COLLEGE OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY





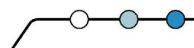
WEEK 10 SUBQUERIES

IM101
ADVANCED DATABASE SYSTEMS

LEARNING OUTCOMES:

- 1. Understand Subqueries;
- 2. Where and when to use subqueries;
- 3. Demonstrate subqueries in SQL Developer.

- Query inside another query
- May return single number, or multiple rows, depending on how they are used
- We use a subquery to fetch data from two tables



A **SUBQUERY** is often referred to as an inner query, while the statement containing a subquery is also called an outer query or outer select

```
SELECT select_list
FROM table
WHERE expr operator

(SELECT select_list
FROM table);
```

SUBQUERIES can be present in the FROM clause, WHERE clause, or the SELECT clause.

We can implement **SUBQUERIES** with the

SELECT

INSERT

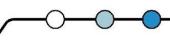
UPDATE

DELETE



Comparison operators can be used

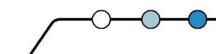
```
> >=
< <=
=
IN BETWEEN
```



SUBQUERIES GUIDELINES

When using subqueries there are some guidelines to consider

- A subquery must be enclosed in parentheses.
- A subquery must put on the comparison operators right hand side
- Subqueries cannot modify their outcomes internally
- Subqueries that return over one row can only be used with multiple value operators such as the IN operator.
- SQL Server allows you to nest subqueries up to 32 levels.



ORACLE SUBQUERIES

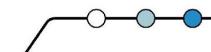
- You can nest up to 255 levels of subqueries in the a nested subquery
- A subquery can contain another subquery.
- Oracle Database imposes no limit on the number of subquery levels in the FROM clause of the top-level query.
- You can nest up to 255 levels of subqueries in the WHERE clause.



SUBQUERIES TYPES

Types of Subqueries

- Single subquery line: returns zero or a row.
- Many subqueries in columns: returns one column or more.
- Correlated subqueries: The outer SQL statement applies to one or more columns.
- Nested subqueries: Put subqueries within another subquery.

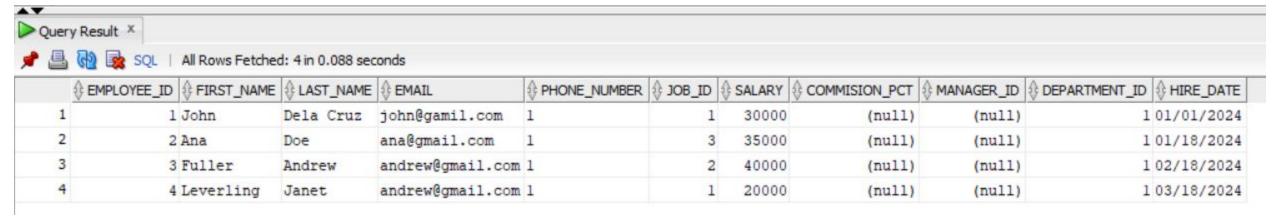


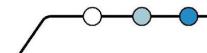
To perform the following tasks:

```
SELECT select_list
FROM table
WHERE expr operator

(SELECT select_list
FROM table);
```

SELECT * FROM employees;





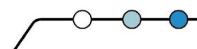
-- Subquery in Select

SELECT employee_id, salary, (SELECT AVG(Salary)

FROM employees) AS AllAvgSalary

FROM employees;

	♦ SALARY	
1	30000	31250
2	35000	31250
3	40000	31250
4	20000	31250



-- Subquery in From

SELECT a.employee_id, a.first_name, AllAvgSalary
FROM (SELECT employee_id, first_name, salary,
AVG(salary) OVER () AS AllAvgSalary FROM
employees) a;

		ALLAVGSALARY
1	John	31250
2	Ana	31250
3	Fuller	31250
4	Leverling	31250

```
-- Subquery in Where

SELECT employee id, salary, job id

FROM employees

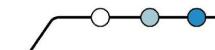
WHERE job_id IN (

SELECT job id FROM jobs);
```

	SALARY	
1	30000	1
2	35000	3
3	40000	2
4	20000	1

SUBQUERIES COMPARE TO JOINS

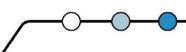
- Both joins and subqueries are used to merge data from various tables into one single result.
- Subqueries return either single value or row set, while join used to return rows
- Possible to restate most subqueries as joins and most joins can be restated as subqueries



SUBQUERIES COMPARE TO JOINS

```
select a.employee id, a.first name, a.last name,
b.job_title
from employees a
left join jobs b on a.job_id = b.job_id
```

		LAST_NAME	
1	John	Dela Cruz	Database Designer
4	Leverling	Janet	Database Designer
3	Fuller	Andrew	Software Developer
2	Ana	Doe	Front End Developer

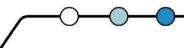


WEEK 10 - SUBQUERIES

Resources

A Step-By-Step Guide To SQL Subquery

https://www.simplilearn.com/tutorials/sql-tutorial/sql-subquery#:~:text=A%20subquery%20is%20often%20also,%2C%20IN%2C%20BETWEEN%2C%20etc.



End of Lesson...

