DBMS LAB

Lab Assignment number 07

Name: Aamir Ansari **Batch:** A **Roll no.** 01

Aim: Experiment to study views.

Theory:

View:-

In SQL view is a table that is derived from other existing base table or existing views.

Unlike ordinary tables (base tables) in a relational datatbase a view does not form part of the physical schema

A view does not exists in physical form it is considered as a virtual table.

Views are nothing but saved SQL statements, and are sometimes referred as "Virtual Tables"

Specification of view in SQL:-

1. CREATE VIEW View_Name AS query statement
2. CREATE VIEW View_Name(list of columns) AS query

Statemen

```
create view deptavg as select dno,avg(salary) as avg_sal
from emp group by dno
```

or

```
create view deptavg(dno,avgsal) as select dno,avg(salary)
from emp group by dno
```

select *from deptavg

dno	avg_sal
101	40666.6666
102	25000.0000
103	40000.0000

--Retrieve employee details of employees those are earning
Salary more than average salary of dno 101.

-- By using view

```
select *From emp where salary>(select avg_sal from deptavg
where dno=101)
```

40666.6666

-- Without using view

```
select *From emp where salary>(select avg(salary) from emp where  dno=101)
```

Eg. create view empinfo as select ssn,dno from emp

```
select *From empinfo
Insert into empinfo(20,103)
```

ssn	dno
1	101
2	101
10	102
5	101
15	103

ssn	ename	salary	dno	superssn
10	Neha	25000.0000	102	NULL
2	smita	42000.0000	101	10
1	John	45000.0000	101	10
5	smit	35000.0000	101	15
15	Nisha	40000.0000	103	10
5	NULL	NULL	105	NULL

Delete from empinfo where ssn=10

--Create view deptinfo which includes columnsdno,dname,

No_of_emp,avgsal of every dept.

create view deptinfo as select e.dno,dname,avg(salary) as avgsal,count(*) as noofemp from emp as e,dept as d where e.dno=d.dno group by e.dno,dname

select *from deptinfo

dno	dname	avgsal	noofemp
101	comp	40666.6666	3
102	it	25000.0000	1

Retrieve employee details of employees those are earning

Salary more than average salary of IT department.

--By using view

select *From emp where salary>(select avgSal from deptinfo where dname='it')

25000.0000

ssn	ename	salary	dno	superssn
1	John	45000.0000	101	10
2	smita	42000.0000	101	10
5	smit	35000.0000	101	15
15	Nisha	40000.0000	103	10

--without using view

select *From emp where salary>(select avg(salary) from emp where dno=(Select dno from dept where dname='it'))

Advantages of view:-

View can provide extra security.

View can provide abstraction so database users can create abstraction by using view

Views can hide the complexity of data.

Views take very little space to store; the database contains only the definition of a view, not a copy of all the data it presents(view saves memory)

Views can act as aggregated tables, where the database engine aggregates data (sum, average, etc) and presents the calculated results as part of the data(views simplifies certain queries)

How views are stored?

When we define a view the database system stores the definition of view itself rather than the result of the evaluation of query expression.

Whenever a view definition appears in a query it is replaced by stored query expression and gets recomputed.

Types of views.

1.Updatable Views

2. Read Only Views

Updatable View:-

]If the database system can determine the reverse mapping from the view schema to the schema of the underlying base tables, then the view is updatable.

INSERT, UPDATE and DELETE operations can be performed on updatable views

Read-only view:-

Read-only views do not support such operations because the DBMS cannot map the changes to the underlying base tables.

Updation on view:-

A view with single defining table is updatable if the view attribute contains primary key of base relation as well as attributes with not null constraints that do not have default value.

A view defined on more than one table is not generally updatable.

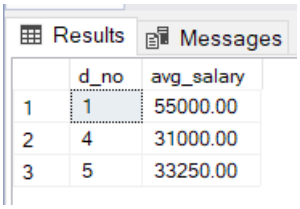
If it is insertion delete operation then it is not possible on more than one table.

Update operation is possible on the view defined on more than one table provided that it does not violates integrity constraints defined on the table.

If view contains aggregate functions then also view is not updatable.

// CODE

```
-- (1) Write a query to create a view to display average salary of every department
CREATE VIEW average(d_no, avg_salary) AS
SELECT d_no, AVG(salary)
FROM Employee
GROUP BY d_no;
SELECT * FROM average;
```



Results | Messages

	d_no	avg_salary
1	1	55000.00
2	4	31000.00
3	5	33250.00

```
-- (2a) Write a query to retrieve employee details of employees those are earning salary more than the average salary of department no. 5 without using view
SELECT *
FROM Employee
WHERE salary > (SELECT AVG(salary)
                FROM Employee
                Where d_no = 5);
```

Results Messages

	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

.

-- (2b) Write a query to retrieve employee details of employees those are earning salary more than the average salary of department no. 5 using view

```
CREATE VIEW salary_greater_avg_5 AS
SELECT *
FROM Employee
WHERE salary > (SELECT AVG(salary)
                FROM Employee
                Where d_no = 5);
SELECT * FROM salary_greater_avg_5;
```

Results Messages

	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

-- (3) Write a query to create a view of employee info which shows the ssn and department no. of every employee

```
CREATE VIEW ssn_and_dno AS
SELECT ssn, d_no
FROM Employee
SELECT * FROM ssn_and_dno;
```

Results Messages

	ssn	d_no
1	123456789	5
2	333445555	5
3	453453453	5
4	666884444	5
5	888665555	1
6	987654321	4
7	987987987	4
8	999887777	4

-- (4) Write a query to create a view of department info which shows dept name, dept id, average salary and no. of employees

```
CREATE VIEW department_info(d_name, d_no, avg_salary, no_employee) AS
SELECT d_name, d.d_no, AVG(salary), COUNT(*)
FROM Employee e JOIN Department d ON e.d_no = d.d_no
GROUP BY d.d_name, d.d_no;
SELECT * FROM department_info;
```

Results | Messages

	d_name	d_no	avg_salary	no_employee
1	Headquarters	1	55000.00	1
2	Administration	4	31000.00	3
3	Research	5	33250.00	4

-- (5a) Write a query to retrieve employee details of employee those are earning salary more than the average salary of Research dept without using view

```
SELECT *
FROM Employee
WHERE salary > (SELECT AVG(salary)
                FROM Employee
                WHERE d_no = (SELECT d_no
                              FROM Department
                              WHERE d_name = 'Research'
                              )
                );
```

Results | Messages

	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

-- (5b) Write a query to retrieve employee details of employee those are earning salary more than the average salary of Research dept using view

```
CREATE VIEW salary_greater_avg_research AS
SELECT *
FROM Employee
WHERE salary > (SELECT AVG(salary)
                FROM Employee
                WHERE d_no = (SELECT d_no
                              FROM Department
                              WHERE d_name = 'Re          search'
                              )
                );
SELECT * FROM salary_greater_avg_research;
```

Results | Messages

	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

Conclusion : Hence we have successfully studied and implemented Views in DBMS.