Murach Chapter 4 Part 2

How to Retrieve Data From Two or More Tables

Week 3, Lecture 5, Part 2

Knowledge Points in this lecture

- In-Class Practice - writing basic inner-join queries
- Multiple JOIN conditions and WHERE conditions
- SELF JOIN

In-Class Practice

- Write basic inner-join queries, getting desired information from more than one table
  - See details in file: Wk3-MurachCh4-InClassPractice.sql

Join Condition, Search Condition

- Join condition
  - A condition that compares columns from more than one table
- Search condition
  - A condition that involves columns from one table
- In most cases, the code will be easier to read if the join condition is placed in the ON expression in FROM clause and search conditions are placed in the WHERE clause.

An inner join with two conditions

```
SELECT invoice_number, invoice_date,
    invoice_total, line_item_amt
FROM invoices i JOIN invoice_line_items li
    ON (i.invoice_id = li.invoice_id) AND
        (i.invoice_total > li.line_item_amt)
ORDER BY invoice_number
```

The result set

	INVOICE_NUMBER	INVOICE_DATE	INVOICE_TOTAL	LINE_ITEM_AMT
1	97/522	30-APR-14	1962.13	765.13
2	97/522	30-APR-14	1962.13	1197
3	I77271-001	05-JUN-14	662	75.6
4	I77271-001	05-JUN-14	662	58.4

(6 rows selected)

The same join with one condition in a WHERE clause

```
SELECT invoice_number, invoice_date,
    invoice_total, line_item_amt
FROM invoices i JOIN invoice_line_items li
    ON i.invoice_id = li.invoice_id
WHERE i.invoice_total > li.line_item_amt
ORDER BY invoice_number
```

Primary join condition

The result set

	INVOICE_NUMBER	INVOICE_DATE	INVOICE_TOTAL	LINE_ITEM_AMT
1	97/522	30-APR-14	1962.13	765.13
2	97/522	30-APR-14	1962.13	1197
3	I77271-001	05-JUN-14	662	75.6
4	I77271-001	05-JUN-14	662	58.4

(6 rows selected)

SELF JOIN

- A table joins with itself and is treated as two different tables
- Must use table aliases in FROM clause
- Must qualify each column name with the table alias
- Used to compare and combine different rows in the same table.
- Example in next slide

A self-join that returns vendors in the same city and state

```
SELECT v1.vendor_name, v2.vendor_name,
       v2.vendor_city, v2.vendor_state
FROM vendors v1 JOIN vendors v2
    ON (v1.vendor_city = v2.vendor_city) AND
       (v1.vendor_state = v2.vendor_state) AND
       (v1.vendor_id <> v2.vendor_id)
```

The result set

	VENDOR_NAME	VENDOR_NAME_1	VENDOR_CITY	VENDOR_STATE
1	Reiter's Scientific & Pro Books	National Information Data Ctr	Washington	DC
2	Register of Copyrights	National Information Data Ctr	Washington	DC
3	Reiter's Scientific & Pro Books	Register of Copyrights	Washington	DC
4	National Information Data Ctr	Register of Copyrights	Washington	DC
5	Office Depot	Jobtrak	Los Angeles	CA
6	Ford Motor Credit Company	Jobtrak	Los Angeles	CA
7	American Express	Jobtrak	Los Angeles	CA
8	Opamp Technical Books	Jobtrak	Los Angeles	CA
9	State of California	California Chamber Of Commerce	Sacramento	CA
10	Franchise Tax Board	California Chamber Of Commerce	Sacramento	CA
11	Pacific Bell	California Chamber Of Commerce	Sacramento	CA

(1758 rows selected)

SELF JOIN vs 1-TABLE SELECT Query

- In a 1-TABLE SELECT query like below,

  SELECT column_list FROM table1 WHERE search_condition;

  - A single row is checked against the search condition in WHERE clause. If it makes the condition evaluate to true, then the row is returned by the query.
  - We cannot compare two different rows in the table source.
- In a SELF-JOIN,
  - A physical table is treated as two logically different tables.
  - RDBMS can then compare two different rows in the same physical table, but in two logically different tables.

A self-join that returns vendors from cities in common with other vendors

```
SELECT DISTINCT v1.vendor_name, v1.vendor_city,
    v1.vendor_state
FROM vendors v1 JOIN vendors v2
    ON (v1.vendor_city = v2.vendor_city) AND
       (v1.vendor_state = v2.vendor_state) AND
       (v1.vendor_id <> v2.vendor_id)
ORDER BY v1.vendor_state, v1.vendor_city
```

The result set

	VENDOR_NAME	VENDOR_CITY	VENDOR_STATE
1	AT&T	Phoenix	AZ
2	Computer Library	Phoenix	AZ
3	Wells Fargo Bank	Phoenix	AZ
4	Aztek Label	Anaheim	CA
5	Blue Shield of California	Anaheim	CA
6	ASC Signs	Fresno	CA
7	Abbey Office Furnishings	Fresno	CA
8	BFI Industries	Fresno	CA

(84 rows selected)

In-Class Practice

- Topics covered in the practice
  - INNER JOIN, SELF-JOIN
- See details in file:
  - Wk3-MurachCh4-InClassPractice.sql