

## SQL Ordering a Listing (Sorting)

- ❖ **ORDER BY** <attributes>
  - ◆ Ascending order is automatic
  - ◆ Descending order is specified by **DESC**

P_CODE	P_DESCRIPTION	P_INDATE	P_PRICE
58778-2T	Rat-tail file, 1/8-in. fine	14-Jun-1996	\$4.99
23109-HB	Claw hammer	19-Nov-1996	\$5.95
SM-18277	1.25-in. metal screw, 25	28-Nov-1996	\$6.99
SW-23116	2.5-in. wd. screw, 50	23-Sep-1996	\$8.45
13-Q2/P2	7.25-in. pwr. saw blade	12-Nov-1996	\$14.99
14-Q1/L3	9.00-in. pwr. saw blade	12-Nov-1996	\$17.49
2238/QPD	B&D cordless drill, 1/2-in.	19-Oct-1996	\$38.95
1546-Q02	Hrd. cloth, 1/4-in., 2x50	14-Aug-1996	\$39.95
1559-QW1	Hrd. cloth, 1/2-in., 3x50	14-Aug-1996	\$43.99
2232/QWE	B&D jigsaw, 8-in. blade	23-Sep-1996	\$99.87
2232/QTY	B&D jigsaw, 12-in. blade	29-Oct-1996	\$109.92
11QER/31	Power painter, 15 psi., 3-nozzle	02-Dec-1996	\$109.99
WR3/TI3	Steel matting, 4'x8'x1/6", 5" mesh	16-Nov-1996	\$119.95
89-WRE-Q	Hicut chain saw, 16 in.	06-Jul-1996	\$256.99
*			

```
SELECT P_CODE, P_DESCRIPTION, P_INDATE,
P_PRICE
FROM PRODUCT1 ORDER BY P_PRICE;
```

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## SQL Ordering a Listing (Sorting)

V_NAME	V_CONTACT	V_AREACODE	V_PHONE	V_STATE
▶ Randsets Ltd.	Anderson	901	678-3998	GA
Brackman Bros	Browning	615	228-1410	TN
SuperLoo, Inc.	Flushing	904	215-8995	FL
ORDVA, Inc.	Hakford	615	898-1234	TN
Gomez Bros.	Ortega	615	889-2546	KY
Rubicon Sis.	Orton	904	890-3529	TN
D&E Supply	Singh	615	228-3245	TN
Dome Supply	Smith	901	678-1419	GA
B&K, Inc.	Smith	904	227-0093	FL
Bryson, Inc.	Smithson	615	223-3234	TN
Damal Supplies	Smythe	615	890-3529	TN

```
SELECT V_NAME, V_CONTACT, V_AREACODE,
V_PHONE, V_STATE
FROM VENDOR1
ORDER BY V_CONTACT, V_STATE DESC;
```

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## SQL Distinct (Unique) Values

- ❖ **DISTINCT** finds unique values in field

```
SELECT DISTINCT V_CODE FROM PRODUCT1;
```

V_CODE
▶ 12225
21231
21344
23119
24288
25595

V_STATE
▶ FL
GA
KY
TN

```
SELECT DISTINCT V_STATE FROM VENDOR1;
```

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## SQL Joining Database Tables

- ❖ Creating Links Through Foreign Keys

```
SELECT P_DESCRIPTION, P_PRICE, V_NAME,
V_CONTACT, V_AREACODE, V_PHONE FROM PRODUCT,
VENDOR WHERE PRODUCT.V_CODE = VENDOR.V_CODE
ORDER BY P_PRICE;
```

P_DESCRIPTION	P_PRICE	V_NAME	V_CONTACT	V_AREACODE	V_PHONE
▶ Rat-tail file, 1/8-in. fine	\$4.99	Gomez Bros.	Ortega	615	889-2546
Claw hammer	\$5.95	Bryson, Inc.	Smithson	615	223-3234
1.25-in. metal screw, 25	\$6.99	Bryson, Inc.	Smithson	615	223-3234
2.5-in. wd. screw, 50	\$8.45	D&E Supply	Singh	615	228-3245
7.25-in. pwr. saw blade	\$14.99	Gomez Bros.	Ortega	615	889-2546
9.00-in. pwr. saw blade	\$17.49	Gomez Bros.	Ortega	615	889-2546
B&D cordless drill, 1/2-in.	\$38.95	Rubicon Sis.	Orton	904	456-0092
Hrd. cloth, 1/4-in., 2x50	\$39.95	Randsets Ltd	Anderson	901	678-3998
Hrd. cloth, 1/2-in., 3x50	\$43.99	Randsets Ltd	Anderson	901	678-3998
B&D jigsaw, 8-in. blade	\$99.87	ORDVA, Inc.	Hakford	615	898-1234
B&D jigsaw, 12-in. blade	\$109.92	ORDVA, Inc.	Hakford	615	898-1234
Power painter, 15 psi., 3-nozzle	\$109.99	Rubicon Sis.	Orton	904	456-0092
Steel matting, 4'x8'x1/6", 5" mesh	\$119.95	Rubicon Sis.	Orton	904	456-0092
Hicut chain saw, 16 in.	\$256.99	ORDVA, Inc.	Hakford	615	898-1234

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## SQL Join with Relational Operator

### ❖ Create Link Through Foreign Keys

```
SELECT P_DESCRIPT, P_PRICE, V_NAME,
V_CONTACT, V_AREACODE, V_PHONE,
P_INDATE
FROM PRODUCT, VENDOR
WHERE PRODUCT.V_CODE = VENDOR.V_CODE
AND P_INDATE > #11/15/1996#
ORDER BY P_INDATE;
```

P_DESCRIPT	P_PRICE	V_NAME	V_CONTACT	V_AREACODE	V_PHONE	P_INDATE
Steel matting, 4'x8'x1/8", .5" mesh	\$119.95	Rubicon Sis.	Orton	904	456-0092	16-Nov-1996
Claw hammer	\$5.95	Bryson, Inc.	Smithson	615	223-3234	19-Nov-1996
1.25-in. metal screw, 25	\$6.99	Bryson, Inc.	Smithson	615	223-3234	28-Nov-1996
Power painter, 15 psi., 3-nozzle	\$109.99	Rubicon Sis.	Orton	904	456-0092	02-Dec-1996

## Some Basic SQL Mathematical Functions

FUNCTION	OUTPUT
COUNT	The number of rows containing the specified attribute.
MIN	The minimum attribute value encountered.
MAX	The maximum attribute value encountered.
AVG	The arithmetic mean (average) for the specified attribute.
SUM	The sum of all values for a selected attribute.

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## SQL Join with Relational Operator

### ❖ What is the inventory value?

- ◆ `SELECT SUM(P_PRICE) FROM PRODUCT1;`
- ◆ \$256.99

### ❖ How many products in product table?

- ◆ `SELECT COUNT(P_CODE) FROM PRODUCT1;`
- ◆ 14

### ❖ What is the average price of a product?

- ◆ `SELECT AVG(P_PRICE) FROM PRODUCT1;`
- ◆ \$62.75

### ❖ What is maximum discount?

- ◆ `SELECT MAX(P_DISCOUNT) FROM PRODUCT1;`
- ◆ 0.1

## SQL Join with Relational Operator

### ❖ What is the inventory value?

- ◆ `SELECT SUM(P_ONHAND*P_PRICE) FROM PRODUCT;`
- ◆ \$14,992.52

Expr1000
\$14,992.52

### ❖ How many different vendors in product table?

- ◆ This will require nesting one query in another
- ◆ `SELECT DISTINCT V_CODE FROM PRODUCT1;`
- ◆ This is saved as "prod1DistinctVendors" Query
- ◆ `SELECT`

V_CODE
21225
21231
21344
23119
24288
25595

```
Count([prod1DistinctVendors].V_CODE)
AS CountOfV_CODE
FROM prod1DistinctVendors;
```

CountOfV_CODE
6

- ◆ "prod1DistinctVendors" and "CountOfV\_CODE" are simply identifiers (No Mystery)

### SQL Sub-Query

- ❖ Inner query is used as a constraint to evaluate the outer query
- ❖ The outer query contains all fields to be displayed as results
- ❖ Sub-query application to determine which product has the MAX discount:

```
◆ SELECT P_DESCRIPT, P_DISCOUNT FROM PRODUCT
WHERE P_DISCOUNT = (SELECT
MAX(P_DISCOUNT) FROM PRODUCT);
```

	P_DESCRIPT	P_DISCOUNT
▶	Claw hammer	0.10
	Steel matting, 4'x8'x1/6"	0.10
*		

### SQL Sub-Query

- ❖ Sub-Query approach applied to SQL function and table JOIN.
- ❖ Sub-query application to determine which vendor receives the MAX discount for which product:

```
◆ SELECT V_NAME, P_DESCRIPT, P_DISCOUNT FROM
PRODUCT1, VENDOR1
WHERE PRODUCT1.V_CODE = VENDOR1.V_CODE
AND P_DISCOUNT = (SELECT MAX(P_DISCOUNT)
FROM PRODUCT1);
```

	V_NAME	P_DESCRIPT	P_DISCOUNT
▶	Bryson, Inc.	Claw hammer	0.10
	Rubicon Sis.	Steel matting, 4'x8'x1/6"	0.10