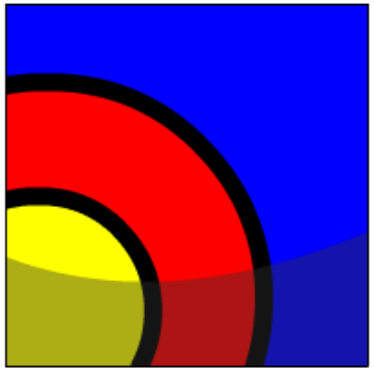
Single-Row Subqueries

What Will I Learn?

In this lesson, you will learn to:



- Construct and execute a single-row subquery in the WHERE clause or HAVING clause
- Construct and execute a SELECT statement using more than one subquery
- Construct and execute a SELECT statement using a group function in the subquery

Why Learn It?

As you have probably realized, subqueries are a lot like Internet search engines. They are great at locating the information needed to accomplish another task.

In this lesson, you will learn how to create even more complicated tasks for subqueries to do for you. Keep in mind that subqueries save time in that you can accomplish two tasks in one statement.

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Remember these facts about single-row subqueries.

They:

- Return only one row
- Use single-row comparison operators (=, >,>=, <, <=, <>)

Always:

- Enclose the subquery in parentheses
- Place the subquery on the right hand side of the comparison condition.

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Also remember that:

- The outer and inner queries can get data from different tables
- Only one ORDER BY clause can be used for a SELECT statement, and if specified, it must be the last clause in the main SELECT statement
- The only limit on the number of subqueries is the buffer size that the query uses.

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SUBQUERIES FROM DIFFERENT TABLES

The outer and inner queries can get data from different tables.

Who works in the Marketing department?

DEPARTMENT_ID	DEPARTMENT_NAME
10	Administration
20	Marketing
50	Shipping
…	…

```
SELECT last_name, job_id, department_id
FROM employees
WHERE department_id =
   (SELECT department_id
    FROM departments
    WHERE department_name = 'Marketing')
ORDER BY job_id;
```

LAST_NAME	JOB_ID	DEPARTMENT_ID
Hartstein	MK_MAN	20
Fay	MK_REP	20

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There can be more than one subquery returning information to the outer query.

```
SELECT last_name, job_id,
salary, department_id
FROM  employees
WHERE job_id =
    (SELECT job_id
     FROM   employees
      WHERE  employee_id = 141)
AND department_id =
     (SELECT department_id
      FROM   departments
      WHERE  location_id =1500);
```

LAST_NAME	JOB_ID	DEPARTMENT_ID
Lorentz	IT_PROG	60
Mourgos	ST_MAN	50
Rajs	ST_CLERK	50
Davies	ST_CLERK	50
Matos	ST_CLERK	50

DEPARTMENT_ID	LOCATION_ID
10	1700
20	1800
50	1500
60	1400

LAST_NAME	JOB_ID	SALARY	DEPARTMENT_ID
Rajs	ST_CLERK	3500	50
Davies	ST_CLERK	3100	50
Matos	ST_CLERK	2600	50

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GROUP FUNCTIONS IN SUBQUERIES

Group functions can be used in subqueries. A group function without a GROUP BY clause in the subquery returns a single row.

Which Global Fast Foods staff earn less than the maximum salary?

```
SELECT last_name, first_name, salary
FROM f_staffs
WHERE salary <
(SELECT MAX(salary)
        FROM f_staffs);
```

F_STAFFS

MAX (SALARY)
60

F_STAFFS

LAST_NAME	FIRST_NAME	SALARY
Doe	Sue	6.75
Miller	Bob	10

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SUBQUERIES IN THE HAVING CLAUSE

Subqueries can also be placed in the HAVING clause.

Remember that the HAVING clause is similar to the WHERE clause, except that the HAVING clause is used to restrict groups and always has a group condition (such as MIN, MAX, AVG) stated.

Because the HAVING clause always has a group condition, the subquery will nearly always have a group condition as well.

The next slide shows an example of this.

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Which departments have a lowest salary that is greater than the lowest salary in department 50?

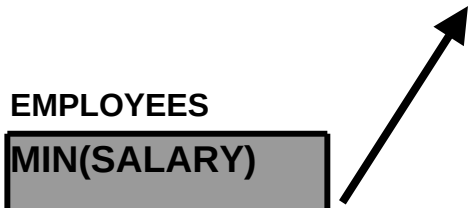
In this example, the subquery selects and returns the lowest salary in department 50.

The outer query uses this value to select the department ID and lowest salaries of all the departments whose lowest salary is greater than that number.

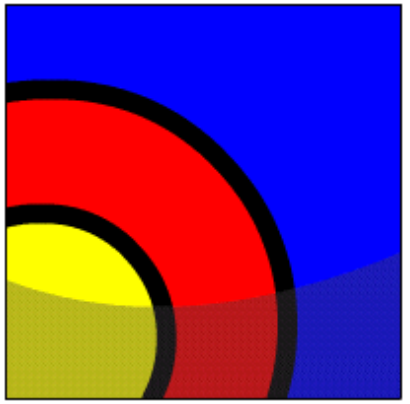
The HAVING clause eliminated those departments whose MIN salary was less than department 50's MIN salary.

```
SELECT department_id, MIN(salary)
FROM employees
GROUP BY department_id
HAVING MIN(salary) >
      (SELECT MIN(salary)
      FROM employees
      WHERE department_id = 50);
```

DEPARTMENT_ID	MIN(SALARY)
10	4400
20	6000
60	4200
80	8600
90	17000
110	8300



Summary



In this lesson you have learned to:

- Construct and execute a single-row subquery in the WHERE clause or HAVING clause
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Summary

Practice Guide

The link for the lesson practice guide can be found in the course resources in Section 0.