Inner versus Outer Joins

JOINs

Objetives

Compare and contrast an inner and an outer join

Construct and execute a

- query to use a left outer join
- query to use a right outer join
- 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.

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.

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

```
1 SELECT e.last_name, d.department_id, d.department_name
2 FROM employees e
3     LEFT OUTER JOIN departments d ON (e.department_id = d.department_id)
4 ORDER BY d.department_id DESC
```

Results | Explain | Describe | Saved SQL | History

LAST_NAME	DEPARTMENT_ID	DEPARTMENT_NAME
Grant	-	-
Gietz	110	Accounting
Higgins	110	Accounting
Kochhar	90	Executive
De Haan	90	Executive
King	90	Executive
Abel	80	Sales
Zlotkey	80	Sales
Taylor	80	Sales
Lorentz	60	IT

LEFT and RIGHT OUTER Joins

- 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.**

```
1 SELECT e.last_name, d.department_id, d.department_name
2 FROM employees e
3     RIGHT OUTER JOIN departments d ON (e.department_id = d.department_id)
4 ORDER BY e.last_name DESC
```

Results | Explain | Describe | Saved SQL | History

LAST_NAME	DEPARTMENT_ID	DEPARTMENT_NAME
-	190	Contracting
Zlotkey	80	Sales
Whalen	10	Administration
Vargas	50	Shipping
Taylor	80	Sales
Rajs	50	Shipping
Mourgos	50	Shipping
Matos	50	Shipping
Lorentz	60	IT
Kochhar	90	Executive

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.**

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

Results | Explain | Describe | Saved SQL | History

Grant	-	-
Mourgos	50	Shipping
Rajs	50	Shipping
Davies	50	Shipping
Matos	50	Shipping
Vargas	50	Shipping
Hunold	60	IT
Ernst	60	IT
Lorentz	60	IT
Hartstein	20	Marketing
Fay	20	Marketing
-	190	Contracting

Join Scenario

- Construct a join to display a list of
  - employees,
  - their current job_id and
  - any previous jobs they may have held.

```
1 SELECT last_name, e.job_id AS "Job", jh.job_id AS "Old job", end_date
2 FROM employees e
3      LEFT OUTER JOIN job_history jh ON(e.employee_id = jh.employee_id)
4 ORDER BY last_name DESC
```

Results | Explain | Describe | Saved SQL | History

LAST_NAME	Job	Old job	END_DATE
Zlotkey	SA_MAN	-	-
Whalen	AD_ASST	AC_ACCOUNT	12/31/1998
Whalen	AD_ASST	AD_ASST	06/17/1993
Vargas	ST_CLERK	-	-
Taylor	SA_REP	SA_MAN	12/31/1999
Taylor	SA_REP	SA_REP	12/31/1998
Rajs	ST_CLERK	-	-
Mourgos	ST_MAN	-	-
Matos	ST_CLERK	-	-
Lorentz	IT_PROG	-	-