Database Programming with SQL

10-4: Correlated Subqueries

Practice Activities

Objectives

* Identify when correlated subqueries are needed
* Construct correlated subqueries
* Construct named subqueries using the WITH clause

Try It / Solve It

1. Explain the main difference between correlated and non-correlated subqueries?

Correlated subquery is executed multiple times once for each intermediate result row from outer query And for each row of the intermediate results inner correlated subquery is executed, if the inner correlated subquery is satisfied, that row becomes part of final results from the whole query. A correlated subquery will get a candidate row from an outer query, execute the inner query using candidate row value, and use values from the inner query to qualify or disqualify the candidate row.

Non-correlated subquery: result/s of inner query are calculated first and reused throughout the execution of outer query.

2. Write a query that lists the highest earners for each department. Include the last\_name,

department\_id, and the salary for each employee.

SELECT last\_name, first\_name, salary, department\_id

FROM employees

WHERE salary in (SELECT Max(salary) FROM employees Group by department\_id)

3. Examine the following select statement and finish it so that it will return the last\_name,

department\_id, and salary of employees who have at least one person reporting to them. So we

are effectively looking for managers only. In the partially written SELECT statement, the WHERE

clause will work as it is. It is simply testing for the existence of a row in the subquery.

SELECT outer.department\_id, outer.last\_name, outer.salary

FROM employees outer

WHERE 'x' IN (SELECT 'x'

FROM employees inner

WHERE inner.manager\_id = inner.employee\_id )

Finish off the statement by sorting the rows on the department\_id column.

Order by department\_id asc

4. Using a WITH clause, write a SELECT statement to list the job\_title of those jobs whose maximum

salary is more than half the maximum salary of the entire company. Name your subquery

MAX\_CALC\_SAL. Name the columns in the result JOB\_TITLE and JOB\_TOTAL, and sort the

result on JOB\_TOTAL in descending order.

Hint: Examine the jobs table. You will need to join JOBS and EMPLOYEES to display the

job\_title.

WITH max\_calc\_sal AS (SELECT jobs.job\_id , jobs.job\_title, MAX(employees.salary) AS job\_actual\_max FROM employees RIGHT OUTER JOIN jobs ON employees.job\_id = jobs.job\_id GROUP BY jobs.job\_id,jobs.job\_title)

SELECT job\_title, job\_actual\_max AS job\_total

FROM max\_calc\_sal

WHERE job\_actual\_max > (SELECT MAX(job\_actual\_max)/2 FROM max\_calc\_sal)

ORDER BY job\_total DESC