SESSIONS 1

Sub-Queries and Nested Select

Data Science Program

Purwadhika
Startup and Coding School

Sub-Queries

Sub-Query: A query inside another SQL query.

- A sub-query is a SQL query nested inside a larger query.
- The sub-query can be nested inside a SELECT, INSERT, UPDATE, or DELETE statement or inside another sub-query.
- Sub-query is usually added within the WHERE Clause of another SQL SELECT statement.

Sub-Queries

EXAMPLE SYNTAX

```
select COLUMN1 from TABLE
    where COLUMN 2 = (select MAX(COLUMN2) from TABLE)
```

```
select ID, NAME, SALARY from EMPLOYEE
    where SALARY < (select AVG(SALARY) from employees)
```

Purwadhika
Startup and Coding School

Sub-Queries & Aggregate Functions

We cannot evaluate Aggregate function like AVG() in the WHERE clause. Therefore, use a sub-Select expression like example bellow:

```
select ID, NAME, SALARY
    from EMPLOYEE
    where SALARY <
    (select AVG(SALARY) from employees)
```

Sub-Queries & Aggregate Functions

Show **employees name where their age is above average age of all employees age** from new_employees table.

```
select First_Name, Last_Name, Age
from new_employees
where Age >
(select avg(Age) from new_employees);
```

first_name	last_name	age
Alain	Chappelet	47
Alejandro	McAlpine	47
Amabile	Gomatam	45
Anneke	Preusig	47
Arif	Merlo	44
Arumugam	Ossenbru…	43
Berhard	McFarlin	46

Purwadhika
Startup and Coding School

Sub-Queries in list of columns

We can substitute column name with a sub-query. It's called column expressions. For example, see this syntax:

```
select ID, SALARY,
    (select AVG (SALARY) from employees)
            AS Average_Salary
    from employees;
```

Sub-Queries in list of columns

Show **employees name, their age, and also the youngest age and the oldest age** from new_employees table.

```
select First_Name, Last_Name, Age,
(select min(Age) from new_employees) Youngest,
(select max(Age) from new_employees) Oldest
from new_employees;
```

first_name	last_name	age	Youngest	Oldest
Georgi	Facello	47	35	48
Bezalel	Simmel	36	35	48
Parto	Bamford	41	35	48
Chirstian	Koblick	46	35	48
Kyoichi	Maliniak	45	35	48
Anneke	Preusig	47	35	48
Tzvetan	Zielinski	43	35	48
Saniya	Kalloufi	42	35	48
Sumant	Peac	48	35	48
Duangkaew	Piveteau	37	35	48

Sub-Queries in FROM Clause

We also can substitute the TABLE name with a sub-query. It's called Derived Tables or Table Expressions.

```
select * from
      ( select ID, NAME, DEPARTMENT_ID
            from employees) AS ALL_EMPLOYEES
```

Sub-Queries in FROM Clause

Substitute the **table name from 'employees' to be 'employee_biodata'** with a sub-query

```
select *from
    (select First_name, Last_name, Gender, Birth_date
    from employees)
        as Employee_Biodata;
```

First_name	Last_name	Gender	Birth_date
Georgi	Facello	M	1953-09-02
Bezalel	Simmel	F	1964-06-02
Parto	Bamford	M	1959-12-03
Chirstian	Koblick	M	1954-05-01
Kyoichi	Maliniak	M	1955-01-21
Anneke	Preusig	F	1953-04-20
Tzvetan	Zielinski	F	1957-05-23
Saniya	Kalloufi	M	1958-02-19
Sumant	Peac	F	1952-04-19
Duangkaew	Piveteau	F	1963-06-01

Reference

- https://www.w3resource.com/sql/subqueries/understanding-sql-subqueries.php

Purwadhika
Startup and Coding School