**Common for all RDBMS:**

**- 4 subdivisions of SQL:**

**DDL (Data Definition Language) :- (Create, Drop, Alter)**

**DML (Data Manipulation Language) :-(Insert, Update, Delete)**

**DCL (Data Control Language) :- (Grant, Revoke)**

**DQL (Data Query Language) :- (Select)**

**#Create table**

create table emp(

sno char(4),

ename varchar(15),

city varchar(15),

sal float,

desig char(5),

jdate varchar(20),

deptno int

);

**#Insert rows into table**

insert into emp(sno, ename, city, sal, desig, jdate, deptno)values

('01', 'Shrutika', 'Mumbai', 6000, 'M', '2020-12-27', 4),

('02', 'Himanshu', 'Kanpur', 8000, 'M', '2020-12-26', 1),

('03', 'Kalyani', 'Mumbai', null, 'C', '2020-12-25', 1),

('04', 'Snehal', 'Nagpur', 5000, 'M', '2020-12-24', null),

('05', 'Jayant', 'Jalgaon', 2000, 'C', '2020-12-23', 4);

//\*\*\*\*\*\* null means nothing and null has ASCII value 0

**#Drop table command**

drop table emp;

**#SELECT COMMAND to Display**

select \* from emp;

**#SELECT COMMAND to Display the mentioned columns**

select emp.sno, emp.ename, emp.city, emp.sal, emp.desig, emp.jdate from emp;

select emp.sno, emp.ename, emp.city from emp;

**To restrict Rows:-**

**(using WHERE clause)**

select emp.sno, emp.ename, emp.city from emp

where emp.sno = '01';

select emp.sno, emp.ename, emp.city, emp.sal from emp

where emp.sno = '01';

select emp.sno, emp.ename, emp.city, emp.sal from emp

where emp.sal > 6000;

select emp.sno, emp.ename, emp.city, emp.sal from emp

where emp.sal != 6000;

select emp.sno, emp.ename, emp.city, emp.sal from emp

where emp.sal <> 6000; //Not equal to sign <>

select emp.sno, emp.ename, emp.city, emp.sal from emp

where emp.sal between 6000 and 8000;

select emp.sno, emp.ename, emp.city, emp.sal from emp

where emp.ename = 'Kalyani' and emp.sal = 9000;

**#alias (used to display new name of column)**

select emp.sno, emp.ename, emp.city, emp.sal\*12 "Annual" from emp;

select emp.ename, emp.sal from emp

where emp.sal\*12 > 72000;

**#distinct (keyword): whenever you use DISTINCT, sorting takes place in server RAM**

select distinct emp.city, emp.ename from emp;

**#ORDER BY clause:- (used for sorting)**

**asc -> by default**

**desc**

select emp.sno, emp.ename, emp.city, emp.sal, emp.desig, emp.jdate from emp

    order by 6 desc; -- ordered by date whose col number is 6

**#Update Command**

update emp set emp.ename = 'Snehal' where emp.sno = '04';

update emp set emp.ename = 'Snehal' where emp.city = 'Mumbai';

update emp set emp.ename = 'Shrutika' where emp.sno = '01';

update emp set emp.ename = 'Kalyani' where emp.sno = '03';

**#Special Operators:- (Like, Between)**

**Wildcards (used for pattern matching)**

**%    any character and any number of characters**

**\_     any 1 character**

select \* from emp

where emp.ename like '\_\_m\_n%';

select \* from emp

where emp.ename not like 'S%';

select emp.ename, emp.jdate from emp

where emp.sal between 6000 and 9000;

select emp.ename, emp.jdate from emp

where ename between 'H' and 'J'; -- does not count last one in range

select emp.ename, emp.jdate from emp

where ename between 'H' and 'k';

select emp.ename, emp.sal, emp.jdate from emp

where emp.sal in (2000, 8000);

select emp.ename, emp.sal, emp.jdate from emp

where emp.city in ('Mumbai', 'Delhi'); -- logical or

update emp set emp.ename = 'Himanshi', city = 'Pune' where emp.sno = '02';

**#CONCATENATION Operator:**

select concat(emp.ename, emp.city) from emp;

select concat(concat(fname,' '),lname) from emp;

**#UPPER and LOWER case:**

select concat(upper(substr(emp.ename, 1, 1)),lower(substr(emp.ename, 2))) from emp

order by emp.sal desc;

**#LPAD: (Right justification puts blank spaces at the left hand side)**

select lpad(emp.ename,25,' ') from emp;

**#RPAD**: **(Left justification puts blank spaces at the left hand side)**

select rpad(emp.ename, length(emp.ename) + 5, '\*') from emp;

**#LTRIM: - (removes black spaces on left hand side)**

select ltrim(emp.ename) from emp;

**#RTRIM: - (removes black spaces on right hand side)**

select rtrim(emp.ename) from emp;

**#TRIM: - (removes black spaces from both the sides)**

select trim(ename) from emp;

**#SUBSTR: - (displays from the given position)**

select substr(ename,3) from emp; -> (3 is starting position)

select substr(ename,3,2) from emp; -> (3 is starting position,2 is number of characters(gets 3rd & 4th letter))

select substr(ename,-3,2) from emp; -> (-3 is starting position, it will start from right side, we will get last 3 letters of the string)

**#REPLACE: - (replaces the string)**

select replace('Himanshi', 'i', 'u') from emp; -- later

update emp set emp.ename = 'Himanshu' where emp.sno = '02';

**#INSTR: - (returns starting position of string)**

select instr('Kalyani', 'an') from emp;

select distinct instr('Kalyani', 'an') from emp;

**#LENGTH: - (returns the length of string)**

select length(emp.ename) from emp;

**#ASCII: -(returns the ascii value of 1st letter)**

select ascii(emp.sal) from emp;

select ascii('X') from dual;

**#SOUNDEX: - (removes the vowels from both string and then compares) (a, e, i, o, u, y -> US)**

select \* from emp where soundex(ename) = soundex('Himaaaanssshhuuu');

**#TRUNCATE: - (removes the decimal point numbers)**

select truncate(emp.sal,0) from emp;

select truncate(emp.sal,1) from emp;

**#ROUND to specified values**

select round(emp.sal) from emp;

select round(7500.5656, 2) from emp;

select round(7500.5656, 2) from dual;

select round(7850.2020, -2) from dual;

**#CEIL Ceiling: - (adds 1 to the last no by removing decimal point)**

select  ceil(7850.5656) from dual;

**#FLOOR: - (removes decimal and goes for lower no)**

select floor(7850.5656) from dual; -- removes everythinh aft dec

**#SIGN: -**

select sign(-15) from dual;

**#MOD: -**

select mod(21.2, 5.1) from dual;

**#SQRT: -**

select sqrt(144) from dual;

**#POWER: -**

select power(10, 3) from dual;

**#ABS: -**

select abs(-25) from dual;

**#Math**

select sin(90) from dual;

select cos(90) from dual;

select tan(90) from dual;

select emp.ename, emp.sal, sign(emp.sal - 7000) from emp;

select distinct emp.ename mod(emp.sal, 3) from emp;

**#Date and Time Functions: -**

select sysdate() from dual;

select now() from dual;

select distinct dayname(sysdate()) from emp;

select sysdate(), now(), sleep(20), sysdate(), now() from dual;

select adddate(sysdate(), 1) from dual;

select adddate(sysdate(), -1) from dual;

select datediff(sysdate(), jdate) from emp;

select date\_add(jdate, interval 2 month) from emp;

select date\_add(jdate, interval -2 month) from emp;

select last\_day(jdate) from emp;

select addtime('2020-02-10 11:00:00', '15') from dual;

select addtime('2020-02-10 11:00:00', '01:30:15') from dual;

select ifnull(emp.sal, 0) from emp;

**#GREATEST Function: - (compares returns greatest among values)**

select emp.ename, emp.sal, greatest(emp.sal, 7000) from emp;

**#LEAST Function: - (compares returns smallest among values)**

select emp.ename, emp.sal, least(emp.sal\*0.1, 1000) from emp

order by 3;

**#CASE expression: -**

select emp.ename, emp.sal,

case

when emp.sal = 2000 then 'Gareeb'

when emp.sal = 5000 then 'Thoda Gareeb'

when emp.sal = 6000 then 'Thoda kam Gareeb'

when emp.sal = 8000 then 'Ameer'

else 'Bahot Ameeerrr'

end "Cdac"

from emp

order by 2;

select emp.ename, emp.sal,

case

when sign(emp.sal - 6000) = 1 then 'Ameer'

when sign(emp.sal - 6000) = -1 then 'Gareeb'

else 'Middle class'

end "Aukat" from emp

order by 2;

**Group Functions**

**#SUM: -**

select sum(emp.sal) from emp;

update emp set emp.sal = null where emp.sno = '03';

select sum(emp.sal) from emp; -- doesnt count null row

select sum(ifnull(emp.sal, 0)) from emp;

**#AVG: -**

select avg(emp.sal) from emp;        -- 5250

select avg(ifnull(emp.sal, 0)) from emp;  -- 4200 counts null row

**#MIN: -**

select min(emp.sal) from emp; -- 2000

select min(ifnull(emp.sal, 0)) from emp; -- 0

**#MAX: -**

select max(emp.sal) from emp; -- 8000

select max(emp.sal)/min(emp.sal) from emp; -- 4

**#COUNT: -**

select count(\*) from emp;

select count(emp.sal) from emp;

select count(\*) - count(emp.sal) from emp;

select sum(emp.sal)/count(\*) from emp; -- faster than avg method using ifnull

update emp set emp.ename = 'Snehal' where city = 'Nagpur';

select emp.ename, min(emp.sal) from emp;-- output meaningless

select count(emp.ename), min(sal) from emp;

select deptno, desig, sum(emp.sal) from emp group by desig;

select ename, deptno from emp group by deptno;-- meaningless output

select sum(sal) from emp where deptno = 4;

select deptno, sum(sal) from emp group by deptno;

select deptno, max(sal) from emp group by deptno;

-- whatever we are writing in sel statement must be wrtitten in group by clause or else output will be meaningless

select desig, sum(sal) from emp where sal >= 6000 group by desig;

select deptno, desig, sum(sal) from emp group by deptno;

select deptno, desig, sum(sal) from emp group by deptno, desig;

select deptno, sum(sal) from emp group by deptno having sum(sal)> 10000;

select deptno, sum(sal) from emp group by deptno having deptno > 2;

select deptno, sum(sal) from emp group by deptno having count(\*) > 2;

**#HAVING clause: -**

select deptno, sum(sal) from emp group by deptno

having sum(sal) > 3000 and sum(sal) < 20000

order by deptno;

**JOIN**

create table dept(

depno int,

deptname varchar(15),

loc varchar(15)

);

drop table dept;

insert into dept(dept.depno, dept.deptname, dept.loc)values

(4, 'TRN', 'Mumbai'),

(1, 'EXP', 'Kanpur'),

(3, 'MRK', 'Delhi');

select  emp.ename, dept.deptname, dept.loc  from emp, dept

where dept.depno = emp.deptno;

select  emp.ename, dept.depno, dept.deptname, dept.loc  from emp, dept

where dept.depno = emp.deptno

    order by dept.deptname;

select  emp.ename, dept.depno, dept.deptname, dept.loc  from emp, dept

where dept.depno != emp.deptno

    order by dept.deptname;

select  emp.ename, dept.depno, dept.deptname, dept.loc  from emp, dept

where dept.depno != emp.deptno

    order by dept.deptname;

create table  depthead(

deptno int,

dhead varchar(15)

);

insert into depthead(deptno, dhead)values

(1, 'Kalyani'),

(4, 'Jayant');

select depthead.deptno, depthead.dhead from depthead;

select emp.ename, dept.deptname, depthead.dhead from emp, dept, depthead

where emp.deptno = dept.depno and dept.depno = depthead.deptno

group by dept.deptname

order by 2;

select emp.ename, emp.sal from emp

where emp.sal = (select min(emp.sal) from emp);

select max(emp.sal) from emp

where emp.sal < (select max(emp.sal) from emp);

select emp.ename, max(emp.sal) from emp

where emp.sal < (select max(emp.sal) from emp

where emp.sal < (select max(emp.sal) from emp));

update emp set emp.sal = 9000 where emp.sno = '03';

select emp.ename, min(emp.sal) from emp

where emp.sal > (select min(emp.sal) from emp

where emp.sal > (select min(emp.sal) from emp

where emp.sal > (select min(emp.sal) from emp)));

select emp.sal, count(\*)-1 from emp

-- where count(\*)-1

order by emp.sal desc;

select emp.ename, emp.sal from emp

-- where count(\*)-1

order by emp.sal desc;

-- Display the 4th largest salary

select emp.ename, emp.sal from emp

where sno = (select count(\*)-2 from emp order by emp.sal desc);

select emp.ename, emp.sal from emp

where sno = (select \* from emp)

order by emp.sal desc ;

select emp.sno, emp.ename, emp.city, emp.sal, emp.desig, emp.jdate from emp;