



Universidad Autónoma de Zacatecas

Unidad Académica de Ingeniería Eléctrica

Programa Académico de Ingeniería de Software

Practice 15

Practice name	Using Views
Academic Program	Software Engineering
Subject name	Laboratory of Database Systems II
Unit	I. SQL.
Professor	Aldonso Becerra Sánchez
Due date	November 24, 2022
Due date with penalty	November 25, 2022
Elaboration date	November 22, 2022

Practice objective	Use SQL SELECT statements for retrieving data from several sources using different operations and Views.
Estimated time of completion	5 hours
Introduction	SQL language allows the realization of projection and selection of data from several tables to satisfy the needs of reports that may be required for a programmer, developer or end user.

Reference 1:

1. Oracle Database 11g: SQL Fundamentals.

Reference 2:

2. Oracle Database SQL Language Reference 11g.

Reference 3:



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Initial Activity:

Read the whole practice before start it.

Write the corresponding report, starting with the **introduction** section.

Activity 1:

Write the section that describes the **work developed** in the following activities.

Read all the choices carefully because there might be more than one correct answer. Choose all the correct answers for each question.

Explain the reason for your answer.

CREATE SIMPLE AND COMPLEX VIEWS

1. Which of these is a defining characteristic of a complex view, rather than a simple view?

(Choose one or more correct answers.)

- A. Joining two tables
- B. Naming the view's columns with column aliases
- C. Restricting the selection of rows with a WHERE clause
- D. Performing an aggregation
- E. Restricting the projection by selecting only some of the table's columns

2. Consider these three statements:

create view v1 as select department_id,department_name,last_name from departments join employees using (department_id);

select department_name,last_name from v1 where department_id=20;

select d.department_name,e.last_name from departments d, employees e where d.department_id=e.department_id and d.department_id=20;

The first query will be quicker than the second because (choose the best answer):

- A. The view has already done the work of joining the tables.



- B. The view uses ISO standard join syntax, which is faster than the Oracle join syntax used in the second query.
- C. The view is precompiled, so the first query requires less dynamic compilation than the second query.
- D. There is no reason for the first query to be quicker.

3. Study this view creation statement:

create view dept30 as

select department_id, employee_id, last_name from employees

where department_id=30 with check option;

What might make the following statement fail? (Choose the best answer.)

update dept30 set department_id=10 where employee_id=114;

- A. Unless specified otherwise, views will be created as WITH READ ONLY.
- B. The view is too complex to allow DML operations.
- C. The WITH CHECK OPTION will reject any statement that changes the DEPARTMENT_ID.
- D. The statement will succeed.

RETRIEVE DATA FROM VIEWS

4. There is a simple view SCOTT.DEPT_VIEW on the table SCOTT.DEPT. This insert fails with an error:

SQL> insert into dept_view values('SUPPORT','OXFORD');

insert into dept_view values('SUPPORT','OXFORD')

ERROR at line 1:

ORA-01400: cannot insert NULL into ("SCOTT"."DEPT"."DEPTNO")

What might be the problem? (Choose the best answer.)

- A. The INSERT violates a constraint on the detail table.
- B. The INSERT violates a constraint on the view.
- C. The view was created as WITH READ ONLY.



D. The view was created as WITH CHECK OPTION.

5. To add the number of columns selected by a view: (Choose the best answer.)

- A. Add more columns to the underlying table.
- B. Issue the alter view statement.
- C. Use a correlated subquery in conjunction with the view.
- D. Drop and re-create the view with references to select more columns.

6. The following statement is issued against the Oracle database. Which line will produce an error? (Choose the best answer.)

- A. create view EMP_VIEW_01
- B. as select E.EMPID, E.LASTNAME, E.FIRSTNAME, A.ADDRESS
- C. from EMPLOYEE E, EMPL_ADDRESS A
- D. where E.EMPID = A.EMPID
- E. with check option;
- F. This statement contains no errors.

Activity 2:

Propose an answer to the following issues:

1. What is a simple view? How does it differ from a complex view? Which view allows the user to insert data into the view's underlying table? Explain.
2. What is a complex view? What are the rules that determine when a complex view can be used to modify data in an underlying table? Explain.
3. How can constraints be created and enforced on views?
4. On what principle does a view constraint operate?
5. What statement is used to alter the definition of a view?
6. How are views dropped?
7. How can you create a view even if the table referenced does not exist?
8. What statement is used to recompile or revalidate an existing view definition?
9. What is object dependency? About views and tables.



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Activity 3:

This exercise must be performed in the local HR schema.

a) Problem 1.

1. The staff in the HR department wants to hide some of the data in the EMPLOYEES table. Create a view called EMPLOYEES_VU based on the employee numbers, employee last names, and department numbers from the EMPLOYEES table. The heading for the employee name should be EMPLOYEE.
2. Confirm that the view works. Display the contents of the EMPLOYEES_VU view.

	EMPLOYEE_ID	EMPLOYEE	DEPARTMENT_ID
1	100	King	90
2	101	Kochhar	90
3	102	De Haan	90
4	103	Hunold	60
5	104	Ernst	60
6	105	Austin	60
7	106	Pataballa	60
8	107	Lorentz	60
9	108	Greenberg	100
10	109	Favier	100
11	110	Chen	100
12	111	Sciarra	100
13	112	Urman	100
14	113	Popp	100
15	114	Raphaely	30
16	115	Khoo	30
17	116	Baida	30
18	117	Tobias	30
19	118	Himuro	30

3. Using your EMPLOYEES_VU view, write a query for the HR department to display all employee names and department numbers.



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Script Output x Query Result x

SQL | All Rows Fetched: 107 in 0.424 s

EMPLOYEE	DEPARTMENT_ID
1 King	90
2 Kochhar	90
3 De Haan	90
4 Hunold	60
5 Ernst	60
6 Austin	60
7 Pataballa	60
8 Lorentz	60
9 Greenberg	100
10 Faviet	100
11 Chen	100
12 Sciarra	100
13 Urman	100
14 Popp	100
15 Raphaely	30
16 Khoo	30
17 Baida	30
18 Tobias	30
19 Himuro	30

4. Department 50 needs access to its employee data. Create a view named DEPT50 that contains the employee numbers, employee last names, and department numbers for all employees in department 50. You have been asked to label the view columns EMPNO, EMPLOYEE, and DEPTNO. For security purposes, do not allow an employee to be reassigned to another department through the view.
5. Display the structure and contents of the DEPT50 view.

Script Output x Query Result x

Task completed in 0.88 seconds

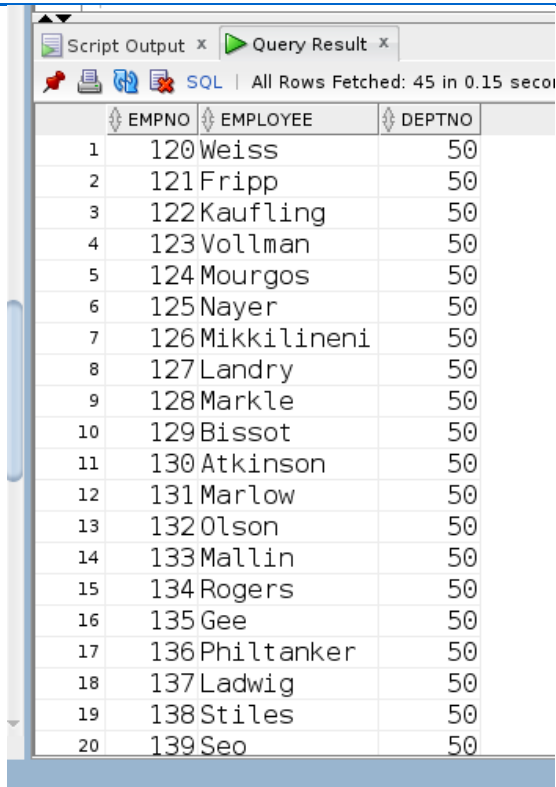
Name	Null?	Type
EMPNO	NOT NULL	NUMBER(6)
EMPLOYEE	NOT NULL	VARCHAR2(25)
DEPTNO		NUMBER(4)



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Script Output x Query Result x

SQL | All Rows Fetched: 45 in 0.15 seconds

	EMPNO	EMPLOYEE	DEPTNO
1	120	Weiss	50
2	121	Fripp	50
3	122	Kaufling	50
4	123	Vollman	50
5	124	Mourgos	50
6	125	Nayer	50
7	126	Mikkilineni	50
8	127	Landry	50
9	128	Markle	50
10	129	Bissot	50
11	130	Atkinson	50
12	131	Marlow	50
13	132	Olson	50
14	133	Mallin	50
15	134	Rogers	50
16	135	Gee	50
17	136	Philtanker	50
18	137	Ladwig	50
19	138	Stiles	50
20	139	Seo	50

6. Test your view. Attempt to reassign Matos to department 80. What is the result? Explain.

b) Problem 2.

1. Create views on the EMPLOYEES (**emp_anon_v**) and DEPARTMENT (**dept_anon_v**) tables that queries representative personal information (hire_date, job_id, salary, commission_pct, department_id; department_id, department_name, location_id) :
2. Create a complex view that will join and aggregate (sum salary grouped by department's id and name [salaries], count the number of employees [staff]) the two simple views. Name the view **dep_sum_v**. Note that there is no reason not to have views of views.
3. Query the resulting table:



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	DEPARTMENT_ID	STAFF	SALARIES	DEPARTMENT_NAME
1	100	6	51608	Finance
2	50	45	156400	Shipping
3	70	1	10000	Public Relations
4	30	6	24900	Purchasing
5	90	3	58000	Executive
6	10	1	4400	Administration
7	110	2	20308	Accounting
8	40	1	6500	Human Resources
9	20	2	19000	Marketing
10	60	5	28800	IT
11	80	34	304500	Sales

4. Execute these statements and show results.

c) Problem 3.

1. Insert a new department through the DEPT_ANON_V view and attempt to insert an employee through EMP_ANON_V:

```
insert into DEPT_ANON_V values(99,'Temp Dept',1800);
```

```
insert into EMP_ANON_V values(sysdate,'AC_MGR',10000,0,99);
```

What is the result? Why?

Try to update through it:

```
update emp_anon_v set salary=salary*1.1;
```

What is the result? Why?

Then roll back the changes:

2. Find out the salary of the department with the highest average salary, by querying the EMPLOYEES table (use a subquery in the FROM clause to extract the average salary from employees):

[illegible]

and find the same information from the `DEP_SUM_V` view, which is a much simpler query:

[illegible]

3. Execute these statements and show results.

d) Problem 4.

From de following tables:

```
CREATE TABLE departments1 (
name CHAR(20) PRIMARY KEY,
office CHAR(50));
```

```
CREATE TABLE employees1 (  
id SMALLINT PRIMARY KEY,  
surname CHAR(40),  
name CHAR(20),  
salary INTEGER,  
dep CHAR(20) REFERENCES departments1);
```



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1. Insert some data in both tables.
2. Create a view called EmpDepSales that contains the surname and first name of the employees of the department "Sales" renaming those properties as "last_name" and "first_name". Use alias out of the subquery.
3. List the surname and first name of the employees of the department "Sales" alphabetically.
4. Alter the view EmpDepSales to also include the salary.
5. Create a view that displays the minimum, maximum and average salaries of the employees of each department.
6. Describe each view.
7. Drop each view created.

e) Problem 5.

1. Connect to your database as user HR.
2. Create synonyms for the three views created in Exercise b, problem 2:
3. Confirm that the synonyms are identical to the underlying object:
4. Confirm that the synonyms work (even to the extent of producing the same errors) by running the statements in b and c against the synonyms instead of the views:
5. Drop two of the views:
6. Query the complex view that is based on the dropped views:

Note that the query fails.

7. Attempt to recompile the broken view:

This will fail as well.



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8. Drop the DEP_SUM_V view:

9. Query the synonym for a dropped view:

This will fail.

10. Recompile the broken synonym:

Note that this does not give an error, but rerun the query from step 9. It is definitely still broken.

11. Tidy up by dropping the synonyms:

The NOTE: Capture an image for each statement output.

Activity 4:

Write the **Pre-assessment** section.

Final activity:

Write the **Conclusion** section.

Attached file that is required for this task (optional):

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