# Session 6-6 Group functions

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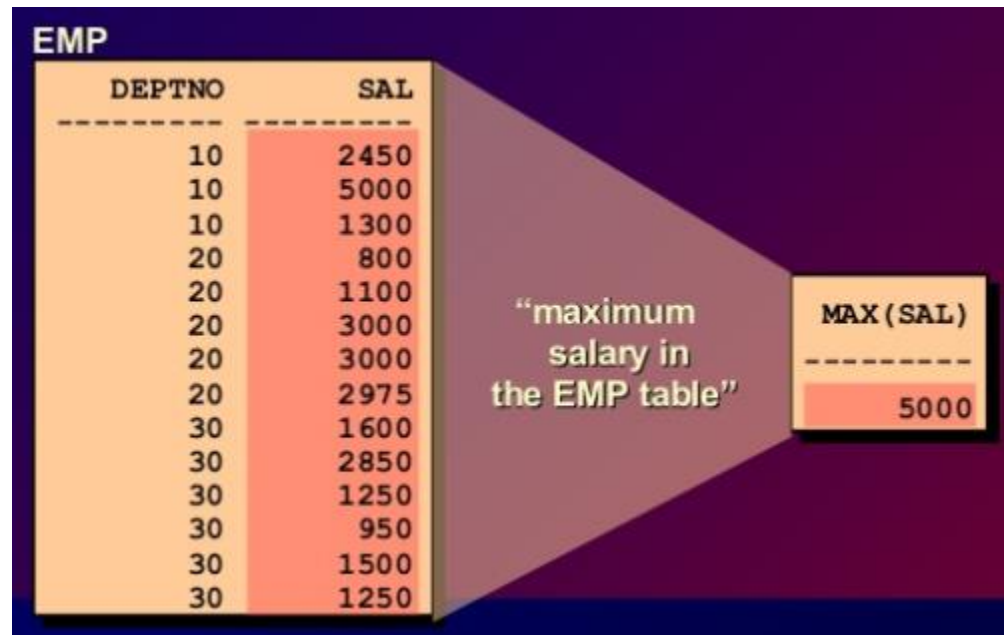
# Group Functions

- Return one result <span style="color:red">per group</span> of rows processed

- Are also called multiple-row and aggregate functions

- All group functions ignore NULL values except COUNT(*)

- Use DISTINCT to suppress duplicate values

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# Group Functions – MAX Example

# Group Functions

- SUM
- COUNT
- AVG
- MAX
- MIN
- STDDEV
- VARIANCE
- … and more

# SUM Function

- Calculates total amount stored in a numeric column for a group of rows



```
SELECT SUM(retail-cost) "Total Profit"
 FROM orderitems JOIN books USING (isbn)
WHERE order# = 1007;
```

| Execute | Load Script | Save Script | Cancel |

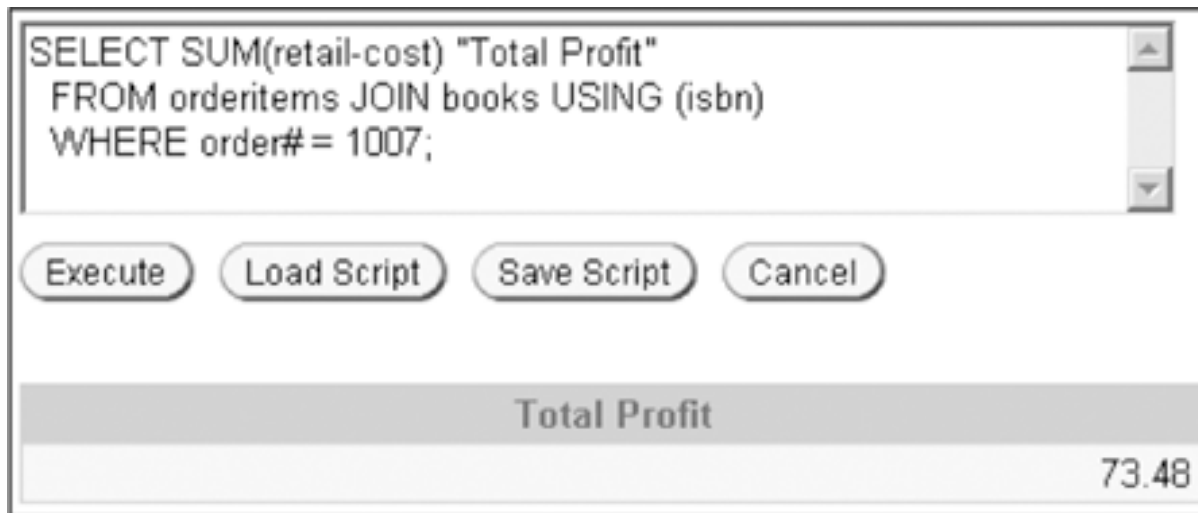| Total Profit |
| --- |
| 73.48 |

**FIGURE 11-3**   Using the SUM function to calculate order profit

# AVG Function

- Calculates the average of numeric values in a specified column
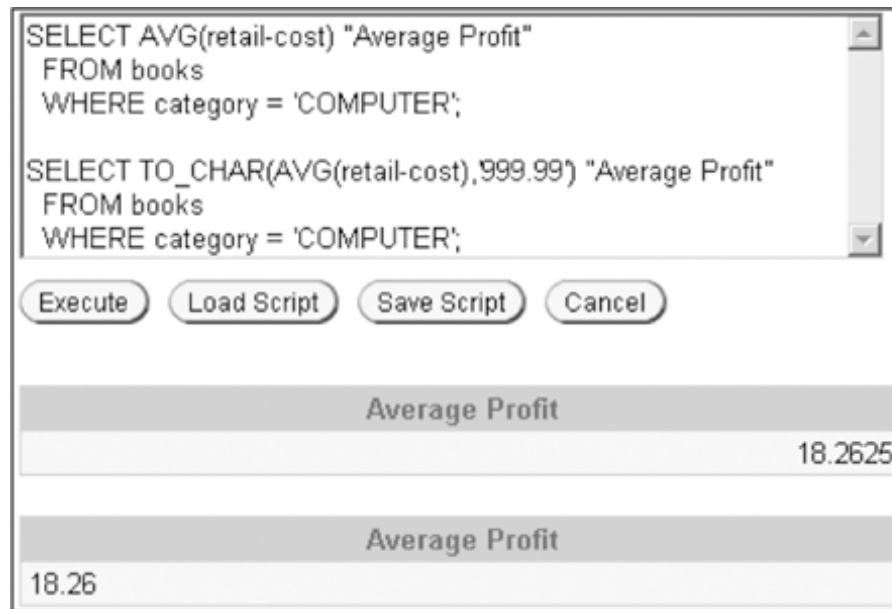


**FIGURE 11-5** Using the AVG function to calculate average profit

# COUNT Function

**Two variants:**

- COUNT (*varname*)
  - To count only non-NULL values

- COUNT (*)
  - To count all records, including those with NULL values

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# COUNT Function –
# 1) Count Only Non-NULL Values

- Include column name in argument to count number of occurrences



```
SELECT COUNT(DISTINCT category)
  FROM books;
```

| COUNT(DISTINCTCATEGORY) |
|---|
| 8 |

**FIGURE 11-6**   Using the COUNT function with a DISTINCT operation

# COUNT Function – 2) Count All Values Including NULL
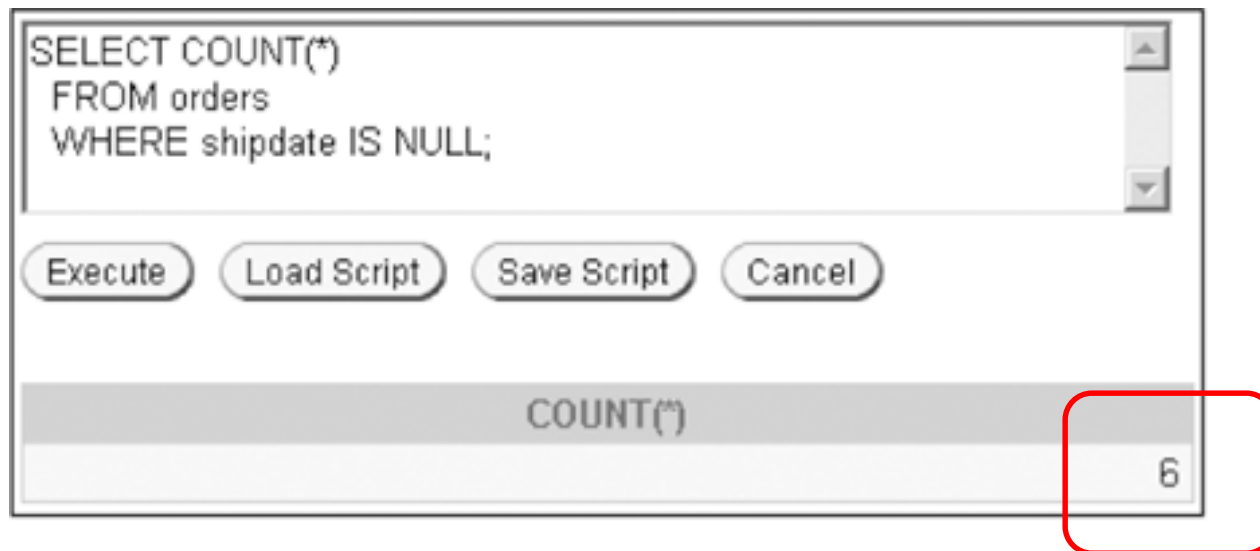
- Include asterisk in argument to count number of rows



```
SELECT COUNT(*)
  FROM orders
  WHERE shipdate IS NULL;
```

| COUNT(*) |
| --- |
| 6 |

**FIGURE 11-8** Using the COUNT(*) function to include NULL values

# COUNT Function – 2) Count All Values Including NULL (cont'd)

• The COUNT(*varname*) not count NULL values

```
SELECT count(shipdate)
FROM orders
WHERE shipdate IS NULL;
```

| Execute | Load Script | Save Script | Cancel |

| COUNT(SHIPDATE) |
|---|
| 0 |

# MAX Function

- Returns largest value



**FIGURE 11-10**  Using the MAX function on numeric data

# MIN Function

- Returns the smallest value



**FIGURE 11-12** Using the MIN function on date data

# Datatypes

- The COUNT, MIN, and MAX functions can be used on values with *character, numeric, and date* datatypes

- Useful application of MAX with *date* datatype
  - MAX(date): the latest date
  - MIN(date): the earliest date

# Wrap-up

- SUM
- AVG
- COUNT
  - Ignore NULL values or not
- MAX
- MIN