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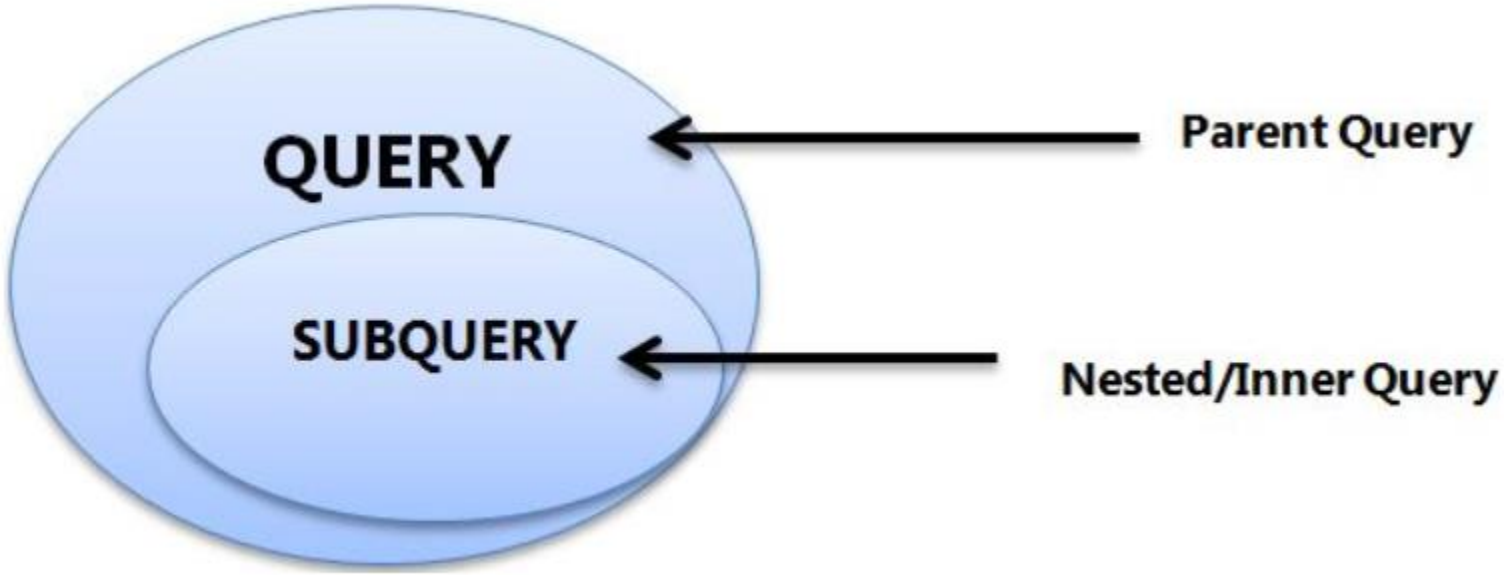
DATABASE SYSTEMS (SW215)

SUB QUERIES

SUBQUERY

- A subquery is a SQL query nested inside a larger query.
- A subquery may occur in :
  - **A SELECT clause**
  - **A FROM clause**
  - **A WHERE clause**
- The subquery can also be nested inside INSERT, UPDATE, or DELETE statement or inside another subquery.
- A subquery is usually added within the WHERE clause of another SELECT statement. But it can also be used in FROM and HAVING clause.
- Comparison operators, such as **>, <, or =** can be used.
- The comparison operator can also be a multiple-row operator, such as **IN, ANY, or ALL.**
- A **subquery** is also called an **inner query** or inner select, while the statement containing a subquery is also called an outer query or outer select.
- The inner query executes first before its parent query so that the results of an inner query can be passed to the outer query.



SYNTAX (WHERE CLAUSE SUBQUERY):

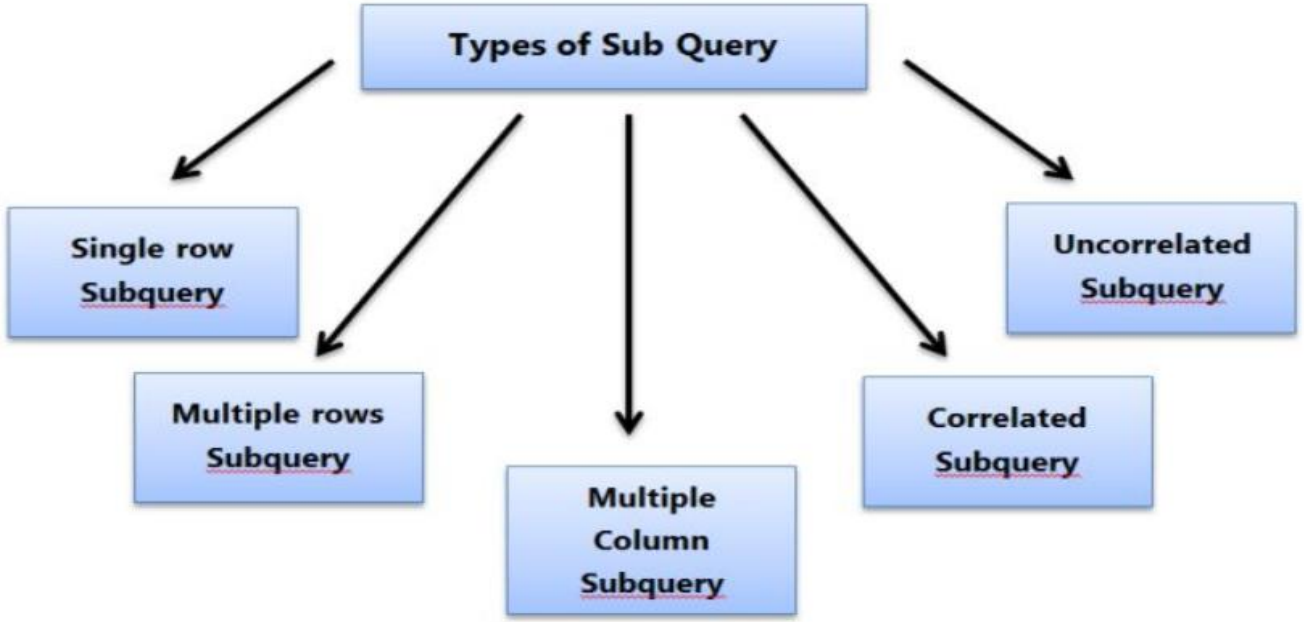
```
SELECT    select_list
FROM      table
WHERE     expr operator
                    (SELECT    select_list
                     FROM      table);
```

GUIDELINES FOR SUBQUERIES

- A subquery must be enclosed in parentheses.
- A subquery must be a complete query in itself i.e., it must have a SELECT and a FROM clause.
- A subquery must be placed on the right side of the comparison operator.
- Subqueries cannot manipulate their results internally, therefore ORDER BY clause cannot be added into a subquery. Though ORDER BY clause can be used in the main SELECT statement (outer query) where it will be the last clause.
- Use single-row operators with single-row subqueries.
- If a subquery (inner query) returns a null value to the outer query, the outer query will not return any rows when using certain comparison operators in a WHERE clause.

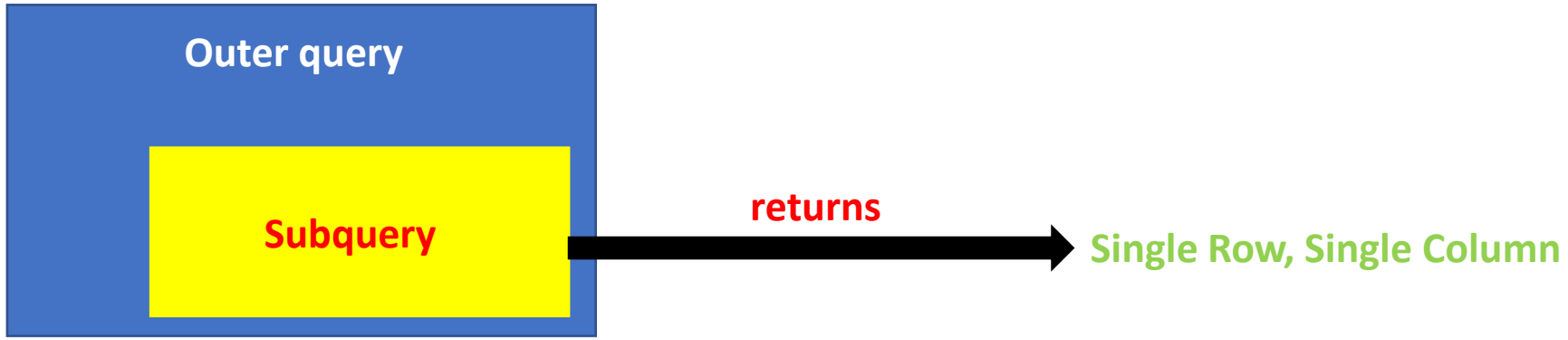
TYPES OF SUBQUERIES

1. Single row subquery : Returns zero or one row.
2. Multiple rows subquery : Returns multiple rows.
3. Multiple columns subqueries : Returns more columns.



SINGLE ROW SUBQUERY

- A **single row subquery** returns zero or one row to the outer query.
- Single row subquery returns a single column to the outer query.
- It can be placed in a WHERE clause, a HAVING clause, or a FROM clause of a SELECT statement.
- Comparison operators such as =,<>, >, <, <, can be used with a single row subquery.



WHY DO WE NEED SUBQUERIES?

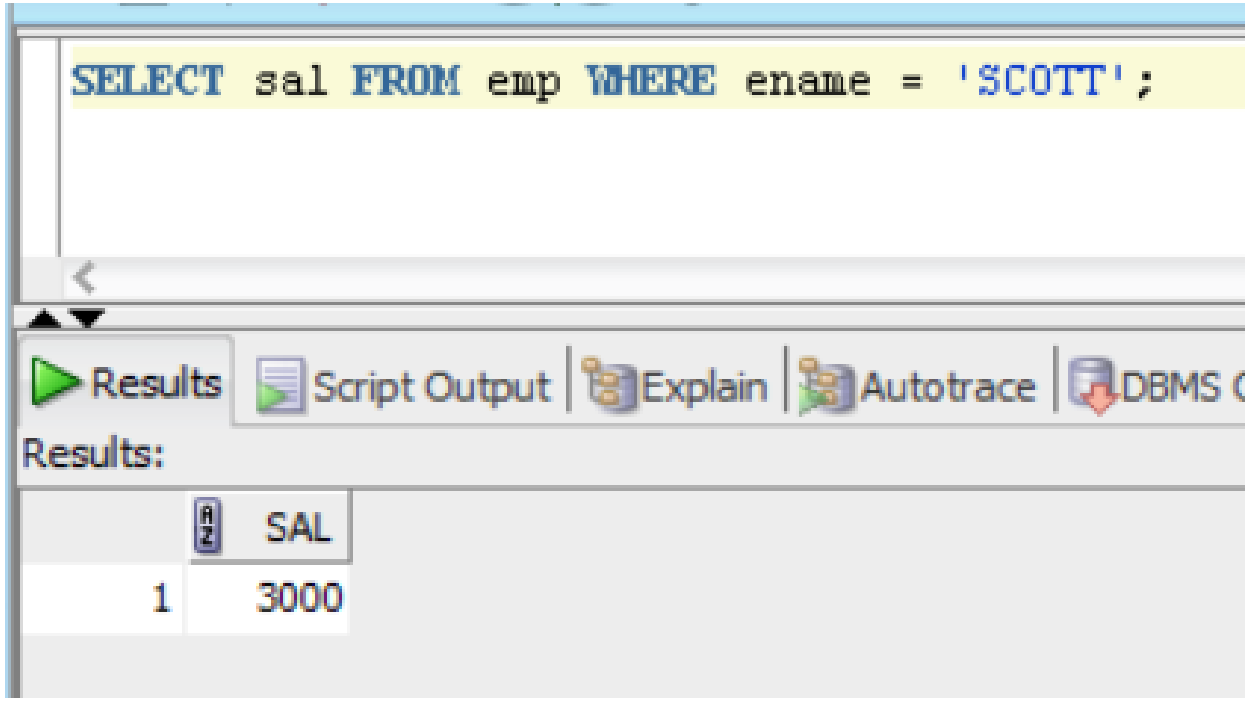
- Subqueries are normally used when one needs to retrieve rows from a table based on a condition that depends upon the data in the table itself.

Display all the employees who are earning more than ‘SCOTT’

Two query solution:

1. Find how much SCOTT earns? **(Query 1)**
2. Use SCOTT’S salary to find the required employees. **(Query 2)**

1.Find how much SCOTT earns? (Query 1)



2. Use SCOTT'S salary to find the required employees. (Query 2)

```
SELECT * FROM emp WHERE sal > 3000;
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10

SINGLE QUERY SOLUTION

```
SELECT *
FROM emp
WHERE sal > ( SELECT sal
              FROM emp
              WHERE ename = 'SCOTT'
            );
```

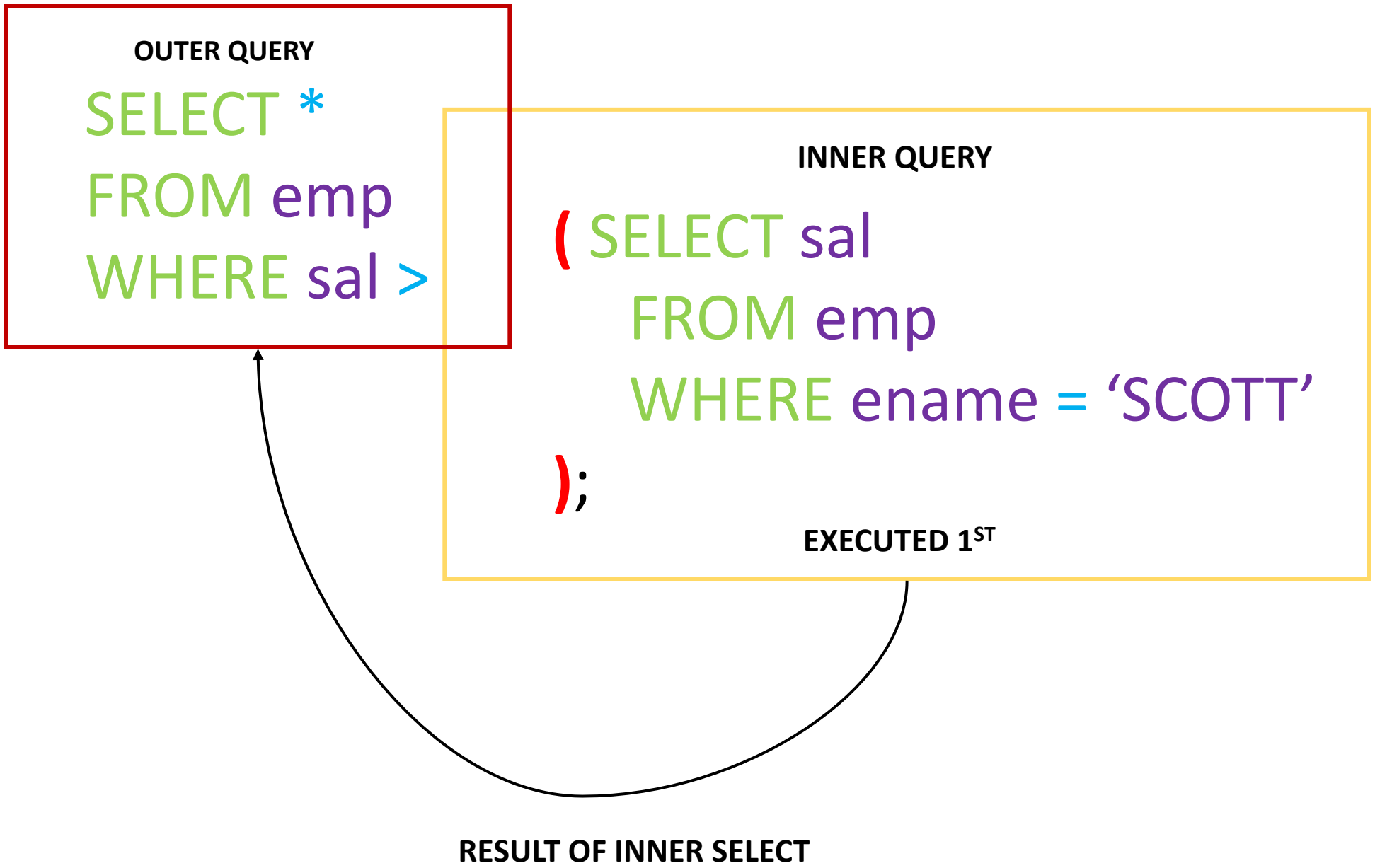
SUB QUERY or
INNER QUERY or
INNER SELECT

```
SELECT * FROM emp WHERE sal > ( SELECT sal  FROM emp WHERE ename = 'SCOTT' );
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10


OUTER QUERY
SELECT *
FROM emp
WHERE sal >
INNER QUERY
(SELECT sal
FROM emp
WHERE ename = 'SCOTT'
);
EXECUTED 1ST
RESULT OF INNER SELECT

3000 (INNER QUERY RESULT)

```
SELECT *
FROM emp
WHERE sal > ( SELECT sal
              FROM emp
              WHERE ename = 'SCOTT'
            );
```

	ENAME	SAL
1	SMITH	800
2	ALLEN	1600
3	WARD	1250
4	JONES	2975
5	MARTIN	1250
6	BLAKE	2850
7	CLARK	2450
8	SCOTT	3000
9	KING	5000

OUTER QUERY

```
SELECT *
FROM emp
WHERE sal > 3000
```

(INNER QUERY RESULT)

	ENAME	SAL
1	SMITH	800
2	ALLEN	1600
3	WARD	1250
4	JONES	2975
5	MARTIN	1250
6	BLAKE	2850
7	CLARK	2450
8	SCOTT	3000
9	KING	5000

(OUTER QUERY OUTPUT)

```
SELECT * FROM emp WHERE sal > ( SELECT sal  FROM emp WHERE ename = 'SCOTT' );
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10

TASK A

Display the employees whose job description is same as that of employee 7428.

```
SELECT *
FROM emp
WHERE job = ( SELECT job
              FROM emp
              WHERE empno = 7428
             ) ;
```

DIFFERENT TABLES IN OUTER AND SUB QUERY

Find the names of the employees who are working in the RESEARCH department.

```
SELECT * FROM EMP
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	800	(null)	20

```
SELECT * FROM dept
```

Results | Script Output | Explain | Autotr

Results:

	DEPTNO	DNAME	LOC
1	10	ACCOUNTING	NEW YORK

```
SELECT ENAME,DEPTNO FROM EMP WHERE DEPTNO = (SELECT DEPTNO FROM DEPT WHERE DNAME = 'RESEARCH')
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	ENAME	DEPTNO
1	SMITH	20
2	JONES	20
3	SCOTT	20
4	ADAMS	20
5	FORD	20

OUTER QUERY RETURNS NO ROWS

```
SELECT * FROM DEPT
```

Results | Script Output | Explain | Autotr

Results:

	DEPTNO	DNAME	LOC
1	10	ACCOUNTING	NEW YORK
2	20	RESEARCH	DALLAS
3	30	SALES	CHICAGO
4	40	OPERATIONS	BOSTON

```
SELECT ENAME,DEPTNO FROM EMP WHERE DEPTNO = (SELECT DEPTNO FROM DEPT WHERE DNAME = 'OPERATIONS')
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

ENAME	DEPTNO

```
SELECT DEPTNO FROM EMP
```

Results | Script Output

Results:

	DEPTNO
1	20
2	30
3	30
4	20
5	30
6	30
7	10
8	20
9	10
10	30
11	20
12	30
13	20
14	10

```
SELECT ENAME,DEPTNO FROM EMP WHERE DEPTNO = (SELECT DEPTNO FROM DEPT WHERE DNAME = 'RES')
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

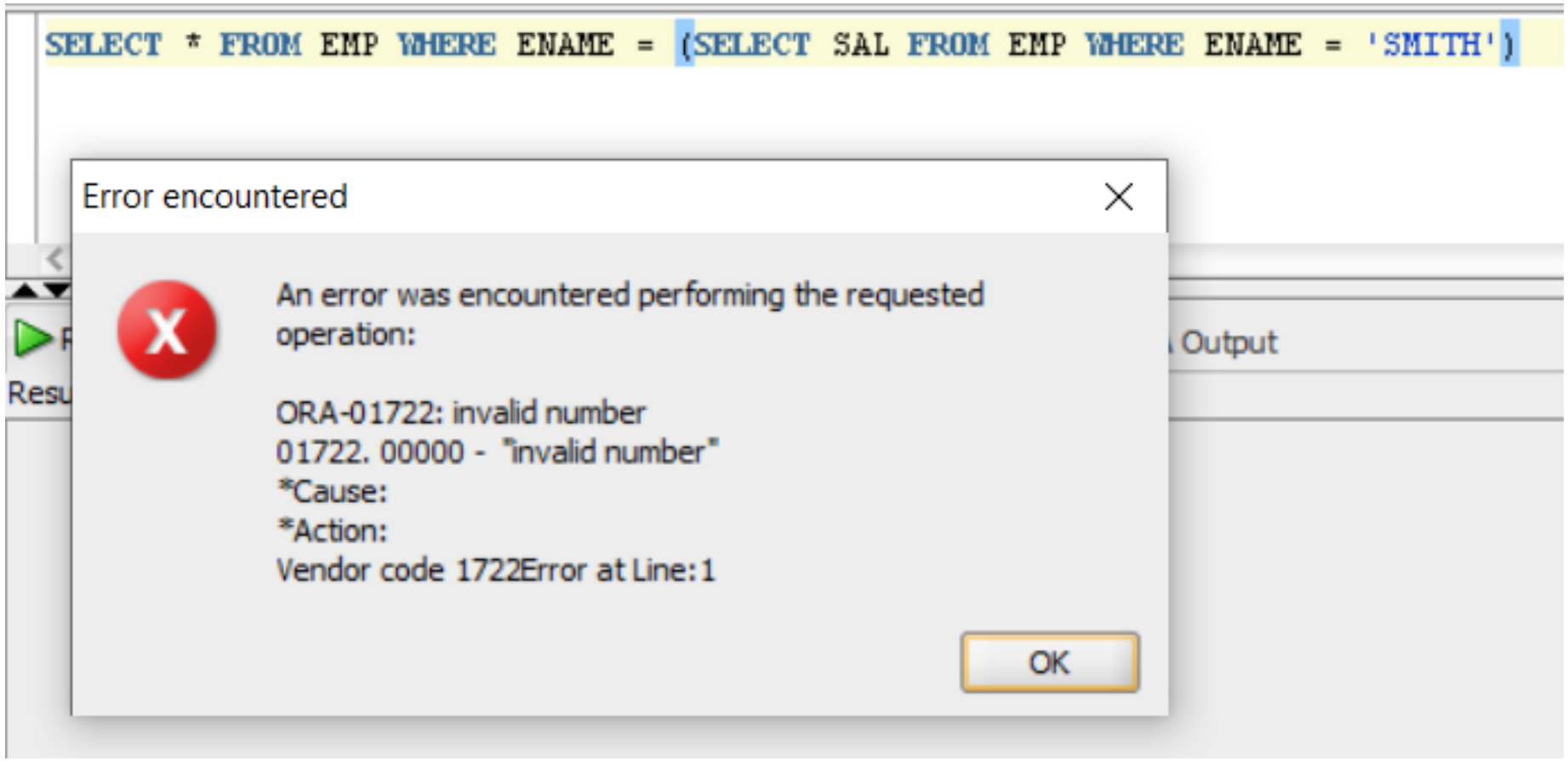
ENAME	DEPTNO

```
SELECT * FROM EMP WHERE SAL = (SELECT DEPTNO FROM EMP WHERE ENAME = 'SMITH')
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

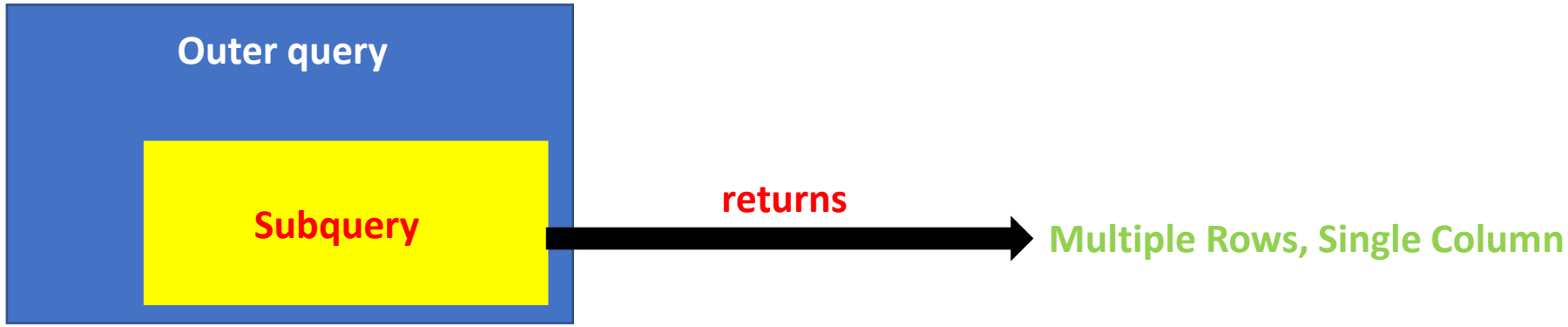
Results:

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO


SELECT * FROM EMP WHERE ENAME = (SELECT SAL FROM EMP WHERE ENAME = 'SMITH')
Error encountered
An error was encountered performing the requested operation:
ORA-01722: invalid number
01722. 00000 - "invalid number"
*Cause:
*Action:
Vendor code 1722Error at Line:1
OK
Output

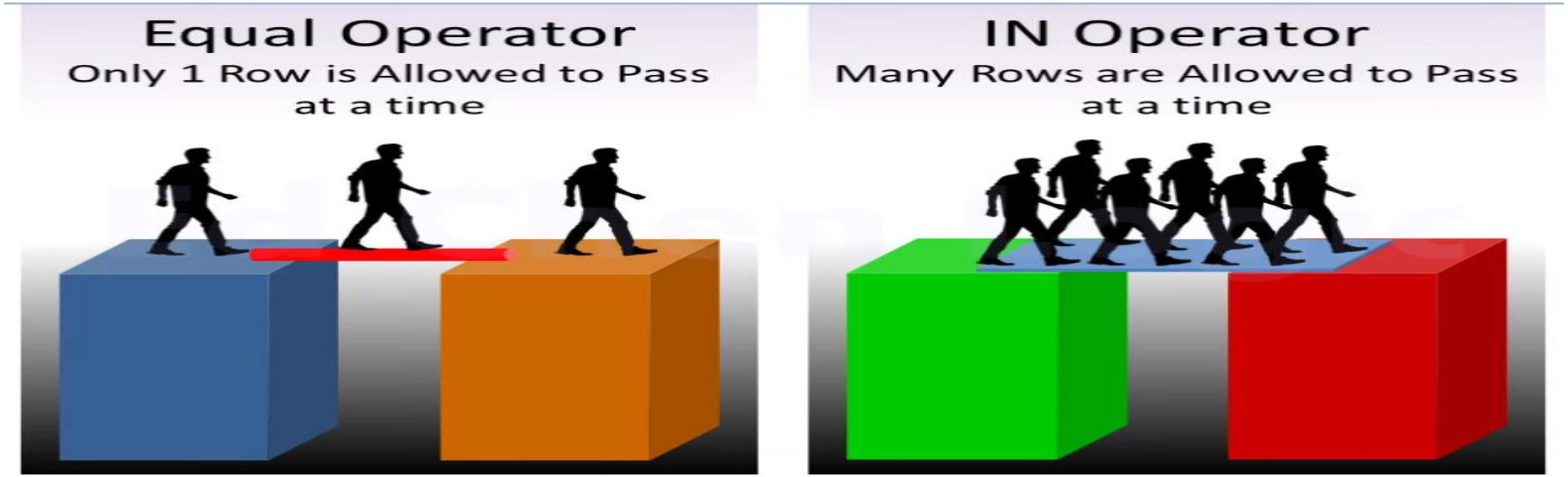
MULTIPLE ROWS SUBQUERY

- A **multiple row subquery** returns multiple rows to the outer query.
- Multiple row subquery returns a single column to the outer query.
- It can be placed in a WHERE clause, a HAVING clause, or a FROM clause of a SELECT statement.
- Multiple row comparison operators such as IN , ANY , ALL can be used with a multiple row subquery.



1. IN operator

- IN is a set operator used to test membership.
- IN indicates that the records processed by the outer query must match one of the values returned by the subquery.
- It is used to test a given value equal to any value returned by the subquery.
- The condition 'S1' IN ('S2', 'S3', 'S1') is true, whereas the condition ‘C1' IN (‘C2', ‘C3') is false.



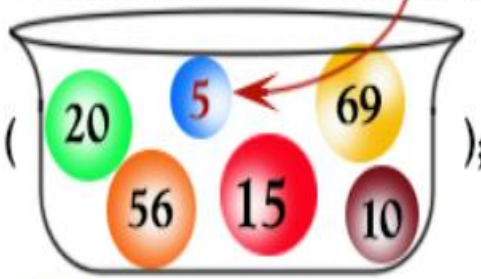
2. ANY operator

- You can use the ANY operator to compare a value with any value in a list.
- You must place an = or > or < operator before ANY operator in your query.
- The <ANY operator is used to find records that have a value less than the highest value returned by the subquery.
- The >ANY operator is used to return records that have a value greater than the lowest value returned by the subquery.

Or

- >ANY means greater than at least one value.
- The =ANY operator works the same way as the IN operator does

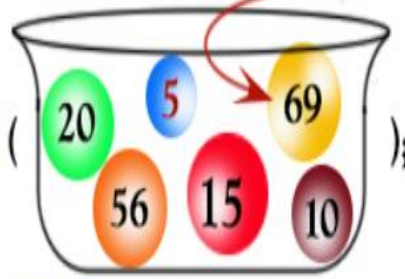
>ANY means greater than at least one value,
that is, greater than the minimum.

WHERE 70 > ANY (

); So >ANY (20,56,5,15,69,10) means greater than 5.

So 70 >5 is true, and data returns.

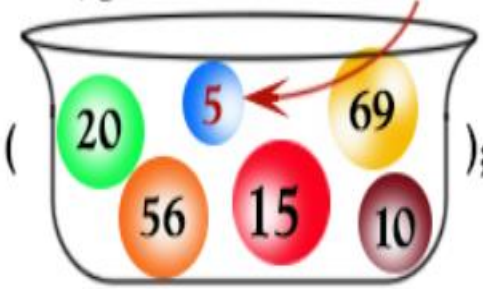
<ANY means less than at least one value,
that is, less than the maximum.

WHERE 70 < ANY (

); So <ANY (20,56,5,15,69,10) means less than 69.

So 70 < 69 is false, and no data returns.

>ANY means greater than at least one value,
that is, greater than the minimum.

WHERE 4 > ANY (

); So >ANY (20,56,5,15,69,10) means greater than 5.

So 4 >5 is false, and no data returns.

<ANY means less than at least one value,
that is, less than the maximum.

WHERE 4 < ANY (

); So <ANY (20,56,5,15,69,10) means less than 69.

So 4 < 69 is true, and data returns.

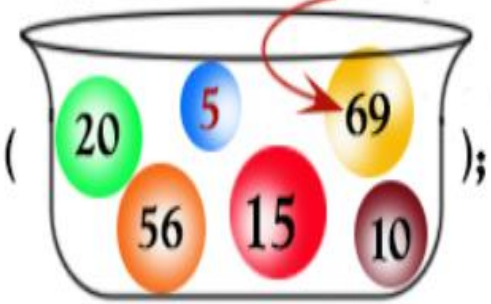
3. ALL operator

- ALL operator is used in conjunction with the > or < operators.
- If the ALL operator is combined with the “greater than” symbol (>), then the outer query is searching for all records with a value higher than the highest valued returned by the subquery (i.e., more than ALL the values returned).

Or

- >ALL means greater than every value.
- If the ALL operator is combined with the “less than” symbol (<), then the outer query is searching for all records with a value lower than the lowest values returned by the subquery (i.e., less than ALL the values returned).

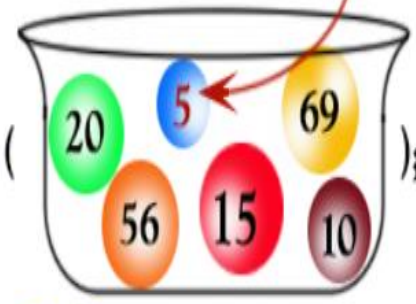
>ALL means greater than the biggest value,
that is, greater than the maximum.

WHERE 70 > ALL (

); So >ALL (20,56,5,15,69,10) means greater than 69.

So 70 > 69 is true, and data returns.

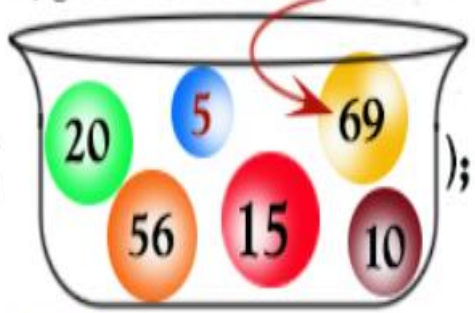
<ALL means less than the smallest value,
that is, less than the minimum

WHERE 70 < ALL (

); So <ALL (20,56,5,15,69,10) means less than 5.

So 70 < 5 is false, and no data returns.

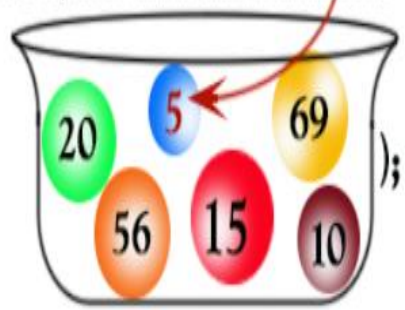
>ALL means greater than the biggest value,
that is, greater than the maximum.

WHERE 4 > ALL (

); So >ALL (20,56,5,15,69,10) means greater than 69.

So 4 >69 is false, and no data returns.

<ALL means less than the smallest value,
that is, less than the minimum.

WHERE 4 < ALL (

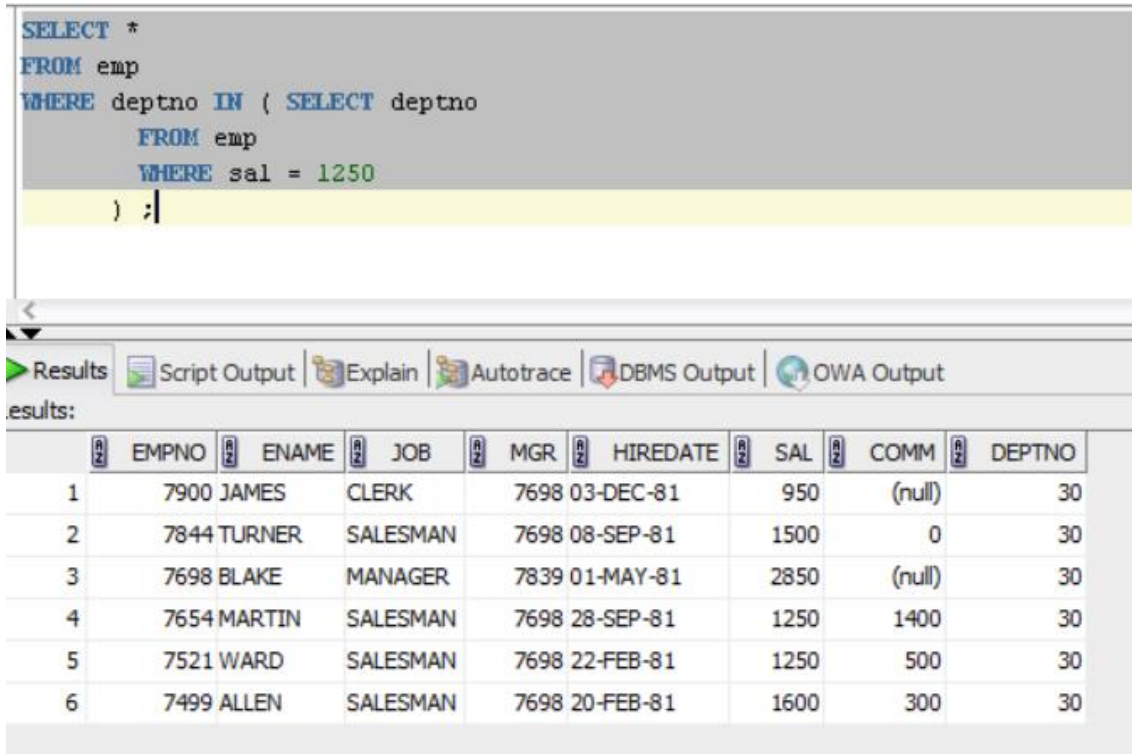
); So <ALL (20,56,5,15,69,10) means less than 5.

So 4 < 5 is true, and data returns.

MULTIPLE ROW SUBQUERY

Display all employees who are working in the same department as that of employees who earn salary of 1250.

```
SELECT *
FROM emp
WHERE deptno IN ( SELECT deptno
                  FROM emp
                  WHERE sal = 1250
                ) ;
```



```
SELECT *
FROM emp
WHERE deptno IN ( SELECT deptno
        FROM emp
        WHERE sal = 1250
      ) ;
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

esults:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30
2	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
3	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
4	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
5	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
6	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30

```
SELECT deptno
        FROM emp
        WHERE sal = 1250
```

Results | Script Output | Explain

Results:

	DEPTNO
1	30
2	30

```
SELECT *
FROM emp
WHERE deptno = ( SELECT deptno
        FROM emp
        WHERE sal = 1250
      ) ;
```

Results | Script Output | Explain | Autotrace

Results:

Error encountered

An error was encountered performing the requested operation:

ORA-01427: single-row subquery returns more than one row
01427. 00000 - "single-row subquery returns more than one row"
*Cause:
*Action:
Vendor code 1427Error at Line:1

OK

```
SELECT * FROM emp WHERE deptno = ( SELECT  distinct deptno FROM emp WHERE sal = 1250) ;
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
2	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
3	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
4	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
5	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
6	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30

```
SELECT *
FROM emp
WHERE deptno IN ( SELECT deptno
        FROM emp
        WHERE sal = 950
      ) ;
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

esults:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30
2	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
3	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
4	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
5	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
6	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30

```
SELECT deptno
        FROM emp
        WHERE sal = 950
```

Results | Script Output | Explain

esults:

	DEPTNO
1	30

```
SELECT *
FROM emp
WHERE deptno = ( SELECT deptno
        FROM emp
        WHERE sal = 950
      );
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

esults:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
2	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
3	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
4	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
5	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
6	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30

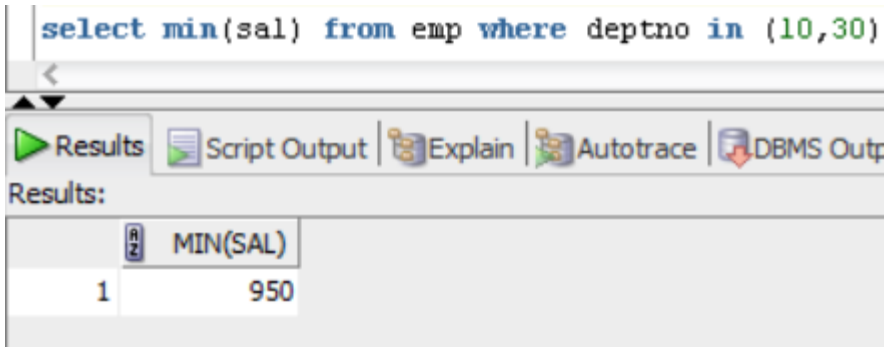
TASK B

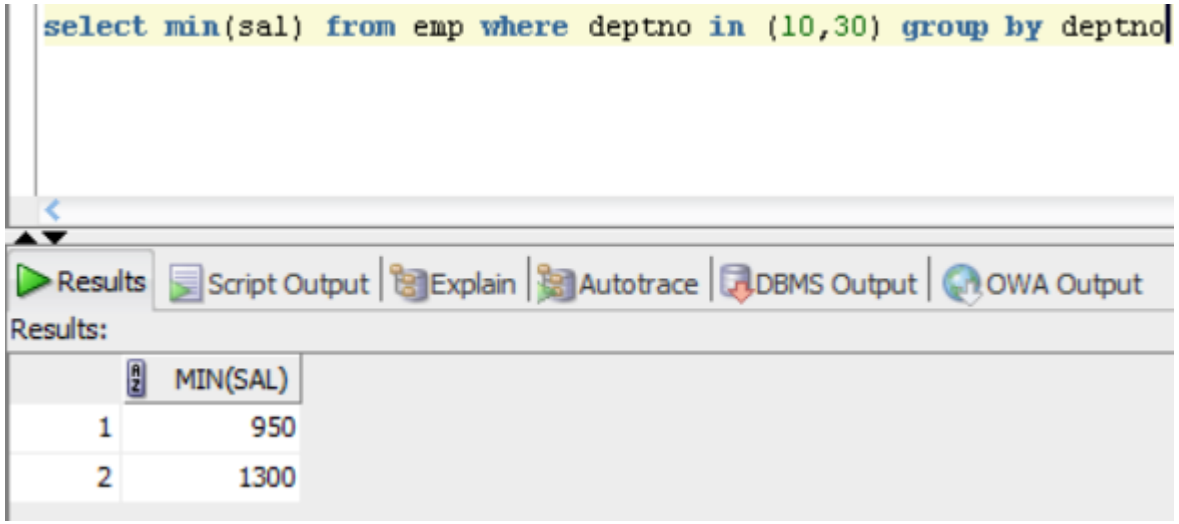
Display the employ numbers and names of all employees who work in a department with any employee whose name contains an ‘A’.

```
SELECT empno , ename
FROM emp
WHERE deptno IN ( SELECT deptno
                  FROM emp
                  WHERE ename LIKE ‘%A%’
                ) ;
```

TASK C

1. select min(sal) from emp where deptno in (10,30)
2. select min(sal) from emp where deptno in (10,30) group by deptno





MULTIPLE COLUMN SUBQUERY

- Multiple column subqueries can retrieve multiple columns for the outer query.
- The number of columns in the outer query and the inner query must be same.
- Column comparison can be Pair-wise or Nonpair-wise.
- A pairwise comparison is when you want to compare a pair of values from the row that is being evaluated in the main query, to a list of pairs of values provided by the subquery. OR We can say that it looks for a match of the exact combination of the columns in the same row.
- In the pairwise comparison, the database looks for rows in which the two columns match in the same row, but in the non-pairwise comparison, the database evaluates the conditions about the columns independently.

PAIRWISE COMPARISION

Display the details of the employees who are managed by the same manager and work in the same department as the employees with employee id 7521 or 7788.

```
SELECT empno, mgr, deptno
FROM emp
WHERE (mgr, deptno) IN ( SELECT mgr, deptno
                         FROM emp
                         WHERE empno IN (7521,7788)
                       )                                    AND
      empno NOT IN (7521,7788);
```

INNER QUERY

```
SELECT mgr, deptno
FROM emp
WHERE empno IN (7521,7788)
```

```
SELECT ename,empno,mgr,deptno FROM emp WHERE empno IN(7521,7788);
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	ENAME	EMPNO	MGR	DEPTNO
1	WARD	7521	7698	30
2	SCOTT	7788	7566	20

(7698,30)
(7566,20)

```
SELECT ename,empno, mgr, deptno  FROM emp WHERE(mgr, deptno) IN (SELECT mgr,deptno FROM emp WHERE empno IN(7521,7788)) AND empno NOT IN(7521,7788);
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	ENAME	EMPNO	MGR	DEPTNO
1	JAMES	7900	7698	30
2	TURNER	7844	7698	30
3	MARTIN	7654	7698	30
4	ALLEN	7499	7698	30
5	FORD	7902	7566	20

OUTER QUERY RESULT

Both mgr and deptno must be the same in the same row.

```
SELECT ename,empno, mgr, deptno  FROM emp WHERE(mgr, deptno) IN (SELECT mgr,deptno FROM emp WHERE empno IN(7521,7788))
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	ENAME	EMPNO	MGR	DEPTNO
1	JAMES	7900	7698	30
2	TURNER	7844	7698	30
3	MARTIN	7654	7698	30
4	WARD	7521	7698	30
5	ALLEN	7499	7698	30
6	FORD	7902	7566	20
7	SCOTT	7788	7566	20

NONPAIRWISE COMPARISION

Display the details of the employees who are managed by the same manager as the employees with employee id 7521 or 7788 and work in the same department as the employees with employee id 7521 or 7788.

```
SELECT empno, mgr, deptno
FROM emp
WHERE mgr IN ( SELECT mgr
               FROM emp
               WHERE empno IN (7521,7788))
      AND
      deptno IN ( SELECT deptno
                  FROM emp
                  WHERE empno IN (7521,7788))
      AND
      empno NOT IN(7521,7788);
```

	MGR
1	7698
2	7566

(7698,30)
(7698,20)
(7566,30)
(7566,20)

	DEPTNO
1	30
2	20

NONPAIR-WISE COMPARISION OUTPUT

```
SELECT ename,empno, mgr, deptno
FROM emp
WHERE mgr IN ( SELECT mgr
          FROM emp
          WHERE empno IN (7521,7788))    AND

          deptno IN ( SELECT deptno
           FROM emp
            WHERE empno IN (7521,7788))    AND

          empno NOT IN(7521,7788);
```

Results | Script Output | Explain | Autotrace | DBMS Ou

esults:

	ENAME	EMPNO	MGR	DEPTNO
1	ALLEN	7499	7698	30
2	MARTIN	7654	7698	30
3	TURNER	7844	7698	30
4	JAMES	7900	7698	30
5	FORD	7902	7566	20

(7698,30)

(7698,20)

(7566,30)

(7566,20)

```
SELECT ename, mgr , deptno FROM emp
```

Results | Script Output | Explain | Autotrac

Results:

	ENAME	MGR	DEPTNO
1	SMITH	7902	20
2	ALLEN	7698	30
3	WARD	7698	30
4	JONES	7839	20
5	MARTIN	7698	30
6	BLAKE	7839	30
7	CLARK	7839	10
8	SCOTT	7566	20
9	KING	(null)	10
10	TURNER	7698	30
11	ADAMS	7788	20
12	JAMES	7698	30
13	FORD	7566	20
14	MILLER	7782	10

NONPAIRWISE COMPARISION (emp3 table)

```
insert into emp3 values (7428,'JOHN','ANALYST',7698,'13-FEB-2021',400,10,20)
insert into emp3 values (7428,'TONY','ANALYST',7566,'13-FEB-2021',500,20,30)

SELECT ENAME, empno, mgr, deptno FROM emp3 WHERE mgr IN ( SELECT mgr FROM emp3 WHERE empno IN (7521,7788)) AND deptno IN ( SELECT deptno FROM emp3 WHERE empno IN (7521,7788))AND empn
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	ENAME	EMPNO	MGR	DEPTNO
1	JOHN	7428	7698	20
2	ALLEN	7499	7698	30
3	MARTIN	7654	7698	30
4	TURNER	7844	7698	30
5	JAMES	7900	7698	30
6	FORD	7902	7566	20
7	TONY	7428	7566	30

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	800	(null)	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
4	7566	JONES	MANAGER	7839	02-APR-81	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	2450	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3000	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1100	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3000	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1300	(null)	10
15	7428	JOHN	ANALYST	7698	13-FEB-21	400	10	20
16	7428	TONY	ANALYST	7566	13-FEB-21	500	20	30

PAIRWISE COMPARISION (emp3 table)

```
SELECT ename, mgr, deptno FROM emp3 WHERE (mgr, deptno) IN ( SELECT mgr, deptno FROM emp3  WHERE empno IN (7521,7788))  AND empno NOT IN (7521,7788);
```

Results | Script Output | Explain | Autotrace | DBMS Output | OWA Output

Results:

	ENAME	MGR	DEPTNO
1	JAMES	7698	30
2	TURNER	7698	30
3	MARTIN	7698	30
4	ALLEN	7698	30
5	FORD	7566	20

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	800	(null)	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
4	7566	JONES	MANAGER	7839	02-APR-81	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	2450	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3000	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1100	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3000	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1300	(null)	10
15	7428	JOHN	ANALYST	7698	13-FEB-21	400	10	20
16	7428	TONY	ANALYST	7566	13-FEB-21	500	20	30

TASK D

1. Display all departments that have minimum salary greater than that of department 20.
2. Find the employees who earn the same salary as the maximum salary of each department.
3. Display the name and salary of every employee who reports to KING.
4. Find the details of highest paid employee.
5. List the employees who are senior to the most recently hired employee working under KING.
6. Display the annual salary of all the employees who salary is below that of all the employees employed in department 20 and department 30.
7. Display the names and salaries of all the employees who earn more than the least average salary of each department.