#### **DBMS LAB**

# Lab Assignment number 05

Name: Aamir Ansari Batch: A Roll no. 01

**Aim:** Experiment to study Simple and nested queries.

# Theory:

Query is nothing but question asked to the database.

#### Select statement:

Select command is used to retrieve data from database. The result is stored in the temporary table called result set.

# General Syntax:

Select A1, A2, A3-----An from R1, R2-----Rn where Predicate

Eg. Consider table Employee (eid, ename, salary, dno)

Select ename, salary from employee

Selecting all columns:-

Select \*from 'tablename&gt'

Select \*from employee

Choosing selected columns:-

Select A1, A2, A3----An from tablename

Select eid, salary from employee

Computed values in select List:-

Select eid,salary\*1.2 as increase\_sal from employee

### Filtering Rows from a table:-

#### Where clause:-

Where clause is used to extract only those records that fulfill specified condition.

Where clause is used to filter records.

Select 'columnname&gt' from 'tablename&gt' where 'condition&gt'

Select empid from employee where salary>20000

Distinct clause: - Eliminating duplicates

Distinct keyword is used to eliminate duplicate rows from the resultset.

Select distinct dno from employee

### By default – all

Select all dno from employee

<u>Top clause:</u> Top clause limits the number of rows returned in the resultset.

Syntax:- Select top n 'columname&gt' from 'tablename&gt'

-- Display first three records from resultset(employee)

Select top 3 \* from emp

-- Display salaries of first two records from resultset

Select top 2 salary from emp

### Operators in SQL:

<u>Relational operators</u>:-,>,','=,>=,'>(!=)

Logical Operators: and , or ,not

Range searching Operators(between ,not between)

Between operator :- is used to specify range of values.

Syntax:- select columname from tablename where columnname between lowerlimit and upperlimit

Eg. Display emp details from employees where salary is within range 10000 and 20000.

Select \*from employee where salary between 10000 and 20000

Select \*from employee where salary =10000 and salary =20000

Display emp details from employee where salary is not Within range between 10000 and 20000

Select \*from employee where salary not between 10000 nad 20000

Pattern matching operator: - Like ,Not Like

#### <u>Like operator:</u>

Like operator is used in a where clause to search for a specified pattern in a column.

Pattern is specified as a string in single quotes.

General Syntax:-

Select colnames from tablename where colname like 'pattern'

#### SQL wild characters:-

SQL wild characters can substitute for one or more characters

When searching for data in database.

SQL wild characters must be used with Like and not like operator.

## Wild character Description

% A substitute for 0 or more characters.

\_ A substitute for exactly one characters

[range] A single character within range [A-D]

[^range] A single character not within range

Eg. Select \*from emp where ename like 'A%'

Select \*from emp where ename like '%A%'

Select \*from emp where eid like ' '

Select \*from emp where eid like ' %'

Select \*from emp where ename like ' [e-f]%'

## Set Membership operators:- In and Not In

#### In operator:-

In operator is used to check membership of value in given set

#### Not in :-

Not In operator is used to check absence of membership of value in given set

#### Syntax:

Select colname from tablename where colname in(value1, value2....)

Eg. Select \*from emp where dno in(20,10,25)

Select \*from emp where dno not in (20,10,25)

#### Nested Queries:-

Nested query is a query that has another query embedded within it. The embedded query is called a subquery.

Some queries requires that data to be fetched from database and then used in comparison

#### Condition.

When we use Select----from----where block within where clause of another query such type of query is called Nested queries.

#### General syntax:

Outer query(parent query)

Select 'columnname> from 'tablename> where col= (select ----- from 'tablename> where 'condition>)

Subquery typically appears within a search condition as a part of the where or having clause of a select, update, delete.

Set comparision operators(all, some any):-

<u>All operator</u>: All operator is used to compare value of a column with all values from given set.

Some / Any :- Some / Any operator is used to compare value of a column with some of the values from given set.

--Set comparision operators are always used with relational operators.

Eg. >all,>=all, <all, <=all, <>all, <some, =some, <>some, <=some, >some-----etc. =some equivalent to in, <>some equivalent to not in.

Eg. Retrive employee details of employees those are working in It department.

empid	ename	salary	dno	
1	John	45000.0000	101	
5	smit	35000.0000	101	
15	Nisha	40000.0000	103	
10	Neha	25000.0000	102	
2	smita	42000.0000	101	

dno	dname
101	comp
102	it

select \*from emp where dno =(select dno from dept where dname ='it') (102)

empid	ename	salary	dno
10	Neha	25000.0000	102

Eg. Retrive employee details of employees those are working It department or comp department.

select \*from emp where dno in(select dno from dept where dname in ('it', 'comp') (101,102)

List employee details of employees earning salary more than salary of emp with empid 5.

select \*from emp where salary >(select salary from emp where empid=5) 35000

_			3300	,,
ĺ	empid	ename	salary	dno
	1	John	45000.0000	101
	15	Nisha	40000.0000	103
	2	smita	42000.0000	101

List employee details of employees earning salary more than salary of every emp working for dept no 101.

select \*from emp where salary >=all(select salary from emp where dno=101) (45000,35000,42000)

empid	ename	salary	dno	
1	John	45000.0000	101	

select \*from emp where salary >=(select salary from emp where dno=101) --error

List employee details of employees earning salary more than salary of some of emps working for dept no 101.

select \*from emp where salary >= some(select salary from emp where dno=101)

empid	ename	salary	dno
1	John	45000.0000	101
5	smit	35000.0000	101
15	Nisha	40000.0000	103
2	smita	42000.0000	101

--List employee details of employees earning salary more than salary of some of emps working for IT department.

select \*from emp where salary >=some(select salary from emp where dno=(select dno from dept where dname='it'))

--List employee details of employees earning salary more than salary of some of emps working for IT department or comp dept.

select \*from emp where salary >= some(select salary from emp where dno in (select dno from dept where dname in ('it','comp')))

# **Code:**

--1 Salary greater than 20,000 SELECT \* FROM Employee WHERE salary > 20000;

	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	John	В	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	М	30000.00	333445555	5
2	Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	М	40000.00	888665555	5
3	Joyce	Α	English	453453453	1972-07-31	5361 Rice, Houston, TX	F	25000.00	333445555	5
4	Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	М	38000.00	333445555	5
5	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	М	55000.00	NULL	1
6	Jennifer	S	Wallace	987654321	1941-06-20	291 Berrym, Bellaire, TX	F	43000.00	888665555	4
7	Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	М	25000.00	987654321	4
8	Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000.00	987654321	4

--2 Distinct ssn for employee who have dependant SELECT DISTINCT e\_ssn FROM Dependant;



--3 First two dependants SELECT TOP 2 \* FROM Dependant;



--4 Employee with salary between 10,000 and 30,000 SELECT \* FROM Employee WHERE salary BETWEEN 10000 AND 30000;

⊞F	Results 🖹	Message	es							
	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	John	В	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	М	30000.00	333445555	5
2	Joyce	Α	English	C453453453e	c <b>1972-07</b> -31le	5361 Rice, Houston, TX	F	25000.00	333445555	5
3	Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	М	25000.00	987654321	4
4	Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000.00	987654321	4

# --5 Employee with salary between 10,000 and 30,000 SELECT \* FROM Employee WHERE salary NOT BETWEEN 10000 AND 30000;

	f_name	m_name	I_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
2	Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	М	38000.00	333445555	5
3	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	М	55000.00	NULL	1
4	Jennifer	S	Wallace	987654321	1941-06-20	291 Berrym, Bellaire, TX	F	43000.00	888665555	4

# --6A Employee with name starting with A SELECT \* FROM Employee WHERE f\_name LIKE 'A%';

	f_name	m_name	I_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000.00	987654321	4
2	Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000.00	987654321	4

# --6B Employee with name ending with A SELECT \* FROM Employee WHERE f\_name LIKE '%a';

⊞ R	esults ្ឋា	Message	es							
	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000.00	987654321	4

# --6C Employee with name ending with A SELECT \* FROM Employee WHERE f\_name like '%[f,e]';

	f name	m name	Lname	ssn	dob	addr	sex	salarv	euper eep	d no
	1_Harrie	III_IIaIIIe	I_name						super_ssn	d_no
1	Joyce	Α	English	453453453	1972-07-31	5361 Rice, Houston, TX	F	25000.00	333445555	5

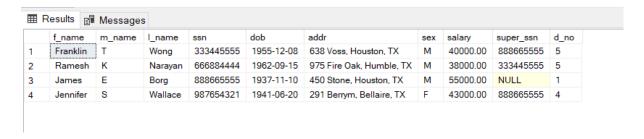
# --7 Employee in department 1 and 4 SELECT \* FROM Employee WHERE d\_no = 1 OR d\_no = 4;

	Results 📑	Message								
	f_name	m_name	I_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	М	55000.00	NULL	1
2	Jennifer	S	Wallace	987654321	1941-06-20	291 Berrym, Bellaire, TX	F	43000.00	888665555	4
3	Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	М	25000.00	987654321	4
4	Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000.00	987654321	4

--8 Employee working in research
SELECT \* FROM Employee WHERE d\_no = (SELECT d\_no FROM Department WHERE
d\_name = 'Research');

<b>#</b>	Results 🗐	Message	S							
	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	John	В	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	М	30000.00	333445555	5
2	Franklin	Т	Wong	333445555	1955-12-08	638 Voss, Houston, TX	М	40000.00	888665555	5
3	Joyce	Α	English	453453453	1972-07-31	5361 Rice, Houston, TX	F	25000.00	333445555	5
4	Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	М	38000.00	333445555	5

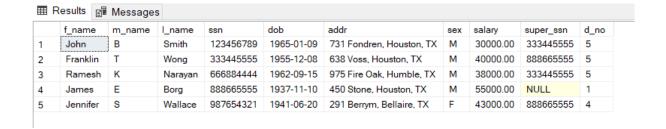
--9 Employee with more salary than a particular employee SELECT \* FROM Employee WHERE salary > (SELECT salary FROM Employee WHERE ssn = 123456789);



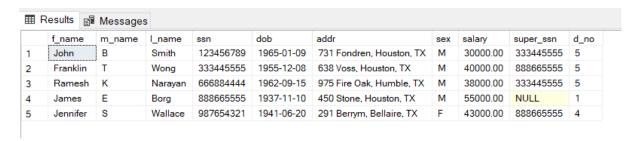
--10 Employee with more salary than max of department 5 SELECT \* FROM Employee WHERE salary > (SELECT MAX(salary) FROM Employee WHERE d\_no = 5);



--11 Employee with more salary than min of Administration department SELECT \* FROM Employee WHERE salary > (SELECT MIN(salary) FROM Employee WHERE d\_no = (SELECT d\_no FROM Department WHERE d\_name = 'Administration'));



--12 Employee with more salary than min of Administration or Research SELECT \* FROM Employee WHERE salary > (SELECT MIN(salary) FROM Employee WHERE d\_no IN (SELECT d\_no FROM Department WHERE d\_name IN ('Administration', 'Research')));



Conclusion: We have successfully studied and implemented Simple and nested queries.