

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>'

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>' from 'tablename>' where 'condition>'

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

Top clause:- Top clause limits the number of rows returned in the resultset.

Syntax:- Select top n 'columnname' from 'tablename'

-- 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:

Relational operators:- >, <, =, >=, <=, ><(<=)

Logical Operators:- and, or, not

Range searching Operators(between, not between)

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

Syntax:- select columnname 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

Like operator:

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 require 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 comparison operators(all, some|any):-

All operator :- 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 comparison 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. Retrieve employee details of employees those are working in It department.

dno	dname
101	comp
102	it

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

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

empid	ename	salary	dno
10	Neha	25000.0000	102

Eg. Retrieve employee details of employees those are working in 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

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	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
2	Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
3	Joyce	A	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	M	38000.00	333445555	5
5	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	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	M	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;
```

Results Messages

	e_ssn
1	123456789
2	333445555
3	987654321

--3 First two dependants

```
SELECT TOP 2 * FROM Dependant;
```

Results

Messages

	e_ssn	dependent_name	dependent_sex	dependent_dob	dependent_relation
1	123456789	Alice	F	1988-12-30	Daughter
2	123456789	Elizabeth	F	1967-05-05	Spouse

Click to select the whole row

--4 Employee with salary between 10,000 and 30,000

```
SELECT * FROM Employee WHERE salary BETWEEN 10000 AND 30000;
```

Results		Messages								
	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
2	Joyce	A	English	453453453	1972-07-31	5361 Rice, Houston, TX	F	25000.00	333445555	5
3	Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	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	l_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	M	38000.00	333445555	5
3	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	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	l_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';

	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	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	Joyce	A	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;

	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	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	M	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');

	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
2	Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
3	Joyce	A	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	M	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);

	f_name	m_name	l_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	M	38000.00	333445555	5
3	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000.00	NULL	1
4	Jennifer	S	Wallace	987654321	1941-06-20	291 Berryman, Bellaire, TX	F	43000.00	888665555	4

--10 Employee with more salary than max of department 5

SELECT * FROM Employee WHERE salary > (SELECT MAX(salary) FROM Employee WHERE d_no = 5);

	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000.00	NULL	1
2	Jennifer	S	Wallace	987654321	1941-06-20	291 Berryman, Bellaire, TX	F	43000.00	888665555	4

--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'));

	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
2	Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
3	Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000.00	333445555	5
4	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000.00	NULL	1
5	Jennifer	S	Wallace	987654321	1941-06-20	291 Berryman, Bellaire, TX	F	43000.00	888665555	4

--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')));
```

Results Messages										
	f_name	m_name	l_name	ssn	dob	addr	sex	salary	super_ssn	d_no
1	John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
2	Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
3	Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000.00	333445555	5
4	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000.00	NULL	1
5	Jennifer	S	Wallace	987654321	1941-06-20	291 Berrym, Bellaire, TX	F	43000.00	888665555	4

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