust\_Name, Salesman.Name, Salesman.City FROM Salesman, Customer

WHERE Customer.City = Salesman.City

Write a SQL statement to find the names of all customers along with the salesmen who works for them.

SELECT Customer.Cust\_Name, Salesman.Name FROM Salesman, Customer

WHERE Customer.Salesman\_ID = Salesman.Salesman\_ID

Write a SQL statement to display all those orders by the customers not located in the same cities where their salesmen live.

SELECT Orders.Ord\_No, Customer.Cust\_Name, Orders.Customer\_ID, Orders.Salesman\_ID

FROM Orders, Customer, Salesman

WHERE Customer.City <> Salesman.City

AND Orders.Customer\_ID = Customer.Customer\_ID

AND Orders.Salesman\_ID = Salesman.Salesman\_ID

Write a SQL statement that finds out each order number followed by the name of the customers who made the order.

SELECT Orders.Ord\_No, Customer.Cust\_Name

FROM Orders, Customer

WHERE Orders.Customer\_ID = Customer.Customer\_ID

Write a SQL statement that sorts out the customer and their grade who made an order. Each of the customers must have a grade and served by at least a salesman, who belongs to a city.

SELECT Customer.Customer\_ID, Customer.Grade, Salesman.City

FROM Customer, Salesman, Orders

WHERE Orders.Customer\_ID = Customer.Customer\_ID AND

Orders.Salesman\_ID = Salesman.Salesman\_ID

AND Customer.Grade IS NOT NULL

AND Salesman.City IS NOT NULL

Write a query that produces all customers with their name, city, salesman and commission, who served by a salesman and the salesman works at a rate of the commission within 12% to 14%.

SELECT Customer.Cust\_Name, Customer.City, Salesman.Name,

Salesman.Salesman\_ID, CONCAT(Salesman.Commission \* 100, '%') AS "Commission %" FROM Salesman, Customer

WHERE Customer.Salesman\_ID = Salesman.Salesman\_ID

AND Salesman.Commission BETWEEN 0.12 AND 0.14

 Write a SQL statement that produces all orders with the order number, customer name, commission rate and earned commission amount for those customers who carry their grade is 200 or more and served by an existing salesman.

SELECT Orders.Ord\_No, Customer.Cust\_Name,

CONCAT((100 \* Salesman.Commission), '%') AS "Commission %",

(Orders.Purch\_Amt \* Salesman.Commission) AS "Commission\_Amt"

FROM Customer, Orders, Salesman

WHERE Orders.Salesman\_ID = Salesman.Salesman\_ID

AND Orders.Customer\_ID = Customer.Customer\_ID

AND Customer.Grade >= 200

SORTING and FILTERING on HR Database

# Write a query in SQL to display the full name (first and last name), and salary for those employees who earn below 6000.

# SELECT CONCAT(First\_Name, ' ', Last\_Name) AS "Full Name", Salary FROM Employees WHERE SALARY < 6000

Write a query in SQL to display the first and last\_name, department number and salary for those employees who earn more than 8000.

SELECT First\_Name, Last\_Name, Department\_ID, Salary FROM Employees

WHERE SALARY > 8000

Write a query in SQL to display the first and last name, and department number for all employees whose last name is “McEwen”.

SELECT First\_Name, Last\_Name, Department\_ID FROM Employees

WHERE Last\_Name = 'McEwen'

Write a query in SQL to display all the information for all employees without any department number.

SELECT \* FROM Employees WHERE Department\_ID IS NULL

Write a query in SQL to display all the information about the department Marketing.

SELECT \* FROM Departments WHERE Department\_Name = 'Marketing'

Write a query in SQL to display the full name (first and last), hire date, salary, and department number for those employees whose first name does not containing the letter M and make the result set in ascending order by department number.

SELECT CONCAT(First\_Name, ' ', Last\_Name) AS "Full Name",

Hire\_Date, Salary, Department\_ID FROM Employees

WHERE NOT First\_Name LIKE '%M%' ORDER BY Department\_ID

Write a query in SQL to display all the information of employees whose salary is in the range of 8000 and 12000 and commission is not null or department number is except the number 40, 120 and 70 and they have been hired before June 5th, 1987.

SELECT \* FROM Employees

WHERE (Salary BETWEEN 8000 AND 12000 AND Commission\_PCT IS NOT NULL)

OR (Department\_ID IN(40, 120, 70) AND Hire\_Date < '1987/06/05')

Write a query in SQL to display the full name (first and last name), and salary for all employees who does not earn any commission.

SELECT CONCAT(First\_Name, ' ', Last\_Name) AS "Full Name", Salary

FROM Employees WHERE Commission\_PCT = 0

Write a query in SQL to display the full name (first and last), the phone number and email separated by hyphen, and salary, for those employees whose salary is within the range of 9000 and 17000. The column headings assign with Full\_Name, Contact\_Details and Remuneration respectively.

SELECT CONCAT(First\_Name, ' ', Last\_Name) AS "Full\_Name",

CONCAT(Phone\_Number, '-', Email) AS "Contact\_Details",

Salary AS "Remuneration"

FROM Employees WHERE Salary BETWEEN 9000 AND 17000

Write a query in SQL to display the first and last name, and salary for those employees whose first name is ending with the letter m.

SELECT First\_Name, Last\_Name, Salary FROM Employees

WHERE First\_Name Like '%m'

Write a query in SQL to display the full name (first and last) name, and salary, for all employees whose salary is out of the range 7000 and 15000 and make the result set in ascending order by the full name.

SELECT CONCAT(First\_Name, ' ', Last\_Name) AS "Full\_Name",

Salary FROM Employees

WHERE NOT Salary BETWEEN 7000 AND 15000

ORDER BY CONCAT(First\_Name, ' ', Last\_Name)

Write a query in SQL to display the full name (first and last), job id and date of hire for those employees who was hired during November 5th, 2007 and July 5th, 2009.

SELECT CONCAT(FIRST\_NAME, ' ', LAST\_NAME) AS "FULL\_NAME",

JOB\_ID, HIRE\_DATE FROM EMPLOYEES

WHERE HIRE\_DATE BETWEEN '2007-11-05' AND '2009-07-5'

Write a query in SQL to display the the full name (first and last name), and department number for those employees who works either in department 70 or 90.

SELECT CONCAT(FIRST\_NAME, ' ', LAST\_NAME) AS "FULL\_NAME",

DEPARTMENT\_ID FROM EMPLOYEES WHERE DEPARTMENT\_ID IN (70, 90)

Write a query in SQL to display the full name (first and last name), salary, and manager number for those employees who is working under a manager.

SELECT CONCAT(FIRST\_NAME, ' ', LAST\_NAME) AS "FULL\_NAME",

SALARY, MANAGER\_ID FROM EMPLOYEES WHERE MANAGER\_ID IS NOT NULL

Write a query in SQL to display all the information from Employees table for those employees who was hired before June 21st, 2002.

SELECT \* FROM EMPLOYEES WHERE HIRE\_DATE < '2002-06-21'

Write a query in SQL to display the first and last name, email, salary and manager ID, for those employees whose managers are hold the ID 120, 103 or 145.

SELECT FIRST\_NAME, LAST\_NAME, EMAIL, SALARY, MANAGER\_ID FROM EMPLOYEES

WHERE MANAGER\_ID IN (120, 103, 145)

Write a query in SQL to display all the information for all employees who have the letters D, S, or N in their first name and also arrange the result in descending order by salary.

SELECT \* FROM EMPLOYEES

WHERE FIRST\_NAME LIKE '%D%'

OR FIRST\_NAME LIKE '%S%'

OR FIRST\_NAME LIKE '%N%'

ORDER BY SALARY DESC

Write a query in SQL to display the full name (first name and last name), hire date, commission percentage, email and telephone separated by '-', and salary for those employees who earn the salary above 11000 or the seventh digit in their phone number equals 3 and make the result set in a descending order by the first name.

SELECT CONCAT(FIRST\_NAME, ‘ ‘, LAST\_NAME) AS “FULL\_NAME”,

HIRE\_DATE, COMMISSION\_PCT,

CONCAT(EMAIL, ‘-‘, PHONE\_NUMBER) AS “CONTACT\_DETAILS”

FROM EMPLOYEES

WHERE SALARY > 11000

OR PHONE\_NUMBER LIKE ‘\_\_\_\_\_\_7%’

ORDER BY FIRST\_NAME DESC

Write a query in SQL to display the first and last name, and department number for those employees who holds a letter s as a 3rd character in their first name.

SELECT FIRST\_NAME, LAST\_NAME, DEPARTMENT\_ID FROM EMPLOYEES

WHERE FIRST\_NAME LIKE ‘\_\_s%’

Write a query in SQL to display the employee ID, first name, job id, and department number for those employees who is working except the departments 50,30 and 80.

SELECT EMPLOYEE\_ID, FIRST\_NAME, JOB\_ID, DEPARTMENT\_ID FROM EMPLOYEES

WHERE NOT DEPARTMENT\_ID IN (80, 30, 50)

Write a query in SQL to display the employee Id, first name, job id, and department number for those employees whose department number equals 30, 40 or 90.

SELECT EMPLOYEE\_ID, FIRST\_NAME, JOB\_ID, DEPARTMENT\_ID FROM EMPLOYEES

WHERE DEPARTMENT\_ID IN (40, 30, 90)

Write a query in SQL to display the ID for those employees who did two or more jobs in the past.

SELECT COUNT(\*), EMPLOYEE\_ID FROM JOB\_HISTORY

GROUP BY EMPLOYEE\_ID

HAVING COUNT(\*) > 1

Write a query in SQL to display job ID, number of employees, sum of salary, and difference between highest salary and lowest salary for a job.

SELECT JOB\_ID, COUNT(\*) AS "NUM\_EMPLOYEES",

SUM(SALARY) AS "SUM\_SALARY",

(MAX(SALARY) - MIN(SALARY)) AS "DIFFERENCE"

FROM EMPLOYEES GROUP BY JOB\_ID

Write a query in SQL to display job ID for those jobs that were done by two or more for more than 300 days.

SELECT JOB\_ID FROM JOB\_HISTORY

WHERE (END\_DATE - START\_DATE) > 300

GROUP BY JOB\_ID HAVING COUNT(\*) > 1

Write a query in SQL to display the country ID and number of cities in that country we have.

SELECT COUNTRY\_ID, COUNT(\*) AS "# CITIES" FROM LOCATIONS

GROUP BY COUNTRY\_ID

Write a query in SQL to display the manager ID and number of employees managed by the manager.

SELECT MANAGER\_ID, COUNT(\*) AS "NUM\_EMPLOYEES" FROM EMPLOYEES

GROUP BY MANAGER\_ID

Write a query in SQL to display the details of jobs in descending sequence on job title.

SELECT \* FROM JOBS ORDER BY JOB\_TITLE DESC

Write a query in SQL to display the first and last name and date of joining of the employees who is either Sales Representative or Sales Man.

SELECT FIRST\_NAME, LAST\_NAME, HIRE\_DATE FROM EMPLOYEES

WHERE JOB\_ID IN ('SA\_MAN', 'SA\_REP')

Write a query in SQL to display the average salary of employees for each department who gets a commission percentage.

SELECT AVG(SALARY), DEPARTMENT\_ID FROM EMPLOYEES

WHERE COMMISSION\_PCT IS NOT NULL GROUP BY DEPARTMENT\_ID

Write a query in SQL to display those departments where any manager is managing 4 or more employees.

SELECT DEPARTMENT\_ID FROM EMPLOYEES GROUP BY DEPARTMENT\_ID

HAVING COUNT(\*) >= 4

Write a query in SQL to display those departments where more than ten employees work who got a commission percentage.

SELECT DEPARTMENT\_ID FROM EMPLOYEES WHERE COMMISSION\_PCT IS NOT NULL

GROUP BY DEPARTMENT\_ID HAVING COUNT(\*) > 10

Write a query in SQL to display the employee ID and the date on which he ended his previous job.

SELECT EMPLOYEE\_ID, MAX(END\_DATE) FROM JOB\_HISTORY GROUP BY EMPLOYEE\_ID

Write a query in SQL to display the details of the employees who have no commission percentage and salary within the range 7000 to 12000 and works in that department which number is 50.

SELECT \* FROM EMPLOYEES WHERE COMMISSION IS NULL

AND SALARY BETWEEN 7000 AND 12000

AND DEPARTMENT\_ID = 50

Write a query in SQL to display the job ID for those jobs which average salary is above 8000.

SELECT JOB\_ID FROM EMPLOYEES GROUP BY JOB\_ID HAVING AVG(SALARY) > 8000

Write a query in SQL to display job Title, the difference between minimum and maximum salaries for those jobs which max salary within the range 12000 to 18000.

SELECT JOB\_TITLE, (MAX\_SALARY - MIN\_SALARY) AS "DIFFERENCE"

FROM JOBS WHERE MAX\_SALARY BETWEEN 12000 AND 18000

Write a query in SQL to display all those employees whose first name or last name starts with the letter D.

SELECT \* FROM EMPLOYEES WHERE FIRST\_NAME LIKE 'D%' OR LAST\_NAME LIKE 'D%'

Write a query in SQL to display the details of jobs which minimum salary is greater than 9000.

SELECT \* FROM JOBS WHERE MIN\_SALARY > 9000

Write a query in SQL to display those employees who joined after 7th September, 1987.

SELECT \* FROM EMPLOYEES WHERE HIRE\_DATE > '1987-09-07'

JOINS

Write a SQL statement to prepare a list with salesman name, customer name and their cities for the salesmen and customer who belongs to the same city.

SELECT SALESMAN.NAME, CUSTOMER.CUST\_NAME, SALESMAN.CITY

FROM SALESMAN INNER JOIN CUSTOMER ON SALESMAN.CITY = CUSTOMER.CITY

**THIS IS SAME AS**

SELECT SALESMAN.NAME, CUSTOMER.CUST\_NAME, SALESMAN.CITY

FROM SALESMAN, CUSTOMER WHERE SALESMAN.CITY = CUSTOMER.CITY

Write a SQL statement to make a list with order no, purchase amount, customer name and their cities for those orders which order amount between 500 and 2000.

SELECT ORDERS.ORD\_NO, ORDERS.PURCH\_AMT, CUSTOMER.CUST\_NAME, CUSTOMER.CITY FROM CUSTOMER INNER JOIN ORDERS

ON CUSTOMER.CUSTOMER\_ID = ORDERS.CUSTOMER\_ID

WHERE ORDERS.PURCH\_AMT BETWEEN 500 AND 2000

Write a SQL statement to know which salesman are working for which customer.

SELECT SALESMAN.NAME, CUSTOMER.CUST\_NAME

FROM CUSTOMER INNER JOIN SALESMAN

ON SALESMAN.SALESMAN\_ID = CUSTOMER.SALESMAN\_ID

Write a SQL statement to find the list of customers who appointed a salesman for their jobs who gets a commission from the company is more than 12%.

SELECT CUSTOMER.CUST\_NAME,

(100 \* SALESMAN.COMMISSION) AS "COMMISSION %", SALESMAN.NAME

FROM CUSTOMER INNER JOIN SALESMAN

ON CUSTOMER.SALESMAN\_ID = SALESMAN.SALESMAN\_ID

WHERE SALESMAN.COMMISSION > 0.12

Write a SQL statement to find the list of customers who appointed a salesman for their jobs who does not live in the same city where their customer lives, and gets a commission is above 12% .

SELECT CUSTOMER.CUST\_NAME,

(100 \* SALESMAN.COMMISSION) AS "COMMISSION %", SALESMAN.NAME

FROM CUSTOMER INNER JOIN SALESMAN

ON CUSTOMER.SALESMAN\_ID = SALESMAN.SALESMAN\_ID

WHERE SALESMAN.COMMISSION > 0.12

AND SALESMAN.CITY <> CUSTOMER.CITY

Write a SQL statement to find the details of a order i.e. order number, order date, amount of order, which customer gives the order and which salesman works for that customer and how much commission he gets for an order.

SELECT ORDERS.ORD\_NO, ORDERS.PURCH\_AMT, ORDERS.ORD\_DATE,

CUSTOMER.CUST\_NAME, SALESMAN.NAME AS "SALESMAN\_NAME",

(SALESMAN.COMMISSION \* 100) AS "COMMISSION %"

FROM ORDERS INNER JOIN CUSTOMER

ON ORDERS.CUSTOMER\_ID = CUSTOMER.CUSTOMER\_ID

INNER JOIN SALESMAN

ON ORDERS.SALESMAN\_ID = SALESMAN.SALESMAN\_ID

Write a SQL statement to make a join on the tables salesman, customer and orders in such a form that the same column of each table will appear once and only the relational rows will come.

SELECT \* FROM ORDERS NATURAL JOIN CUSTOMER NATURAL JOIN SALESMAN

Write a SQL statement to make a list in ascending order for the customer who works either through a salesman or by own.

SELECT CUSTOMER.CUSTOMER\_ID, CUSTOMER.CUST\_NAME, CUSTOMER.CITY, SALESMAN.NAME AS "SALESMAN"

FROM CUSTOMER LEFT JOIN SALESMAN

ON CUSTOMER.SALESMAN\_ID = SALESMAN.SALESMAN\_ID

ORDER BY CUSTOMER.CUSTOMER\_ID

Write a SQL statement to make a list in ascending order for the customer who holds a grade less than 300 and works either through a salesman or by own.

SELECT CUSTOMER.CUSTOMER\_ID, CUSTOMER.CUST\_NAME, CUSTOMER.CITY, CUSTOMER.GRADE, SALESMAN.NAME AS "SALESMAN"

FROM CUSTOMER LEFT JOIN SALESMAN

ON CUSTOMER.SALESMAN\_ID = SALESMAN.SALESMAN\_ID

WHERE GRADE < 300

Write a SQL statement to make a report with customer name, city, order number, order date, and order amount in ascending order according to the order date to find that either any of the existing customers have placed no order or placed one or more orders.

SELECT CUSTOMER.CUST\_NAME, CUSTOMER.CITY, ORDERS.ORD\_NO,

ORDERS.ORD\_DATE, ORDERS.PURCH\_AMT

FROM CUSTOMER LEFT JOIN ORDERS

ON CUSTOMER.CUSTOMER\_ID = ORDERS.CUSTOMER\_ID

ORDER BY ORDERS.ORD\_DATE

Write a SQL statement to make a report with customer name, city, order number, order date, order amount salesman name and commission to find that either any of the existing customers have placed no order or placed one or more orders by their salesman or by own.

SELECT CUSTOMER.CITY, CUSTOMER.CUST\_NAME, ORDERS.ORD\_NO,

ORDERS.PURCH\_AMT, SALESMAN.NAME AS "SALESMAN",

SALESMAN.COMMISSION FROM CUSTOMER LEFT JOIN ORDERS

ON CUSTOMER.CUSTOMER\_ID = ORDERS.CUSTOMER\_ID

LEFT JOIN SALESMAN ON SALESMAN.SALESMAN\_ID = CUSTOMER.SALESMAN\_ID

Write a SQL statement to make a list in ascending order for the salesmen who works either for one or more customer or not yet join under any of the customers.

SELECT SALESMAN.SALESMAN\_ID, SALESMAN.NAME,

SALESMAN.CITY, CUSTOMER.CUST\_NAME FROM SALESMAN LEFT JOIN CUSTOMER

ON CUSTOMER.SALESMAN\_ID = SALESMAN.SALESMAN\_ID

ORDER BY SALESMAN.SALESMAN\_ID

Write a SQL statement to make a list for the salesmen who works either for one or more customer or not yet join under any of the customers who placed either one or more orders or no order to their supplier.

SELECT SALESMAN.SALESMAN\_ID, SALESMAN.NAME, SALESMAN.CITY, CUSTOMER.CUST\_NAME,CUSTOMER.GRADE, ORDERS.ORD\_NO, ORDERS.PURCH\_AMT

FROM SALESMAN

LEFT JOIN CUSTOMER ON CUSTOMER.SALESMAN\_ID = SALESMAN.SALESMAN\_ID

LEFT JOIN ORDERS ON ORDERS.CUSTOMER\_ID = CUSTOMER.CUSTOMER\_ID

Write a SQL statement to make a list for the salesmen who either work for one or more customers or yet to join any of the customer. The customer may have placed, either one or more orders on or above order amount 2000 and must have a grade, or he may not have placed any order to the associated supplier.

SELECT CUSTOMER.CUST\_NAME, CUSTOMER.CITY, CUSTOMER.GRADE,

SALESMAN.SALESMAN\_NAME, ORDERS.ORD\_NO, ORDERS.ORD\_DATE, ORDERS.PURCH\_AMT

FROM SALESMAN LEFT JOIN CUSTOMER

ON CUSTOMER.SALESMAN\_ID = SALESMAN.SALESMAN\_ID LEFT JOIN ORDERS

ON ORDERS.CUSTOMER\_ID = CUSTOMER.CUSTOMER\_ID

WHERE (PURCH\_AMT >= 2000 AND GRADE IS NOT NULL)

OR ORDERS.ORD\_NO IS NULL

Write a SQL statement to make a report with customer name, city, order no. order date, purchase amount for those customers from the existing list who placed one or more orders or which order(s) have been placed by the customer who is not on the list.

SELECT CUSTOMER.CUST\_NAME, CUSTOMER.CITY, ORDERS.ORD\_NO,

ORDERS.ORD\_DATE, ORDERS.PURCH\_AMT

FROM ORDERS LEFT JOIN CUSTOMER

ON ORDERS.CUSTOMER\_ID = CUSTOMER.CUSTOMER\_ID

Write a SQL statement to make a report with customer name, city, order no. order date, purchase amount for only those customers on the list who must have a grade and placed one or more orders or which order(s) have been placed by the customer who is neither in the list not have a grade.

SELECT CUSTOMER.CUST\_NAME, CUSTOMER.CITY, ORDERS.ORD\_NO, ORDERS.ORD\_DATE, ORDERS.PURCH\_AMT

FROM CUSTOMER FULL OUTER JOIN ORDERS

ON CUSTOMER.CUSTOMER\_ID = ORDERS.CUSTOMER\_ID

WHERE (CUSTOMER.CUSTOMER\_ID IS NOT NULL AND CUSTOMER.GRADE IS NOT NULL)

OR (CUSTOMER.CUSTOMER\_ID IS NULL AND CUSTOMER.GRADE IS NULL)

Write a SQL statement to make a cartesian product between salesman and customer i.e. each salesman will appear for all customer and vice versa.

SELECT SALESMAN.SALESMAN\_NAME, CUSTOMER.CUST\_NAME FROM SALESMAN, CUSTOMER

OR

SELECT SALESMAN.SALESMAN\_NAME, CUSTOMER.CUST\_NAME

FROM SALESMAN CROSS JOIN CUSTOMER

Write a SQL statement to make a cartesian product between salesman and customer i.e. each salesman will appear for all customer and vice versa for that customer who belongs to a city.

SELECT SALESMAN.SALESMAN\_NAME, CUSTOMER.CUST\_NAME , SALESMAN.CITY

FROM SALESMAN CROSS JOIN CUSTOMER

WHERE SALESMAN.CITY IS NOT NULL

Write a SQL statement to make a cartesian product between salesman and customer i.e. each salesman will appear for all customer and vice versa for those salesmen who belongs to a city and the customers who must have a grade.

SELECT SALESMAN.SALESMAN\_NAME, CUSTOMER.\* , SALESMAN.\*

FROM SALESMAN CROSS JOIN CUSTOMER

WHERE SALESMAN.CITY IS NOT NULL AND CUSTOMER.GRADE IS NOT NULL

Write a SQL statement to make a cartesian product between salesman and customer i.e. each salesman will appear for all customer and vice versa for those salesmen who must belong a city which is not the same as his customer and the customers should have an own grade.

SELECT SALESMAN.SALESMAN\_NAME, CUSTOMER.\* , SALESMAN.\*

FROM SALESMAN CROSS JOIN CUSTOMER

WHERE SALESMAN.CITY IS NOT NULL AND CUSTOMER.GRADE IS NOT NULL

AND CUSTOMER.CITY <> SALESMAN.CITY

Write a SQL query to display all the data from the item\_mast, including all the data for each item's producer company.

SELECT \* FROM ITEM\_MAST INNER JOIN COMPANY\_MAST

ON ITEM\_MAST.PRO\_COM = COMPANY\_MAST.COM\_ID

Write a SQL query to display the item name, price, and company name of all the products.

SELECT ITEM\_MAST.PRO\_NAME, ITEM\_MAST.PRO\_PRICE, COMPANY\_MAST.COM\_NAME

FROM ITEM\_MAST INNER JOIN COMPANY\_MAST

ON COMPANY\_MAST.COM\_ID = ITEM\_MAST.PRO\_COM

Write a SQL query to display the average price of items of each company, showing the name of the company.

SELECT COMPANY\_MAST.COM\_NAME, AVG(ITEM\_MAST.PRO\_PRICE) AS 'AVERAGE\_PRICE'

FROM COMPANY\_MAST INNER JOIN ITEM\_MAST

ON COMPANY\_MAST.COM\_ID = ITEM\_MAST.PRO\_COM

GROUP BY COMPANY\_MAST.COM\_NAME

Write a SQL query to display the names of the company whose products have an average price larger than or equal to Rs. 350.

SELECT COMPANY\_MAST.COM\_NAME, AVG(ITEM\_MAST.PRO\_PRICE) AS 'AVERAGE\_PRICE'

FROM COMPANY\_MAST INNER JOIN ITEM\_MAST

ON COMPANY\_MAST.COM\_ID = ITEM\_MAST.PRO\_COM

GROUP BY COMPANY\_MAST.COM\_NAME

HAVING AVG(ITEM\_MAST.PRO\_PRICE) > 350

Write a SQL query to display the name of each company along with the ID and price for their most expensive product.

SELECT COMPANY\_MAST.COM\_ID, COMPANY\_MAST.COM\_NAME,

MAX(ITEM\_MAST.PRO\_PRICE) AS 'MAX\_PRICE'

FROM COMPANY\_MAST INNER JOIN ITEM\_MAST

ON COMPANY\_MAST.COM\_ID = ITEM\_MAST.PRO\_COM

GROUP BY COMPANY\_MAST.COM\_ID, COMPANY\_MAST.COM\_NAME

Write a query in SQL to display all the data of employees including their department.

SELECT \* FROM EMP\_DETAILS INNER JOIN EMP\_DEPARTMENT ON EMP\_DEPARTMENT.DPT\_CODE = EMP\_DETAILS.EMP\_DEPT

Write a query in SQL to display the first name and last name of each employee, along with the name and sacntion amount for their department.

SELECT EMP\_DETAILS.EMP\_FNAME, EMP\_DETAILS.EMP\_LNAME, EMP\_DEPARTMENT.DPT\_NAME, EMP\_DEPARTMENT.DPT\_ALLOTMENT

FROM EMP\_DETAILS INNER JOIN EMP\_DEPARTMENT

ON EMP\_DEPARTMENT.DPT\_CODE = EMP\_DETAILS.EMP\_DEPT

Write a query in SQL to find the first name and last name of employees working for departments with a budget more than Rs. 50000.

SELECT EMP\_DETAILS.EMP\_FNAME, EMP\_DETAILS.EMP\_LNAME, EMP\_DEPARTMENT.DPT\_NAME, EMP\_DEPARTMENT.DPT\_ALLOTMENT

FROM EMP\_DETAILS INNER JOIN EMP\_DEPARTMENT

ON EMP\_DEPARTMENT.DPT\_CODE = EMP\_DETAILS.EMP\_DEPT

WHERE EMP\_DEPARTMENT.DPT\_ALLOTMENT > 50000

Write a query in SQL to find the names of departments where more than two employees are working.

SELECT EMP\_DEPARTMENT.DPT\_NAME, COUNT(EMP\_DETAILS.\*) AS "NUM\_EMPLOYEES"

FROM EMP\_DETAILS INNER JOIN EMP\_DEPARTMENT

ON EMP\_DEPARTMENT.DPT\_CODE = EMP\_DETAILS.EMP\_DEPT

GROUP BY EMP\_DEPARTMENT.DPT\_NAME

HAVING COUNT(EMP\_DETAILS.\*) > 1

SUBQUERIES

Write a query to display all the orders from the orders table issued by the salesman 'Paul Adam'

SELECT \* FROM ORDERS WHERE

SALESMAN\_ID = (SELECT SALESMAN\_ID FROM SALESMAN WHERE SALESMAN\_NAME = 'Paul Adam')

Write a query to display all the orders for the salesman who belongs to the city London.

SELECT \* FROM ORDERS

WHERE SALESMAN\_ID IN (SELECT SALESMAN\_ID FROM SALESMAN WHERE CITY = 'London')

Write a query to find all the orders issued against the salesman who works for customer whose id is 3007.

SELECT \* FROM ORDERS

WHERE SALESMAN\_ID = (SELECT SALESMAN\_ID FROM ORDERS WHERE CUSTOMER\_ID = 3007)

Write a query to display all the orders which values are greater than the average order value for 10th October 2012.

SELECT \* FROM ORDERS

WHERE PURCH\_AMT > (SELECT AVG(PURCH\_AMT) FROM ORDERS WHERE ORD\_DATE = '2012-10-10')

 Write a query to find all orders attributed to a salesman in New york.

SELECT \* FROM ORDERS

WHERE SALESMAN\_ID IN (SELECT SALESMAN\_ID FROM SALESMAN WHERE CITY = 'New York')

Write a query to display the commission of all the salesmen servicing customers in Paris.

SELECT SALESMAN\_ID, SALESMAN\_NAME, COMMISSION FROM SALESMAN

WHERE SALESMAN\_ID IN (SELECT SALESMAN\_ID FROM CUSTOMER WHERE CITY = 'New York')

Write a query to display all the customers whose id is 2001 below the salesman ID of Mc Lyon.

SELECT \* FROM CUSTOMER WHERE CUSTOMER\_ID

IN (SELECT (SALESMAN\_ID - 2001) FROM SALESMAN WHERE SALESMAN\_NAME = 'Mc Lyon')

Write a query to count the customers with grades above New York's average.

SELECT \* FROM CUSTOMER

WHERE GRADE > (SELECT AVG(GRADE) FROM CUSTOMER WHERE CITY = 'New York')

Write a query to display all customers with orders on October 5, 2012.

SELECT \* FROM CUSTOMER

WHERE CUSTOMER\_ID IN (SELECT CUSTOMER\_ID FROM ORDERS WHERE ORD\_DATE = '2012-10-5')

Write a query to display all the customers with orders issued on date 17th August, 2012.

SELECT \* FROM CUSTOMER

WHERE CUSTOMER\_ID IN (SELECT CUSTOMER\_ID FROM ORDERS WHERE ORD\_DATE = '2012-08-17'

Write a query to find the name and numbers of all salesmen who had more than one customer.

SELECT SALESMAN\_NAME, SALESMAN\_ID FROM SALESMAN WHERE SALESMAN\_ID IN

(SELECT SALESMAN\_ID FROM CUSTOMER GROUP BY SALESMAN\_ID HAVING COUNT(\*) > 1)

Write a query to find all orders with order amounts which are above-average amounts for their customers.

SELECT \* FROM ORDERS A WHERE

PURCH\_AMT > (SELECT AVG(PURCH\_AMT)

FROM ORDERS B WHERE A.CUSTOMER\_ID = B.CUSTOMER\_ID)

Write a query to find all orders with order amounts which are on or above-average amounts for their customers.

SELECT \* FROM ORDERS A WHERE

PURCH\_AMT >= (SELECT AVG(PURCH\_AMT)

FROM ORDERS B WHERE A.CUSTOMER\_ID = B.CUSTOMER\_ID)

Write a query to find the sums of the amounts from the orders table, grouped by date, eliminating all those dates where the sum was not at least 1000.00 above the maximum order amount for that date.

SELECT SUM(PURCH\_AMT), ORD\_DATE FROM ORDERS A

GROUP BY ORD\_DATE

HAVING SUM(PURCH\_AMT) > (SELECT MAX(PURCH\_AMT) FROM ORDERS B

WHERE A.ORD\_DATE = B.ORD\_DATE) + 1000

Write a query to extract the data from the customer table if and only if one or more of the customers in the customer table are located in London.

SELECT \* FROM CUSTOMER WHERE EXISTS (SELECT \* FROM CUSTOMER WHERE CITY = 'London')

Write a query to find the salesmen who have multiple customers.

SELECT \* FROM SALESMAN WHERE SALESMAN\_ID IN

(SELECT SALESMAN\_ID FROM CUSTOMER GROUP BY SALESMAN\_ID HAVING COUNT(\*) > 1)

Write a query to find all the salesmen who worked for only one customer.

SELECT \* FROM SALESMAN WHERE SALESMAN\_ID IN

(SELECT SALESMAN\_ID FROM CUSTOMER GROUP BY SALESMAN\_ID HAVING COUNT(\*) = 1)

Write a query that extract the rows of all salesmen who have customers with more than one orders.

SELECT \* FROM SALESMAN WHERE SALESMAN\_ID IN

(SELECT SALESMAN\_ID FROM CUSTOMER WHERE CUSTOMER\_ID IN

(SELECT CUSTOMER\_ID FROM ORDERS GROUP BY CUSTOMER\_ID HAVING COUNT(\*) > 1))

**OR**

SELECT \* FROM SALESMAN A WHERE EXISTS

(SELECT \* FROM CUSTOMER B WHERE A.SALESMAN\_ID = B.SALESMAN\_ID AND

(SELECT COUNT(\*) FROM ORDERS C WHERE B.CUSTOMER\_ID = C.CUSTOMER\_ID) > 1)

Write a query to find salesmen with all information who lives in the city where any of the customers lives.

SELECT \* FROM SALESMAN A WHERE EXISTS

(SELECT \* FROM CUSTOMER B WHERE A.CITY = B.CITY)

OR

SELECT \* FROM SALESMAN WHERE CITY IN (SELECT CITY FROM CUSTOMER)

Write a query to display the salesmen which name are alphabetically lower than the name of the customers.

SELECT \* FROM SALESMAN A WHERE EXISTS

(SELECT \* FROM CUSTOMER WHERE A.SALESMAN\_NAME < CUSTOMER.CUST\_NAME)

Write a query to display the customers who have a greater gradation than any customer who belongs to the alphabetically lower than the city New York.

SELECT \* FROM CUSTOMER WHERE

GRADE > ANY(SELECT GRADE FROM CUSTOMER WHERE CITY < 'New York')

Write a query to display all the orders that had amounts that were greater than at least one of the orders on September 10th 2012.

SELECT \* FROM ORDERS WHERE PURCH\_AMT > ANY

(SELECT PURCH\_AMT FROM ORDERS WHERE ORD\_DATE = '2012-09-10')

Write a query to find all orders with an amount smaller than any amount for a customer in London.

SELECT \* FROM ORDERS WHERE PURCH\_AMT < ANY

(SELECT PURCH\_AMT FROM ORDERS INNER JOIN CUSTOMER ON

ORDERS.CUSTOMER\_ID = CUSTOMER.CUSTOMER\_ID WHERE CITY = 'London')

Write a query to display only those customers whose grade are, in fact, higher than every customer in New York.

SELECT \* FROM CUSTOMER WHERE GRADE > ALL

(SELECT GRADE FROM CUSTOMER WHERE CITY = 'New York')

Write a query to get all the information for those customers whose grade is not as the grade of customer who belongs to the city London.

SELECT \* FROM CUSTOMER WHERE GRADE <> ANY

(SELECT GRADE FROM CUSTOMER WHERE CITY = 'London')

Write a query to find all those customers whose grade are not as the grade, belongs to the city Paris.

SELECT \* FROM CUSTOMER WHERE GRADE <> ANY

(SELECT GRADE FROM CUSTOMER WHERE CITY = 'Paris')

Write a query to find all those customers who hold a different grade than any customer of the city Dallas.

SELECT \* FROM CUSTOMER WHERE

GRADE <> ANY(SELECT GRADE FROM CUSTOMER WHERE CITY = 'Dallas')

Write a SQL query to find the average price of each manufacturer's products along with their name.

SELECT COM\_NAME, AVG(PRO\_PRICE) FROM COMPANY\_MAST INNER JOIN ITEM\_MAST

ON COMPANY\_MAST.COM\_ID = ITEM\_MAST.PRO\_COM GROUP BY COM\_NAME

Write a SQL query to display the average price of the products which is more than or equal to 350 along with their names.

SELECT COM\_NAME, AVG(PRO\_PRICE) FROM

COMPANY\_MAST INNER JOIN ITEM\_MAST ON COMPANY\_MAST.COM\_ID = ITEM\_MAST.PRO\_COM

GROUP BY COM\_NAME HAVING AVG(PRO\_PRICE) >= 350

Write a SQL query to display the name of each company, price for their most expensive product along with their ID.

SELECT COM\_NAME, PRO\_PRICE, PRO\_NAME

FROM COMPANY\_MAST A INNER JOIN ITEM\_MAST B ON A.COM\_ID = B.PRO\_COM

WHERE B.PRO\_PRICE = (SELECT MAX(PRO\_PRICE) FROM ITEM\_MAST B

WHERE A.COM\_ID = B.PRO\_COM)

Write a query in SQL to find all the details of employees whose last name is Gabriel or Dosio.

SELECT \* FROM EMP\_DETAILS WHERE EMP\_LNAME IN ('Gabriel', 'Dosio')

Write a query in SQL to display all the details of employees who works in department 89 or 63.

SELECT \* FROM EMP\_DETAILS WHERE EMP\_DEPT IN (89,63)

Write a query in SQL to display the first name and last name of employees working for the department which allotment amount is more than Rs.50000.

SELECT EMP\_FNAME, EMP\_LNAME FROM EMP\_DETAILS INNER JOIN EMP\_DEPARTMENT

ON EMP\_DEPT = DPT\_CODE WHERE DPT\_ALLOTMENT > 50000

Write a query in SQL to find the departments which sanction amount is larger than the average sanction amount of all the departments.

SELECT \* FROM EMP\_DEPARTMENT WHERE

DPT\_ALLOTMENT > (SELECT AVG(DPT\_ALLOTMENT) FROM EMP\_DEPARTMENT)

Write a query in SQL to find the names of departments with more than two employees are working.

SELECT DPT\_NAME, COUNT(\*) AS "#EMP" FROM EMP\_DETAILS INNER JOIN EMP\_DEPARTMENT

ON EMP\_DEPT = DPT\_CODE GROUP BY DPT\_CODE HAVING COUNT(\*) > 2

Write a query in SQL to find the first name and last name of employees working for departments which sanction amount is second lowest.

SELECT EMP\_FNAME, EMP\_LNAME FROM EMP\_DETAILS WHERE

EMP\_DEPT = (SELECT DPT\_CODE FROM EMP\_DEPARTMENT WHERE

DPT\_ALLOTMENT = (SELECT MIN(DPT\_ALLOTMENT) FROM EMP\_DEPARTMENT WHERE

DPT\_ALLOTMENT > (SELECT MIN(DPT\_ALLOTMENT) FROM EMP\_DEPARTMENT)))

OR

SELECT EMP\_FNAME, EMP\_LNAME FROM EMP\_DETAILS

WHERE EMP\_DEPT = (SELECT DPT\_CODE FROM (SELECT DPT\_CODE, ROW\_NUMBER() OVER (ORDER BY DPT\_ALLOTMENT ASC) AS 'ROW#' FROM EMP\_DEPARTMENT) AS A WHERE ROW# = 2)

**T-SQL**

T-SQL (Transact-SQL) is a set of programming extensions from Sybase and Microsoft that add several features to the Structured Query Language (SQL), including transaction control, exception and error handling, row processing and declared variables. Transact-SQL is central to using Microsoft SQL Server. All applications that communicate with an instance of SQL Server do so by sending Transact-SQL statements to the server, regardless of the user interface of the application.

Variables:

* Transact-SQL provides the following statements to declare and set local variables: DECLARE, SET and SELECT

**DECLARE** @var1 **VARCHAR**(30)

**SET** @var1 = 'Some Name'

**SELECT** @var1 = Name

**FROM** Sales.Store

**WHERE** CustomerID = 100

Flow Control:

* IF and ELSE allow conditional execution. This batch statement will print "It is the weekend" if the current date is a weekend day, or "It is a weekday" if the current date is a weekday.

**IF** DATEPART(dw, GETDATE()) = 7 **OR** DATEPART(dw, GETDATE()) = 1

**PRINT** 'It is the weekend.'

**ELSE**

**PRINT** 'It is a weekday.'

* BEGIN and END mark a block of statements. If more than one statement is to be controlled by the conditional in the example above, we can use BEGIN and END like this:

**IF** DATEPART(dw, GETDATE()) = 7 **OR** DATEPART(dw, GETDATE()) = 1

**BEGIN**

**PRINT** 'It is the weekend.'

**PRINT** 'Get some rest on the weekend!'

**END**

**ELSE**

**BEGIN**

**PRINT** 'It is a weekday.'

**PRINT** 'Get to work on a weekday!'

**END**

* WAITFOR will wait for a given amount of time, or until a particular time of day. The statement can be used for delays or to block execution until the set time.
* RETURN is used to immediately return from a [stored procedure](https://en.wikipedia.org/wiki/Stored_procedure) or function.
* BREAK ends the enclosing WHILE loop, while CONTINUE causes the next iteration of the loop to execute. An example of a WHILE loop is given below.

**DECLARE** @i **INT**

**SET** @i = 0

**WHILE** @i < 5

**BEGIN**

**PRINT** 'Hello world.'

**SET** @i = @i + 1

**END**

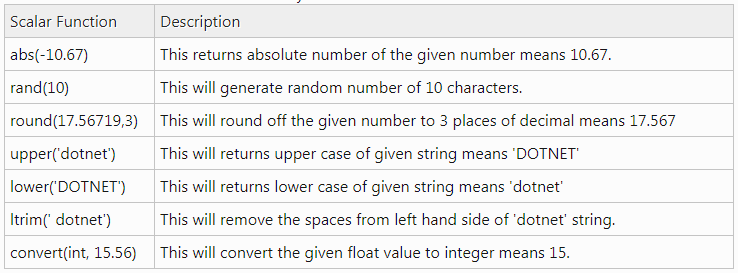
Functions:

Function is a database object in SQL Server. Basically it is a set of SQL statements that accepts only input parameters, perform actions and return the result. Function can return only single value or a table. We can’t use function to Insert, Update, Delete records in the database table(s).

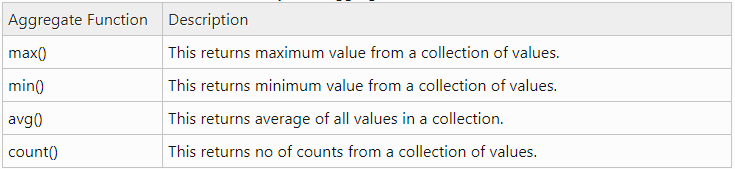
Types Of Functions:

## **System Defined Function:** These functions are defined by SQL Server for different purpose. We have two types of system defined function in SQL Server.

## **Scalar Function:** Scalar functions operates on a single value and returns a single value. Below is the list of some useful SQL Server Scalar functions.



## **Aggregate Function:** Aggregate functions operates on a collection of values and returns a single value. Below is the list of some useful SQL Server Aggregate functions.



* **User Defined Functions:** These functions are created by user in system database or in user defined database. We three types of user defined functions.
  1. **Scalar Function:** User defined scalar function also returns single value as a result of actions perform by function. We return any datatype value from function.

**Examples:**

-- USER DEFINED FUNCTION TO CALCULARE NTH POWER OF A NUMBER.

CREATE FUNCTION POW(@NUMBER INT, @POWER INT) RETURNS INT AS

BEGIN

DECLARE @RESULT INT

SET @RESULT = 1

WHILE @POWER > 0

BEGIN

SET @RESULT = @RESULT \* @NUMBER

SET @POWER = @POWER - 1

END

RETURN @RESULT

END

-- FUNCTION TO GET FULL NAME OF EMPLOYEE

CREATE FUNCTION GETFULLNAME(@FIRSTNAME VARCHAR(30), @LASTNAME VARCHAR(30)) RETURNS VARCHAR(60) AS

BEGIN

RETURN (SELECT @FIRSTNAME + ' ' + @LASTNAME)

END

-- FUNCTION TO REVERSE A STRING

CREATE FUNCTION STRREV(@STRING VARCHAR(30)) RETURNS VARCHAR(30) AS

BEGIN

DECLARE @STRLEN INT

DECLARE @REV VARCHAR(30)

SET @STRLEN = LEN(@STRING)

SET @REV = ''

WHILE @STRLEN > 0

BEGIN

SET @REV = (SELECT (@REV + SUBSTRING(@STRING, @STRLEN, 1)))

SET @STRLEN = @STRLEN - 1

END

RETURN @REV

END

* 1. **Inline Table-Valued:** User defined inline table-valued function returns a table variable as a result of actions perform by function. The value of table variable should be derived from a single SELECT statement

**Examples:**

-- USER DEFINED INLINE TABLE VALUED FUNCTION TO RETURN A TABLE HAVING FULL NAMES OF ALL EMPLOYEE AND THEIR SALARY

CREATE FUNCTION GETNAMES() RETURNS TABLE AS

RETURN SELECT (FIRSTNAME + ' ' + LASTNAME) AS 'FULL NAME', SALARY FROM TEMPTABLE

-- CALLING THE FUNCTION

SELECT \* FROM DBO.GETNAMES()

* 1. **Multi-Statement Table-Valued Function:** User defined multi-statement table-valued function returns a table variable as a result of actions perform by function. In this a table variable must be explicitly declared and defined whose value can be derived from a multiple sql statements.

**Examples:**

-- FUNCTION TO GENERATE MULTIPLICATION TABLE OF A NUMBER

CREATE FUNCTION GETMULTABLE(@NUM INT) RETURNS @MULTABLE TABLE (MUL VARCHAR(20)) AS

BEGIN

DECLARE @COUNTER INT

DECLARE @ENTRY VARCHAR(20)

SET @COUNTER = 1

WHILE @COUNTER <= 10

BEGIN

SET @ENTRY =

(CONVERT(VARCHAR,@NUM) + ' X ' + CONVERT(VARCHAR, @COUNTER) + ' = ' + CONVERT(VARCHAR, @NUM \* @COUNTER))

INSERT INTO @MULTABLE VALUES(@ENTRY)

SET @COUNTER = @COUNTER + 1

END

RETURN

END