Database Programming

Inner versus Outer Joins

Objectives

This lesson covers the following objectives:

- Compare and contrast an inner and an outer join
- Construct and execute a query to use a left outer join
- Construct and execute a query to use a right outer join
- Construct and execute a query to use a full outer join

Purpose

Up to now, all of the joins returned data that matched the join condition.

Sometimes, however, we want to retrieve both the data that meets the join condition, and the data that does not meet the join condition. This should sound familiar!

The outer joins in ANSI-99 SQL allow this functionality.

INNER And OUTER Joins

In ANSI-99 SQL, a join of two or more tables that returns only the matched rows is called an inner join.

When a join returns the unmatched rows as well as the matched rows, it is called an outer join.

Outer join syntax uses the terms “left, full, and right”. These names are associated with the order of the table names in the FROM clause of the SELECT statement.

LEFT and RIGHT OUTER Joins

In the example shown of a left outer join, note that the table name listed to the left of the words “left outer join" is referred to as the “left table.”

```
SELECT e.last_name, d.department_id,
d.department_name
FROM employees e
LEFT OUTER JOIN departments d
ON (e.department_id =
d.department_id);
```

LAST_NAME	DEPT_ID	DEPT_NAME
King	90	Executive
Kochhar	90	Executive
…		
Whalen	10	Administration
Hartstein	20	Marketing
Fay	20	Marketing
Higgins	110	Accounting
Gietz	110	Accounting
Grant		

LEFT and RIGHT OUTER Joins (cont.)

This query will return all employee last names, both those that are assigned to a department and those that are not.

```
SELECT e.last_name, d.department_id,
d.department_name
FROM employees e
LEFT OUTER JOIN departments d
ON (e.department_id =
d.department_id);
```

LAST_NAME	DEPT_ID	DEPT_NAME
King	90	Executive
Kochhar	90	Executive
…		
Whalen	10	Administration
Hartstein	20	Marketing
Fay	20	Marketing
Higgins	110	Accounting
Gietz	110	Accounting
Grant		

LEFT and RIGHT OUTER Joins (cont.)

This right outer join would return all department IDs and department names, both those that have employees assigned to them and those that do not.

```
SELECT e.last_name, d.department_id,
d.department_name
FROM employees e
RIGHT OUTER JOIN departments d
ON (e.department_id =
d.department_id);
```

LAST_NAME	DEPT_ID	DEPT_NAME
King	90	Executive
Kochhar	90	Executive
…		
Whalen	10	Administration
Hartstein	20	Marketing
Fay	20	Marketing
Higgins	110	Accounting
Gietz	110	Accounting
	190	Contracting

FULL OUTER Join

It is possible to create a join condition to retrieve all matching rows and all unmatched rows from both tables.

Using a full outer join solves this problem. The result set of a full outer join includes all rows from a left outer join and all rows from a right outer join combined together without duplication.

FULL OUTER Join Example

The example shown is a full outer join.

```
SELECT e.last_name, d.department_id,
d.department_name
FROM employees e
FULL OUTER JOIN departments d
ON (e.department_id =
d.department_id);
```

LAST_NAME	DEPT_ID	DEPT_NAME
Whalen	10	Administration
Fay	20	Marketing
…		
De Haan	90	Executive
Kochhar	90	Executive
King	90	Executive
Gietz	110	Accounting
Higgins	110	Accounting
Grant		
	190	Contracting

Join Scenario

Construct a join to display a list of Global Fast Foods customers and their orders. Include all customers whether or not they have placed an order.

```
SELECT c.first_name, c.last_name,
o.order_number, o.order_date,
o.order_total
FROM   f_customers c
LEFT OUTER JOIN f_orders o
ON   (c.id = o.cust_id);
```

FIRST_NAME	LAST_NAME	ORDER_NUMBER	ORDER_DATE	ORDER_TOTAL
Cole	Bee	5678	10-DEC-2002	103.02
Zoe	Twee	(null)	(null)	(null)

Terminology

Key terms used in this lesson included:

- FULL OUTER JOIN
- Inner join
- LEFT OUTER JOIN
- Outer join
- RIGHT OUTER JOIN

Summary

In this lesson, you should have learned how to:

- Compare and contrast an inner and an outer join
- Construct and execute a query to use a left outer join
- Construct and execute a query to use a right outer join
- Construct and execute a query to use a full outer join