

Lecture 3: Continuing SQL

Wednesday, January 28, 2015

Agenda for today

- Class Demos: SQL Developer, SQL*Plus and creating textbook schemas
- Continue SQL: Chapter 3 in Murach textbook

Recall terminology:

- Relation
- Attribute
- Record
- Primary key
- Foreign key
- DML versus DDL
- Clauses of a SELECT statement

A SELECT statement that retrieves a calculated value

```
SELECT invoice_id, invoice_total,  
       (credit_total + payment_total) AS total_credits  
FROM invoices  
WHERE invoice_id = 17
```

	INVOICE_ID	INVOICE_TOTAL	TOTAL_CREDITS
1	17	356.48	356.48

A SELECT statement that retrieves all invoices between given dates

```
SELECT invoice_number, invoice_date, invoice_total
FROM invoices
WHERE invoice_date BETWEEN '01-MAY-2014' AND '31-MAY-2014'
ORDER BY invoice_date
```

	INVOICE_NUMBER	INVOICE_DATE	INVOICE_TOTAL
1	7548906-20	01-MAY-14	27
2	4-321-2596	01-MAY-14	10
3	4-327-7357	01-MAY-14	162.75
4	4-342-8069	01-MAY-14	10

(70 rows selected)

Basic Pattern Matching in SQL

```
SELECT vendor_id, vendor_name, vendor_address1  
FROM vendors  
WHERE vendor_name LIKE '%Consultants%'
```

```
SELECT invoice_number, invoice_date, invoice_total  
FROM invoices  
WHERE invoice_number LIKE 'P-%'
```

Column specifications that use calculated values

An arithmetic expression that calculates balance_due

```
SELECT invoice_number,  
       invoice_total - payment_total - credit_total  
       AS balance_due
```

A string expression that derives full_name

```
SELECT first_name || ' ' || last_name AS full_name
```

A SELECT statement that retrieves rows with null values

```
SELECT *  
FROM null_sample  
WHERE invoice_total IS NULL
```

	INVOICE_ID	INVOICE_TOTAL
1	3	(null)

A SELECT statement that retrieves rows without null values

```
SELECT *  
FROM null_sample  
WHERE invoice_total IS NOT NULL
```

	INVOICE_ID	INVOICE_TOTAL
1	1	125
2	2	0
3	4	2199.99
4	5	0

The expanded syntax of the ORDER BY clause

```
ORDER BY expression [ASC|DESC]  
        [, expression [ASC|DESC]] ...
```

An ORDER BY clause that sorts by one column

```
SELECT vendor_name,  
       vendor_city || ', ' || vendor_state || ' ' ||  
       vendor_zip_code AS address  
FROM vendors  
ORDER BY vendor_name
```

	VENDOR_NAME	ADDRESS
1	ASC Signs	Fresno, CA 93703
2	AT&T	Phoenix, AZ 85062
3	Abbey Office Furnishings	Fresno, CA 93722

An ORDER BY clause that sorts by one column in descending sequence

```
SELECT vendor_name,  
       vendor_city || ', ' || vendor_state || ' ' ||  
       vendor_zip_code AS address  
FROM vendors  
ORDER BY vendor_name DESC
```

	VENDOR_NAME	ADDRESS
1	Zylka Design	Fresno, CA 93711
2	Zip Print & Copy Center	Fresno, CA 93777
3	Zee Medical Service Co	Washington, IA 52353

An ORDER BY clause that sorts by three columns

```
SELECT vendor_name,  
       vendor_city || ', ' || vendor_state || ' ' ||  
       vendor_zip_code AS address  
FROM vendors  
ORDER BY vendor_state, vendor_city, vendor_name
```

	VENDOR_NAME	ADDRESS
1	AT&T	Phoenix, AZ 85062
2	Computer Library	Phoenix, AZ 85023
3	Wells Fargo Bank	Phoenix, AZ 85038
4	Aztek Label	Anaheim, CA 92807
5	Blue Shield of California	Anaheim, CA 92850
6	Diversified Printing & Pub	Brea, CA 92621
7	ASC Signs	Fresno, CA 93703

An ORDER BY clause that uses an expression

```
SELECT vendor_name,  
       vendor_city || ', ' || vendor_state || ' ' ||  
       vendor_zip_code AS address  
FROM vendors  
ORDER BY vendor_contact_last_name  
        || vendor_contact_first_name
```

	VENDOR_NAME	ADDRESS
1	Dristas Groom & McCormick	Fresno, CA 93720
2	Internal Revenue Service	Fresno, CA 93888
3	US Postal Service	Madison, WI 53707
4	Yale Industrial Trucks-Fresno	Fresno, CA 93706

An ORDER BY clause that uses column positions

```
SELECT vendor_name,  
       vendor_city || ', ' || vendor_state || ' ' ||  
       vendor_zip_code AS address  
FROM vendors  
ORDER BY 2, 1
```

	VENDOR_NAME	ADDRESS
1	Aztek Label	Anaheim, CA 92807
2	Blue Shield of California	Anaheim, CA 92850
3	Malloy Lithographing Inc	Ann Arbor, MI 48106
4	Data Reproductions Corp	Auburn Hills, MI 48326

An expression in the WHERE clause

```
SELECT invoice_number, invoice_date, invoice_total,  
       payment_total, credit_total,  
       invoice_total - payment_total - credit_total  
       AS balance_due  
FROM invoices  
WHERE invoice_total - payment_total - credit_total > 0  
ORDER BY invoice_date
```

	INVOICE_NUMBER	INVOICE_DATE	INVOICE_TOTAL	PAYMENT_TOTAL	CREDIT_TOTAL	BALANCE_DUE
1	P-0608	11-APR-14	20551.18	0	1200	19351.18
2	989319-497	17-APR-14	2312.2	0	0	2312.2
3	989319-487	18-APR-14	1927.54	0	0	1927.54
4	97/553B	26-APR-14	313.55	0	0	313.55
5	97/553	27-APR-14	904.14	0	0	904.14
6	97/522	30-APR-14	1962.13	0	200	1762.13

Joining two tables using the explicit join syntax

```
SELECT vendor_name, invoice_number, invoice_date,  
invoice_total  
FROM vendors JOIN invoices  
ON vendors.vendor_id = invoices.vendor_id  
WHERE invoice_total >= 500  
ORDER BY vendor_name, invoice_total DESC
```

	VENDOR_NAME	INVOICE_NUMBER	INVOICE_DATE	INVOICE_TOTAL
7	Federal Express Corporation	963253230	15-MAY-14	739.2
8	Ford Motor Credit Company	9982771	03-JUN-14	503.2
9	Franchise Tax Board	RTR-72-3662-X	04-JUN-14	1600
10	Fresno County Tax Collector	P02-88D77S7	06-JUN-14	856.92
11	IBM	Q545443	14-MAR-14	1083.58
12	Ingram	31359783	23-MAY-14	1575
13	Ingram	31361833	23-MAY-14	579.42
14	Malloy Lithographing Inc	0-2058	08-MAY-14	37966.19
15	Malloy Lithographing Inc	P-0259	16-APR-14	26881.4
16	Malloy Lithographing Inc	0-2060	08-MAY-14	23517.58
17	Malloy Lithographing Inc	P-0608	11-APR-14	20551.18
18	Malloy Lithographing Inc	0-2436	07-MAY-14	10976.06
19	Pollstar	77290	04-JUN-14	1750

Joining two tables using the implicit join syntax

```
SELECT vendor_name, invoice_number, invoice_date,  
invoice_total  
FROM vendors, invoices  
WHERE vendors.vendor_id = invoices.vendor_id  
AND invoice_total >= 500  
ORDER BY vendor_name, invoice_total DESC
```

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