ROLL NO : 19131A05P1 V SATYA SIVA LALITHA GAYATHRI BODA SEC: CSE4

Part A

Aim: commands:

i) To perform join operations

ii) Use set operators

Prerequisite: SQL Server.

Outcome: Understanding and use of join operations.

Theory:

SQL JOIN

An SQL JOIN clause is used to combine rows from two or more tables, based on a common field between them.

SQL INNER JOIN

The INNER JOIN keyword selects all rows from both tables as long as there is a match between the columns in both tables.

Syntax

SELECT *column_name(s)*
FROM *table1*
INNER JOIN *table2*
ON *table1.column_name=table2.column_name*;

SQL LEFT JOIN

The LEFT JOIN keyword returns all rows from the left table (table1), with the matching rows in the right table (table2). The result is NULL in the right side when there is no match.

Syntax

SELECT *column_name(s)*
FROM *table1*
LEFT JOIN *table2*
ON *table1.column_name=table2.column_name*;

SQL RIGHT JOIN

The RIGHT JOIN keyword returns all rows from the right table (table2), with the matching rows in the left table (table1). The result is NULL in the left side when there is no match.

Syntax

SELECT *column_name(s)*
FROM *table1*
RIGHT JOIN *table2*
ON *table1.column_name=table2.column_name*;

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SQL FULL OUTER JOIN
The FULL OUTER JOIN keyword returns all rows from the left table (table1) and from the right table (table2).

The FULL OUTER JOIN keyword combines the result of both LEFT and RIGHT joins.

Syntax

SELECT *column_name(s)*
FROM *table1*
FULL OUTER JOIN *table2*
ON *table1.column_name=table2.column_name*;

SQL UNION :
The SQL UNION operator combines the result of two or more SELECT statements.

Syntax:
SELECT *column_name(s)* FROM *table1*
UNION
SELECT *column_name(s)* FROM *table2*;

SQL INTERSECT:
The SQL Intersect operator returns all the results which are common in two or more SELECT statements.

Syntax:
SELECT *column_name(s)* FROM *table1*
Intersect
SELECT *column_name(s)* FROM *table2*;

SQL EXCEPT:
The SQL Except operator returns all the results which are in the result of first but not in the result of second SELECT statement (Set-Difference).

Syntax:
SELECT *column_name(s)* FROM *table1*
Except
SELECT *column_name(s)* FROM *table2*;

Procedure:

1. Formulate the query for given problem.
2. Write the SQL query with proper input.
3. Execute the query.

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Practice Exercise:

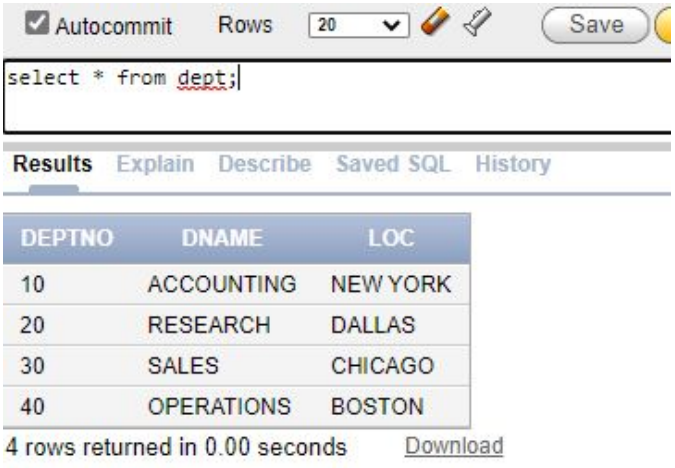
1. Display the common jobs from department number 10 and 20.
2. Display the jobs found in department number 10 and 20 eliminate duplicate jobs.
3. Display the jobs which are in dept no 10 but not in 20.
4. Display those employees who are working in the same dept where his manager is working.
5. Delete those employees who joined the company before 31-dec-82 while there dept location is 'NEW YORK' or 'CHICAGO'.
6. Display employees name for the dept Accounting or Sales but job is not clerk, while joined the company before 31-dec-82.
7. Display employee name, job, deptname, location for all who are working as managers.
8. Display those employees whose manager names is Jones, and also display there manager name.
9. Display emp number and salary of ford if his Sal is equal to highest Sal of his department.
10. List out all the employees name, job, and salary grade and department name for every one in the company except 'CLERK'. Sort on salary.
11. Display employees who are without manager.
12. Display the name of those employees who are getting highest salary.
13. Display the name of those employees who are getting second highest salary.
14. Display those employees whose salary is equal to average of maximum and minimum.
15. Display count of employees in each department where count greater than 3.
16. Display dname where at least 3 are working and display only dname.
17. Display name of those managers name whose salary is more than average salary of company.
18. Find out the top 5 earner of company.
19. Find out the last 5(least) earner of the company?
20. Display employee name, his job, his dept name, his manager name, his sal and arrange it based on salary under department wise.

Instructions:

1. Write and execute the query in Oracle SQL server.
2. Paste the snapshot of the output in input & output section.

Part B

INPUT AND OUTPUT:



DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

4 rows returned in 0.00 seconds Download

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```
select * from emp;
```

Results Explain Describe Saved SQL History

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	AGE
7839	KING	PRESIDENT	-	11/17/1981	5000	-	10	-
7698	BLAKE	MANAGER	7839	05/01/1981	2850	-	30	-
7782	CLARK	MANAGER	7839	06/09/1981	2450	-	10	-
7566	JONES	MANAGER	7839	04/02/1981	2975	-	20	-
7788	SCOTT	ANALYST	7566	12/09/1982	3000	-	20	-
7902	FORD	ANALYST	7566	12/03/1981	3000	-	20	-
7369	SMITH	CLERK	7902	12/17/1980	800	-	20	-
7499	ALLEN	SALESMAN	7698	02/20/1981	1600	300	30	-
7521	WARD	SALESMAN	7698	02/22/1981	1250	500	30	-
7654	MARTIN	SALESMAN	7698	09/28/1981	1250	1400	30	-
7844	TURNER	SALESMAN	7698	09/08/1981	1500	0	30	-
7876	ADAMS	CLERK	7788	01/12/1983	1100	-	20	-
7900	JAMES	CLERK	7698	12/03/1981	950	-	30	-
7934	MILLER	CLERK	7782	01/23/1982	1300	-	10	-

14 rows returned in 0.00 seconds Download

1.

Autocommit Rows 20 Save Run

```
select distinct(job) from emp where deptno=10
intersect
select distinct(job) from emp where deptno=20
```

Results Explain Describe Saved SQL History

JOB
CLERK
MANAGER

2 rows returned in 0.00 seconds Download

2.

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```
select distinct(job) from emp where deptno=10
union
select distinct(job) from emp where deptno=20
```

Results Explain Describe Saved SQL History

JOB
ANALYST
CLERK
MANAGER
PRESIDENT

4 rows returned in 0.00 seconds Download

or

select distinct(job) from emp where empno in(select empno from emp where deptno=10 or deptno=20);

```
select distinct(job) from emp where empno in(select empno from emp where deptno=10 or deptno=20);
```

Results Explain Describe Saved SQL History

JOB
CLERK
PRESIDENT
MANAGER
ANALYST

4 rows returned in 0.00 seconds Download

3.

```
select job from emp where deptno=10
minus
select job from emp where deptno=20;
```

Results Explain Describe Saved SQL History

JOB
PRESIDENT

1 rows returned in 0.00 seconds Download

4.select e.ename from emp e inner join emp m on e.mgr=m.empno and e.deptno=m.deptno;

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```
select e.ename from emp e inner join emp m on e.mgr=m.empno and e.deptno=m.deptno;
```

Results Explain Describe Saved SQL History

ENAME
CLARK
JAMES
TURNER
MARTIN
WARD
ALLEN
MILLER
FORD
SCOTT
ADAMS
SMITH

11 rows returned in 0.00 seconds Download

or

```
SELECT E.ENAME FROM EMP E,EMP E1 WHERE E.MGR=E1.EMPNO AND E.DEPTNO=E1.DEPTNO;
```

Results Explain Describe Saved SQL History

ENAME
CLARK
JAMES
TURNER
MARTIN
WARD
ALLEN
MILLER
FORD
SCOTT
ADAMS
SMITH

11 rows returned in 0.00 seconds Download

5.

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Autocommit Rows 20 Save Run

```
delete from emp2 where hiredate<'12/31/1982' and dept_no in (select deptno from dept where loc in('NEWYORK','CHICAGO'));
```

Results Explain Describe Saved SQL History

```
6 row(s) deleted.

0.01 seconds
```

6.select ENAME from EMP where HIREDATE<'12/31/1982' and job!='CLERK' and DEPTNO in (select DEPTNO from DEPT where DNAME='ACCOUNTING' or DNAME='SALES');

Autocommit Rows 10 Save Run

```
select ENAME from EMP where HIREDATE<'12/31/1982' and job!='CLERK' and DEPTNO in (select DEPTNO from DEPT where DNAME='ACCOUNTING' or DNAME='SALES');
```

Results Explain Describe Saved SQL History

ENAME
KING
CLARK
MARTIN
ALLEN
TURNER
WARD
BLAKE

7 rows returned in 0.00 seconds Download

or

select ENAME from EMP natural join DEPT where DNAME in ('SALES','ACCOUNTING') and JOB<>'CLERK' AND HIREDATE<'12/31/1982';

```
select ENAME from EMP natural join DEPT where DNAME in ('SALES','ACCOUNTING') and JOB<>'CLERK' AND HIREDATE<'12/31/1982';
```

Results Explain Describe Saved SQL History

ENAME
KING
CLARK
MARTIN
ALLEN
TURNER
WARD
BLAKE

7 rows returned in 0.01 seconds Download

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7.select ENAME,JOB,DNAME,LOC from EMP,DEPT where EMP.JOB='MANAGER';

```
SELECT ENAME,JOB,DNAME,LOC from EMP E NATURAL JOIN DEPT D WHERE E.JOB='MANAGER';
```

Results Explain Describe Saved SQL History

ENAME	JOB	DNAME	LOC
CLARK	MANAGER	ACCOUNTING	NEW YORK
JONES	MANAGER	RESEARCH	DALLAS
BLAKE	MANAGER	SALES	CHICAGO

3 rows returned in 0.00 seconds Download

8.select E.ENAME,E1.ENAME from EMP E,EMP E1 where E.MGR=E1.EMPNO AND E1.ENAME='JONES';

```
select E.ENAME,E1.ENAME from EMP E,EMP E1 where E.MGR=E1.EMPNO AND E1.ENAME='JONES';
```

Results Explain Describe Saved SQL History

ENAME	ENAME
FORD	JONES
SCOTT	JONES

2 rows returned in 0.00 seconds Download

9.SELECT EMPNO,SAL from EMP WHERE ENAME='FORD' AND SAL=(SELECT MAX(SAL) FROM EMP WHERE DEPTNO=(SELECT DEPTNO FROM EMP WHERE ENAME='FORD'));

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```
SELECT EMPNO,SAL from EMP WHERE ENAME='FORD' AND SAL=(SELECT MAX(SAL) FROM EMP WHERE DEPTNO=(SELECT DEPTNO FROM EMP WHERE ENAME='FORD'));
```

Results Explain Describe Saved SQL History

EMPNO	SAL
7902	3000

1 rows returned in 0.01 seconds Download

10.

```
select ENAME,JOB,DEPTNO from EMP E
NATURAL JOIN DEPT D WHERE JOB <> 'CLERK' ORDER BY SAL;
```

Results Explain Describe Saved SQL History

ENAME	JOB	DEPTNO
WARD	SALESMAN	30
MARTIN	SALESMAN	30
TURNER	SALESMAN	30
ALLEN	SALESMAN	30
CLARK	MANAGER	10
BLAKE	MANAGER	30
JONES	MANAGER	20
FORD	ANALYST	20
SCOTT	ANALYST	20
KING	PRESIDENT	10

10 rows returned in 0.01 seconds Download

11

```
select ENAME FROM EMP WHERE MGR IS NULL OR EMPNO=MGR;
```

Results Explain Describe Saved SQL History

ENAME
KING

1 rows returned in 0.00 seconds Download

.

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12.

```
select ENAME FROM EMP WHERE SAL=(SELECT MAX(SAL) FROM EMP);
```

Results Explain Describe Saved SQL History

ENAME
KING

1 rows returned in 0.01 seconds Download

13.

```
select ENAME,SAL FROM EMP WHERE SAL IN (SELECT MAX(SAL) FROM EMP WHERE SAL<(SELECT MAX(SAL) FROM EMP));
```

Results Explain Describe Saved SQL History

ENAME	SAL
SCOTT	3000
FORD	3000

2 rows returned in 0.00 seconds Download

OR

```
select ename from emp where sal=(select max(sal) from emp where sal in (select sal from emp minus select max(sal) from emp));
```

Results Explain Describe Saved SQL History

ENAME
SCOTT
FORD

2 rows returned in 0.00 seconds Download

14.SELECT ENAME ,SAL FROM EMP WHERE SAL=SELECT MAX(SAL)+MIN(SAL)/2 FROM EMP;

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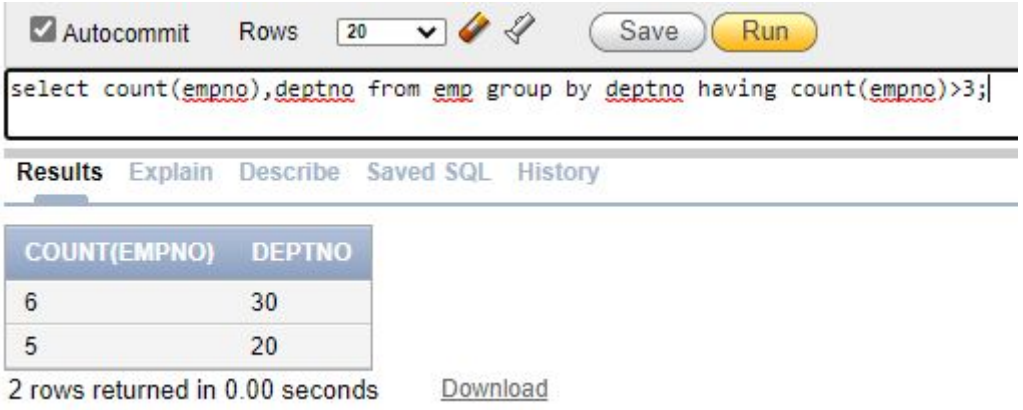
```
select ENAME,SAL FROM EMP WHERE SAL = (SELECT MAX(SAL)+MIN(SAL)/2 FROM EMP);
```

Results Explain Describe Saved SQL History

no data found

15.SELECT COUNT(EMPNO),DEPTNO FROM EMP GROUP BY DEPTNO HAVING COUNT(EMPNO)>3;



16.SELECT DNAME FROM EMP NATURAL JOIN DEPT GROUP BY DNAME HAVING COUNT(EMPNO)>=3;

```
SELECT DNAME FROM EMP NATURAL JOIN DEPT GROUP BY DNAME HAVING COUNT(EMPNO)>=3;
```

Results Explain Describe Saved SQL History

DNAME
ACCOUNTING
RESEARCH
SALES

3 rows returned in 0.00 seconds Download

17.SELECT ENAME FROM EMP WHERE JOB='MANAGER' AND SAL>(SELECT AVG(SAL) FROM EMP);

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```
select ENAME from EMP where job='MANAGER' and SAL>(select AVG(SAL) from EMP);
```

Results Explain Describe Saved SQL History

ENAME
BLAKE
CLARK
JONES

3 rows returned in 0.01 seconds Download

18. SELECT ENAME FROM EMP E WHERE 5>(SELECT COUNT(*) FROM EMO WHERE SAL>E.SAL) ORDER BY SAL DESC;

```
SELECT ENAME FROM EMP E WHERE 5>(SELECT COUNT(*) FROM EMP WHERE SAL>E.SAL) ORDER BY SAL DESC;
```

Results Explain Describe Saved SQL History

ENAME
KING
SCOTT
FORD
JONES
BLAKE

5 rows returned in 0.01 seconds Download

OR

SELECT ENAME FROM (SELECT ENAME FROM EMP ORDERBY SAL DESC) WHERE ROWNUM<=5 ORDER BY SAL DESC;

19.

```
SELECT ENAME FROM EMP E WHERE 5>(SELECT COUNT(*) FROM EMP WHERE SAL<E.SAL) ORDER BY SAL ASC;
```

Results Explain Describe Saved SQL History

ENAME
SMITH
JAMES
ADAMS
WARD
MARTIN

5 rows returned in 0.00 seconds Download

or

select ename,sal from (select ename, Sal from emp order by sal) where rownum <= 5 order by sal ;

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20.

select e.ename,e.job,d.dname,m.ename as manager from emp e,emp m,dept d where e.mgr=m.empno and e.deptno=d.deptno order by e.deptno,e.sal;

```
select e.ename,e.job,d.dname,m.ename as manager from emp e,emp m,dept d where
e.mgr=m.empno and e.deptno=d.deptno order by e.deptno,e.sal;
```

Results Explain Describe Saved SQL History

ENAME	JOB	DNAME	MANAGER
MILLER	CLERK	ACCOUNTING	CLARK
CLARK	MANAGER	ACCOUNTING	KING
SMITH	CLERK	RESEARCH	FORD
ADAMS	CLERK	RESEARCH	SCOTT
JONES	MANAGER	RESEARCH	KING
FORD	ANALYST	RESEARCH	JONES
SCOTT	ANALYST	RESEARCH	JONES
JAMES	CLERK	SALES	BLAKE
MARTIN	SALESMAN	SALES	BLAKE
WARD	SALESMAN	SALES	BLAKE
TURNER	SALESMAN	SALES	BLAKE
ALLEN	SALESMAN	SALES	BLAKE
BLAKE	MANAGER	SALES	KING

13 rows returned in 0.00 seconds Download

Observation & Learning:

By this experiment I have learnt and practiced following sql queries using join operations(self join ,natural join etc) and using set operators

Conclusion:

Learned joins and set operations.

Questions:

1. Explain self-join with example query and output.

Answers:

1. **A self join allows you to join a table to itself.**

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Eg:Here in this expt we have used emp table
To get employee names of city chicago :

QUERY: select ename from emp e, dept d where e.deptno=d.deptno and d.loc='chicago'

Output will be list of employees from chicago