19CSE202 - Database Management Systems
SubQueries

Vidhya. S
Assistant Professor(Sr. Gr.)
Department of Computer Science and Engineering

Subquery

- Query within a query.
- Subqueries enable you to write queries that select data rows for criteria that are actually developed while the query is executing at run time.
- A subquery can also be nested inside INSERT, UPDATE, and DELETE statements.
- Subqueries must be enclosed within parentheses.
- A subquery can be used any place where an expression is allowed providing it returns a single value.
- Subquery can be placed either in FROM clause, WHERE clause or HAVING clause of the main query.
- Oracle allows a maximum nesting of 255 subquery levels in a WHERE clause.

Single - Row Subquery

It in turn uses this value to compare salary of all the employees and displays only those, whose salary is equal to minimum salary.

```
SELECT first_name, salary, department_id
FROM employees
WHERE salary = (SELECT MIN (salary)
                FROM employees);
```

returns only one row i.e. the minimum salary for the company.

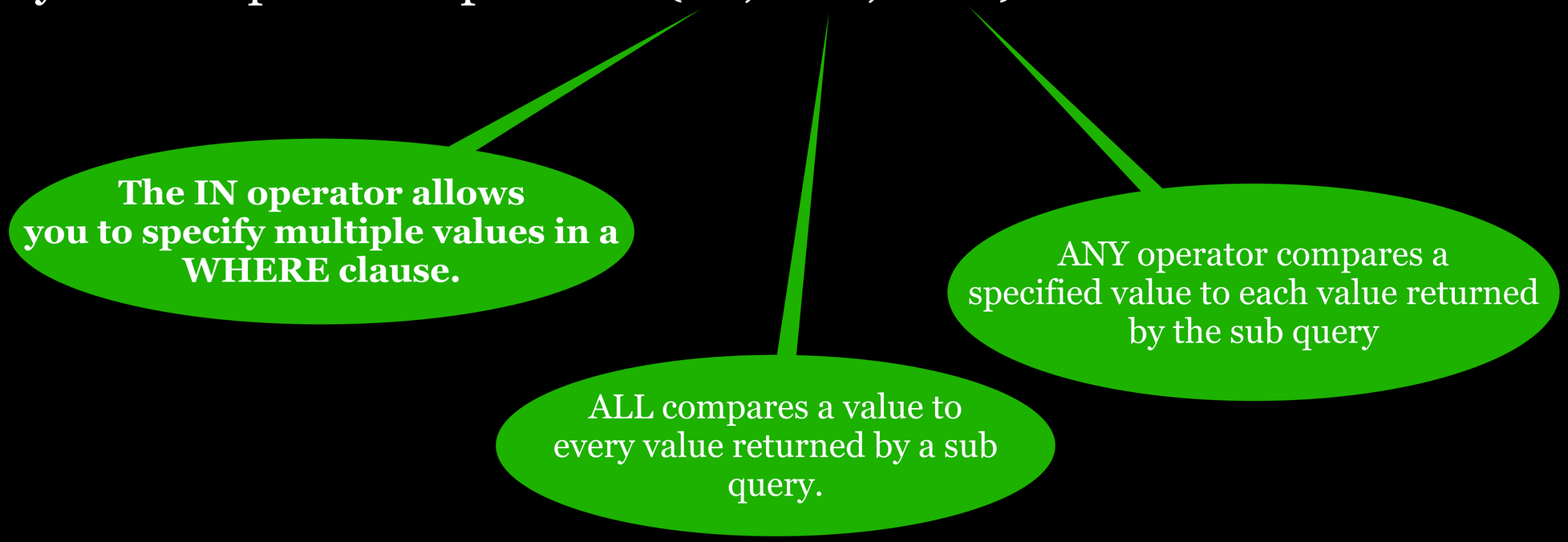
Single Row Sub Query

```
SELECT department_id, MIN (salary)
FROM employees
GROUP BY department_id
HAVING MIN (salary) < (SELECT AVG (salary)
                       FROM employees)
```

If a subquery's result must be compared with a group function, you must nest the inner query in the outer query's HAVING clause.

Multiple Row Sub Query

- Multiple-row subqueries are nested queries that can return more than one row of results to the parent query.
- Used most commonly in WHERE and HAVING clauses.
- Handled by set comparison operators (IN, ALL, ANY)



Multiple Row Sub Query

```
SELECT first_name, department_id
FROM employees
WHERE department_id = (SELECT department_id
                       FROM employees
                       WHERE LOCATION_ID = 100)
department_id = (SELECT *
```

single row subquery returns more than one row

```
SELECT first_name, department_id
FROM employees
WHERE department_id IN (SELECT department_id
                        FROM departments
                        WHERE LOCATION_ID = 100)
```

IN matches department ids returned from the sub query, compares it with that in the main query and returns employee's name who satisfy the condition.

Multiple Column Sub Query

```
SELECT first_name, job_id, salary
FROM emp_history
WHERE (salary, department_id) IN (SELECT salary, department_id
                                  FROM employees
                                  WHERE salary BETWEEN 1000 AND 2000
                                  AND department_id BETWEEN 10 AND 20)
ORDER BY first_name;
```

- When a multiple-column subquery is used in the outer query's FROM clause, it creates a temporary table that can be referenced by other clauses of the outer query.
- This temporary table is more formally called an inline view.
- The subquery's results are treated like any other table in the FROM clause.
- If the temporary table contains grouped data, the grouped subsets are treated as separate rows of data in a table.