Department of Software Engineering
Mehran University of Engineering and Technology, Jamshoro

Course: SW215 – Database System			
Instructor	Ms Shafiya Qadeer	**Practical/Lab No.**	08
Date	23-02-2021	**CLOs**	2
Signature		**Assessment Score**	2 Marks

Topic	To become familiar with Sub-Queries.
.Objectives	- To become familiar with Single & Multiple row Subqueries

Lab Discussion: Theoretical concepts and Procedural steps

Sub-Query

A subquery is a **SELECT** statement within another statement.

Here is an example of a subquery:

```
SELECT * FROM t1 WHERE column1 = (SELECT column1 FROM t2);
```

In this example, **SELECT * FROM t1 ...** is the outer query (or outer statement), and **(SELECT column1 FROM t2)** is the subquery. We say that the subquery is nested within the outer query, and in fact it is possible to nest subqueries within other subqueries, to a considerable depth. A subquery must always appear within parentheses.

The main advantages of subqueries are:

- They allow queries that are structured so that it is possible to isolate each part of a statement.
- They provide alternative ways to perform operations that would otherwise require complex joins and unions.
- Many people find subqueries more readable than complex joins or unions. Indeed, it was the innovation of subqueries that gave people the original idea of calling the early SQL "Structured Query Language.

Points To Note:

- A subquery is also known as inner query. The main query is known as the outer query.
- A subquery is written within parenthesis.
- There are two types of sub queries: Single Row Sub query and Multi Row Sub query.
- A single row subquery will return a single row. In single row sub queries, we use operators like =, >,<, <>, <=, >= etc.

FEW EXAMPLES:

```
SELECT * FROM emp
WHERE sal = (SELECT MIN(sal)
FROM emp);
```

Results Explain Describe Saved SQL History

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
283	ECO UGO	INGEGNERE	125	09-JUN-81	0	-	70
348	ESPOSITO ANGELO	DIRIGENTE	5	09-JUN-81	0	-	227
480	FUMAROLA UGO	SEGRETARIO	448	09-JUN-81	0	-	33
1361	PETRARCA ELENA	TECNICO	1179	09-JUN-81	0	-	35
5513	SANTE DONATO	TECNICO	5099	09-JUN-81	0	-	48

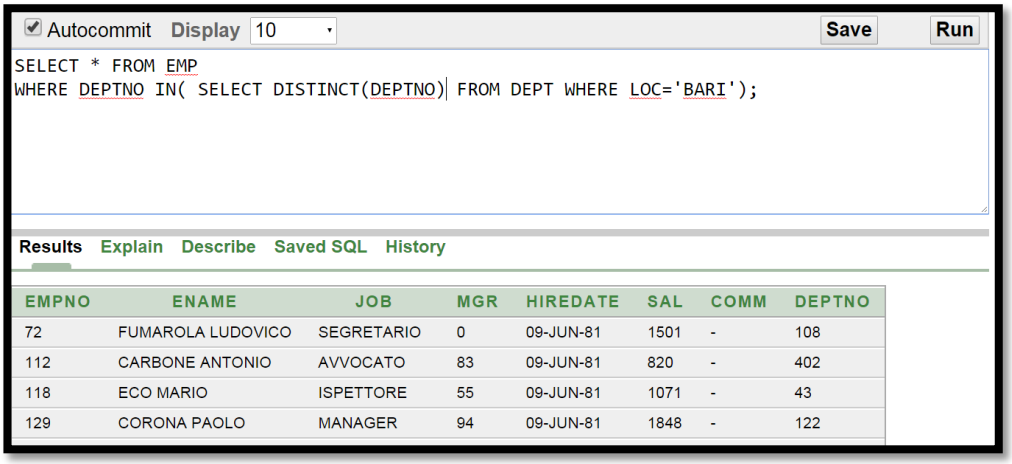
```
SELECT ename, sal
FROM emp
WHERE sal >
(SELECT sal
FROM emp
WHERE empno=151);
```

Results Explain Describe Saved SQL History

ENAME	SAL
CALVINO ANDREA	1095
FUMAROLA LUDOVICO	1501
NERI ELENA	521
SANTE ANDREA	1663
ESPOSITO ANDREA	1668
ECO MASSIMO	235

- A multiple row subquery returns more than one row. IN, ANY, ALL etc can be used in multi row subqueries.

  - IN operator means equal to any member in the list.
  - The ANY operator (and its synonym SOME operator) compares a value to each value returned by a subquery. <ANY means less than the maximum. >ANY means more than the minimum. =ANY is equivalent to IN.
  - The ALL operator compares a value to every value returned by a subquery. >ALL means more than the maximum and <ALL means less than the minimum.



EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
72	FUMAROLA LUDOVICO	SEGRETARIO	0	09-JUN-81	1501	-	108
112	CARBONE ANTONIO	AVVOCATO	83	09-JUN-81	820	-	402
118	ECO MARIO	ISPETTORE	55	09-JUN-81	1071	-	43
129	CORONA PAOLO	MANAGER	94	09-JUN-81	1848	-	122

The following statement finds the employees whose salary is more than the minimum salary of the employees in any department.

Lab Tasks

1. Write a query that displays employees whose job title is the same as that of employee 7369 and whose salary is greater than that of employee 7876.
2. Write a query that displays all the departments that have a minimum salary greater than that of department 50.
3. Find the job with the lowest average salary.

4. Write a SQL statement displays all the employees whose salary is less than any CLERK and who are not CLERK.
5. Find the employees who earn the same salary as the minimum salary for departments.