Please make use of your own examples after understanding the concepts.

Exercise Number: 4

Title of the Exercise : NESTED QUERIES AND JOIN QUERIES

Date of the Exercise :

OBJECTIVE (AIM) OF THE EXPERIMENT

To perform nested Queries and joining Queries using DML command.

FACILITIES REQUIRED AND PROCEDURE

a) Facilities required to do the experiment:

Sl.No.	Facilities required	Quantity
1	System	1
2	Operating System	Windows
3	Front end	
4	Back end	Oracle11g

b) Procedure for doing the experiment:

Step no.	Details of the step
1	**Nested Queries:** Nesting of queries one within another is known as a nested queries. **Sub queries** The query within another is known as a sub query. A statement containing sub query is called parent statement. The rows returned by sub query are used by the parent statement.
2	**Types** **1. Sub queries that return several values** Sub queries can also return more than one value. Such results should be made use along with the operators in and any. **2. Multiple queries** Here more than one sub query is used. These multiple sub queries are combined by means of 'and' & 'or' keywords **3. Correlated sub query** A sub query is evaluated once for the entire parent statement whereas a correlated Sub query is evaluated once per row processed by the parent statement.
3	**Relating Data through Join Concept** The purpose of a join concept is to combine data spread across tables. A join is actually performed by the 'where' clause which combines specified rows of tables. Syntax; select columns from table1, table2 where logical expression; **Types of Joins** 1. Simple Join 2. Self Join 3. Outer Join 4. Inner Join
4	1. Simple Join **a) Equi-join:** A join, which is based on equalities, is called equi-join. **b) Non Equi-join:** It specifies the relationship between **Table Aliases** Table aliases are used to make multiple table queries shorted and more readable. We give an alias name to the table in the 'from' clause and use it instead of the name throughout the query.
5	**Self join:** Joining of a table to itself is known as self-join. It joins one row in a table to another. It can compare each row of the table to itself and also with other rows of the same table.
6	**Outer Join:** It extends the result of a simple join. An outer join returns all the rows returned by simple join as well as those rows from one table that do not match any row from the table. The symbol (+) represents outer join. **Inner join:** Inner join returns the matching rows from the tables that are being joined

c) SQL Commands:

Nested Queries:

Example: select ename, eno, address where salary >(select salary from employee where ename =’jones’);

1.Subqueries that return several values

Example: select ename, eno, from employee where salary <any (select salary from employee where deptno =10’);

3.Correlated subquery

Example: select * from emp x where x.salary > (select avg(salary) from emp where deptno =x.deptno);

Simple Join

a) Equi-join

Example: select * from item, cust where item.id=cust.id;

b) Non Equi-join

Example: select * from item, cust where item.id<cust.id;

Self join

Example: select * from emp x ,emp y where x.salary >= (select avg(salary) from x.emp where x. deptno =y.deptno);

Outer Join

Example: select ename, job, dname from emp, dept where emp.deptno (+) = dept.deptno;

d) Queries:

Q1: Display all employee names and salary whose salary is greater than minimum salary of the company and job title starts with ‘M’.

Solution:

1. Use select from clause.
2. Use like operator to match job and in select clause to get the result.

Ans:

```
SQL> select ename,sal from emp where sal>(select min(sal) from emp where job like 'A%');
ENAME                SAL
-------------------- ----------
Arjun                12000
Gugan                20000
Karthik              15000
```

Q2: Issue a query to find all the employees who work in the same job as Arjun.

Ans:

```
SQL> select * from emp;
    EMPNO ENAME              JOB          DEPTNO       SAL
---------- -------------------- ---------- ---------- ----------
         1 Mathi              AP              1      10000
         2 Arjun              ASP             2      12000
         3 Gugan               ASP             2      20000
         4 Karthik            AP              1      15000
SQL> select ename from emp where job=(select job from emp where ename='Arjun');
ENAME
--------------
Arjun
Gugan
```

Q3: Issue a query to display information about employees who earn more than any employee in dept 1.
Ans:

```
SQL> select * from emp where sal>(select max(sal) from emp where empno=1);

     EMPNO ENAME              JOB          DEPTNO       SAL
---------- -------------------- ---------- ---------- ----------
         2 Arjun              ASP             2      12000
         3 Gugan               ASP              2       20000
         4 Karthik             AP              1      15000
```

JOINS

Tables used

```
SQL> select * from emp;

     EMPNO ENAME              JOB          DEPTNO       SAL
---------- -------------------- ---------- ---------- ----------
         1 Mathi              AP              1      10000
         2 Arjun              ASP             2      12000
         3 Gugan               ASP              2       20000
         4 Karthik             AP              1      15000

SQL> select * from dept;

    DEPTNO DNAME         LOC
---------- -------------- -------------
         1 ACCOUNTING     NEW YORK
         2 RESEARCH       DALLAS
        30 SALES          CHICAGO
        40 OPERATIONS     BOSTON
```

EQUI-JOIN

Q4: Display the employee details, departments that the departments are same in both the emp and dept.
Solution:
1. Use select from clause. 2. Use equi join in select clause to get the result.
Ans:

```
SQL> select * from emp,dept where emp.deptno=dept.deptno;
    EMPNO ENAME      JOB    DEPTNO   SAL     DEPTNO DNAME         LOC
---------- -------------------- ---------- ---------- ---------- ----------  -------------- -------------
         1 Mathi              AP              1      10000          1  ACCOUNTING     NEW YORK
         2 Arjun              ASP             2      12000          2   RESEARCH       DALLAS
         3 Gugan               ASP              2       20000          2 RESEARCH       DALLAS
         4 Karthik             AP              1      15000          1  ACCOUNTING     NEW YORK
```

NON-EQUIJOIN

Q5: Display the employee details, departments that the departments are not same in both the emp and dept.
Solution:
1.Use select from clause. 2. Use non equi join in select clause to get the result.

Ans:

SQL> select * from emp,dept where emp.deptno!=dept.deptno;

```
    EMPNO ENAME      JOB          DEPTNO       SAL     DEPTNO    DNAME         LOC
---------- -------------------- ---------- ---------- ---------- ---------------------- -------------
         2 Arjun                ASP              2      12000          1   ACCOUNTING     NEW YORK
         3 Gugan                ASP              2      20000          1   ACCOUNTING     NEW YORK
         1 Mathi                AP               1      10000          2   RESEARCH       DALLAS

    EMPNO ENAME                JOB          DEPTNO       SAL     DEPTNO DNAME         LOC
---------- -------------------- ---------- ---------- ---------- ---------- -------------- -------------
         4 Karthik              AP               1      15000          2 RESEARCH       DALLAS
         1 Mathi                AP               1      10000         30 SALES          CHICAGO
         2 Arjun                ASP              2      12000         30 SALES          CHICAGO
    EMPNO ENAME                JOB          DEPTNO       SAL     DEPTNO DNAME         LOC
---------- -------------------- ---------- ---------- ---------- ---------- -------------- -------------
         3 Gugan                ASP              2      20000         30 SALES          CHICAGO
         4 Karthik              AP               1      15000         30 SALES          CHICAGO
         1 Mathi                AP               1      10000         40 OPERATIONS     BOSTON
    EMPNO ENAME                JOB          DEPTNO       SAL     DEPTNO DNAME         LOC
---------- -------------------- ---------- ---------- ---------- ---------- -------------- -------------
         2 Arjun                ASP              2      12000         40 OPERATIONS     BOSTON
         3 Gugan                ASP              2      20000         40 OPERATIONS     BOSTON
         4 Karthik              AP               1      15000         40 OPERATIONS     BOSTON
12 rows selected.
```

LEFTOUT-JOIN

Tables used

```
SQL> select * from stud1;
   Regno  Name           Mark2      Mark3              Result
---------- ----------- ---------- ---------- ---------------------------------------
      101           john            89           80            pass
      102   Raja                    70           80             pass
      103   Sharin                 70            90            pass
     104            sam                 90            95            pass
SQL> select * from stud2;
NAME       GRA
---------- ----------
john             s
raj              s
sam              a
sharin           a
```

Q6: Display the Student name and grade by implementing a left outer join.

Ans: SQL> select stud1.name,grade from stud1 left outer join stud2 on stud1.name=stud2.name;

```
Name       Gra
---------- ----------
john          s
raj           s
sam           a
sharin        a
smith       null
```

RIGHTOUTER-JOIN

Q7: Display the Student name, register no, and result by implementing a right outer join.

Ans:

SQL> select stud1.name, regno, result from stud1 right outer join stud2 on stud1.name = stud2.name;

Name	Regno	Result
john	101	pass
raj	102	pass
sam	103	pass
sharin	104	pass

Rollno	Name	Mark1	Mark2	Total
1	sindu	90	95	185
2	arul	90	90	180

FULLOUTER-JOIN

Q8: Display the Student name register no by implementing a full outer join.

Ans:

SQL> select stud1.name, regno from stud1 full outer join stud2 on (stud1.name= stud2.name);

Name	Regno
john	101
raj	102
sam	103
sharin	104

SELFJOIN

Q9: Write a query to display their employee names

Ans:

SQL> select distinct ename from emp x, dept y where x.deptno=y.deptno;

ENAME

Arjun

Gugan

Karthik

Mathi

Q10: Display the details of those who draw the salary greater than the average salary.

Ans:

SQL> select distinct * from emp x where x.sal >= (select avg(sal) from emp);

EMPNO	ENAME	JOB	DEPTNO	SAL
3	Gugan	ASP	2	20000
4	Karthik	AP	1	15000
11	kavitha	designer	12	17000

e) Result:

Thus the nested Queries and join Queries was performed successfully and executed.

QUESTIONS AND ANSWERS

1. **What is the use of sub Queries?**

   A sub Queries is a select-from-where expression that is nested with in another Queries. A common use of sub Queries is to perform tests for set membership, make set comparisons, and determine set cardinality