

## SQL : SUB Queries

- In SQL a Subquery can be defined as a query within another query.
- The outer query is called as **main query** and inner query is called as **subquery**.
- Subqueries can be used with **SELECT, UPDATE, INSERT, DELETE** statements along with expression operator. It could be equality operator or comparison operator such as =, >, <, <= and Like operator.
- The subquery executes first, and its output is used to complete the query condition for the outer query.

### Example :

Consider an employee entity with attributes Id, Name, Age, Email and Salary.

```
mysql> SELECT * FROM employee;
+-----+-----+-----+-----+-----+
| Id   | Name           | Age  | Email                | Salary |
+-----+-----+-----+-----+-----+
| 101  | Jake Peralta   | 20   | jakePera@B99.com     | 5000   |
| 102  | Charles Boyle  | 21   | CharlesBoy@B99.com   | 6000   |
| 103  | Amy Santiago   | 20   | AmySantiago@B99.com  | 3000   |
| 104  | Terry Jeff     | 23   | Teryy@B99.com        | 4500   |
| 105  | Raymond Holt   | 24   | RayHolt@B99.com      | 6500   |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

1. **Sub query with SELECT:** Employees having salary more than 4000.

```
mysql> SELECT * FROM employee
-> WHERE Id IN (SELECT Id FROM employee
-> WHERE SALARY > 4000);
+-----+-----+-----+-----+-----+
| Id   | Name           | Age  | Email                | Salary |
+-----+-----+-----+-----+-----+
| 101  | Jake Peralta   | 20   | jakePera@B99.com     | 5000   |
| 102  | Charles Boyle  | 21   | CharlesBoy@B99.com   | 6000   |
| 104  | Terry Jeff     | 23   | Teryy@B99.com        | 4500   |
| 105  | Raymond Holt   | 24   | RayHolt@B99.com      | 6500   |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

2. **Sub query with INSERT:** Duplicating the employee table into employee\_records table which can be used for certain operations.

```
mysql> INSERT INTO employee_records
-> SELECT * FROM employee
-> WHERE Id IN (SELECT Id FROM employee);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM employee_records;
+-----+-----+-----+-----+-----+
| Id | Name           | Age | Email                | Salary |
+-----+-----+-----+-----+-----+
| 101 | Jake Peralta   | 20  | jakePera@B99.com    | 5000   |
| 102 | Charles Boyle  | 21  | CharlesBoy@B99.com  | 6000   |
| 103 | Amy Santiago   | 20  | AmySantiago@B99.com | 3000   |
| 104 | Terry Jeff     | 23  | Teryy@B99.com       | 4500   |
| 105 | Raymond Holt   | 24  | RayHolt@B99.com     | 6500   |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

3. **Sub query with UPDATE:** Update the salary by 50% of employees whose age is greater than or equal to 22.

```
mysql> UPDATE employee
-> SET Salary = Salary * 1.5
-> WHERE AGE IN
-> ( SELECT AGE FROM employee_records
-> WHERE AGE >= 22 );
Query OK, 2 rows affected (0.01 sec)
Rows matched: 2  Changed: 2  Warnings: 0

mysql> SELECT * FROM employee;
+-----+-----+-----+-----+-----+
| Id | Name           | Age | Email                | Salary |
+-----+-----+-----+-----+-----+
| 101 | Jake Peralta   | 20  | jakePera@B99.com    | 5000   |
| 102 | Charles Boyle  | 21  | CharlesBoy@B99.com  | 6000   |
| 103 | Amy Santiago   | 20  | AmySantiago@B99.com | 3000   |
| 104 | Terry Jeff     | 23  | Teryy@B99.com       | 6750   |
| 105 | Raymond Holt   | 24  | RayHolt@B99.com     | 9750   |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

4. **Sub query with DELETE:** Delete the employees whose age is greater than or equal to 22 years.

```
mysql> DELETE FROM employee
      -> where Age IN
      -> ( SELECT Age FROM employee_records
      -> WHERE Age>=22);
Query OK, 2 rows affected (0.00 sec)

mysql> SELECT * FROM employee;
+-----+-----+-----+-----+-----+
| Id   | Name           | Age  | Email                      | Salary |
+-----+-----+-----+-----+-----+
| 101  | Jake Peralta   | 20   | jakePera@B99.com          | 5000   |
| 102  | Charles Boyle  | 21   | CharlesBoy@B99.com        | 6000   |
| 103  | Amy Santiago   | 20   | AmySantiago@B99.com       | 3000   |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```