Like operator

- It is used for pattern matching.
- % matches with 0 or more characters
- _ matches with one character

name starts with A	'A%'	'^A'
name with A at 2 nd position	'_A%'	'^.A'
name with A at 2 nd last position	'%A_'	'A.$'
name with A at the beginning and N at the end	'A%N	'^A.*N$'
name starts with either A or M and N or E at the end	A%N A%E M%N M%E	'^[AM] .* [NE]$'
name starts with A and ends with N and has 5 charaters	'A ___N'	'^A .{3} N$

1. All rows with ename starts with A

select * from emp where ename like 'A%'	select * from emp where ename REGEXP '^A'

2. All rows with ename ends with N

select * from emp where ename like '%N'	select * from emp where ename REGEXP 'N$'

3. List all names either ends with N or starts with A

select * from emp where ename like '%N' or ename like 'A%'	select * from emp where ename REGEXP 'N$|^A'

4. list all rows if ename has either A or M at the beginning and N or E at the end

select * from emp where ename like 'A%N' or ename like 'A%E' or ename like 'M%N' or ename like 'M%E';	select * from emp where ename REGEXP '^[AM].*[NE]$'

5. find all employees with name has A at 2 nd position or N at last position.

select * from emp where ename like '_A%' or ename like '%N'	select * from emp where ename regexp '^.A|N$'

6. find all employees with name stars with A and N at either 2nd position or 3 rd position.

select * from emp where ename like 'AN%' or ename like "A_N%	select * from emp where ename REGEXP '^AN|^A.N' select * from emp where ename REGEXP '^A.?N'

7. find all employee with name starts with M and r at the end or name starts with A and N at the end

select * from emp where ename like 'M%R' or ename like 'A%N'	select * from emp where ename REGEXP '^M.*R$\|^A.*N$'

REGEXP

.	it matches with any one character
[A-Za-z]	it matches with any one alphabet
[0-9]	it matches with any one digit
[^0-9]	anything other that digits
+	1 or more occurrences of the preceding pattern
*	0 or more occurrence
?	0 or 1 occurrence
^	matches the pattern at the beginning
$	it matches the pattern at the end
{m}	exactly m occurrences
{m,n}	minimum m occurrences and maximum n occurrences
{m,}	minimum m occurrences maximum any number of occurrences
(abc|pqr)	either abc or pqr

1. find all employees with name starts with A , l at 3 rd position and N at the end or starts with M , l at the 3 rd position

select * from emp where ename like 'A_l%N' or ename like 'M_l%'	select * from emp where ename REGEXP '^A.l.*N$|^M.l'

2. find all employees with name starts with A and ends with N or E or start with J and ends with N or E

select * from emp where ename like 'A%N' or ename like 'A%E' or ename like 'J%N' or ename like 'J%E'	select * from emp where ename REGEXP '^A.*[NE]$\|^J.*[EN]$' or select * from emp where ename REGEXP '^[AJ].*[NE]$'

3. find all employees with job starts with S or C and ends with N or R

select * from emp where job like 'S%N' or job like 'S%R' or job like 'C%N or job like 'C%R'	select * from emp where job REGEXP '^[SC].*[NR]$'

4. find all employees with job does not start with S or C

select * from emp where job not like 'S%' or job not like 'C%	select * from emp where job REGEXP '^[^SC]'

5. to display empno,name,sal, comm and net sal(sal+comm)
   select empno,ename,sal,comm,sal+comm netsal
   from emp;

   in mysql to replace null value with some other value then use ifnull function
   select empno,ename,sal,comm,sal+ifnull(comm,0) netsal
   -> from emp;
   Sorting of data
   to arrange data in the sorted order use order by clause
   1. To arrange the data in the ascending order of department
      select * from emp
      order by deptno
   2. To arrange the data in the descending order of department
      select * from emp
      order by deptno desc;
   3. To arrange the data in the descending order of department and job

   select * from emp

   order by deptno desc,job ;

   4. To arrange the data in the descending order of department and in the descending order of jobs

   select * from emp

   order by deptno desc,job desc ;

Aggregate Functions

sum(column name or expression)	display the sum of all the values within that column or group
min(column name or expression)	display the minimum of all the values within that column or group
max(column name or expression)	display the maximum of all the values within that column or group
avg(column name or expression)	display the average of all the values within that column or group
count(column name or *)	it will count how many rows are there, if any column name is given then null values will not be counted, but if * is used then it will include null values also in the count

In group by clause whichever columns are used only those columns you can use in select statement along with aggregate function
If the filter condition is based on aggregate function then use it in having clause, and if it is based on existing column in the table then use the condition in where cluse.

1. find sum , max, min , avg of sal for all employees
   select sum(sal), min(sal), max(sal), avg(sal), count(*), count(comm)
   from emp
2. find sum(sal) for each department

```
select deptno,sum(sal), min(sal), max(sal), avg(sal), count(*), count(comm)

from emp

group by deptno
```

3. find sum, min and max of sal for each job
   select job,sum(sal),min(sal),max(sal)
   from emp
   group by job
   order by job;
4. find sum, min and max of sal for each job within each department

```
select deptno,job,sum(sal),min(sal),max(sal)

from emp

group by deptno,job

order by sum(sal)
```

5. display sum and average of sal departmentwise and jobwise display data in sorted order of sum of sal

```
select deptno,job,sum(sal) s,avg(sal)
```

-> from emp

-> group by deptno

-> order by s;

6. find sum of sal for all clerks in each department
select deptno,sum(sal)
from emp
where job='CLERK'
group b y deptno

6. find all employees sum of sal, avg sal, count, of all salesman department wise.
select deptno,sum(sal),avg(sal),count(*)
from emp
where job='salesman'
group by deptno;
7. find sum sal, avg sal for all employees who are working under same mgr.
select mgr,sum(sal),avg(sal)
from emp
group by mgr;
8. find sum sal, avg sal,count, min sal for all employees who are working under same mgr if number of people working under the manager is >=2
select mgr,sum(sal),avg(sal),count(*), min(sal)
from emp
group by mgr
having count(*)>=2
9. to display sum, avg, min, max, count for all employees whose sal >=2000 departmentwise,
select deptno,sum(sal),avg(sal) min(sal),max(sal), count(*)
from emp
where sal>=2000
group by deptno;
10. to display sum, avg, min, max, count for all employees whose joined in feb 81 or joined in jan 81, departmentwise,
select deptno,sum(sal),avg(sal),min(sal),max(sal),count(*)
from emp
where hiredate between 1981-01-01 and 1981-02-28
group by deptno

distinct-→ when you want to find distinct values of a particular column then use word distinct

1. display how many departments are there in the company
select distinct deptno
from emp;
2. display how many different jobs are there in the table

select distinct job

from emp;

3. display distinct combinations of department and jobs in the table
   select distinct job, deptno
   from emp

   Top n analysis
4. find first 2 highly paid employees in the company
   select * from emp
   order by sal desc
   limit 2
5. find 3rd 4th and 5 th highly paid employees from emp table
   select * from emp
   order by sal desc
   limit 2,3
6. display 2 mgrs under whom min number of employees are working.
   select mgr,count(*)
   -> from emp
   -> where mgr is not null
   -> group by mgr
   -> order by count(*)
   -> limit 2;

   in database there are 2 types of functions
   1. aggregate functions—if the functions work on multiple rows and find single value, then it is called as aggregate functions
   2. single row functions—if the functions takes values for from one row and return single value for each row then it is called as single row functions. these functions can work on numbers/ strings / date

      functions used for numeric columns.

abs(num)	to convert -ve value into +ve
pow(num,raiseto)	power of the number
floor(num)	It will remove all the digits after the decimal point
ceil(num)	It will always give the next minimum number
round(num,precision)	round will round the number upto given precision
truncate(num,precesion)	truncate will truncate the number upto given precision