Database Programming with SQL
9-1: Using GROUP BY and HAVING Clauses
Practice Activities

Objectives

- Construct and execute a SQL query using GROUP BY
- Construct and execute a SQL query using GROUP BY … HAVING
- Construct and execute a GROUP BY on more than one column
- Nest group functions

Vocabulary

Identify the vocabulary word for each definition below.

	Used to specify which groups are to be displayed; restricts groups that do not meet group criteria
	Divides the rows in a table into groups

Try It / Solve It

1. In the SQL query shown below, which of the following is true about this query?

_____ a. Kimberly Grant would not appear in the results set.

_____ b. The GROUP BY clause has an error because the manager_id is not listed in the SELECT clause.

_____ c. Only salaries greater than 16001 will be in the result set.

_____ d. Names beginning with Ki will appear after names beginning with Ko.

_____ e. Last names such as King and Kochhar will be returned even if they don't have salaries > 16000.

```
SELECT last_name, MAX(salary)
FROM employees
WHERE last_name LIKE 'K%'
GROUP BY manager_id, last_name
HAVING MAX(salary) >16000
ORDER BY last_name DESC ;
```

2. Each of the following SQL queries has an error. Find the error and correct it. Use Oracle Application Express to verify that your corrections produce the desired results.

   a.
```
SELECT manager_id
FROM employees
WHERE AVG(salary) <16000
GROUP BY manager_id;
```

   b.
```
SELECT cd_number, COUNT(title)
FROM d_cds
WHERE cd_number < 93;
```

   c.
```
SELECT ID, MAX(ID), artist AS Artist
FROM d_songs
WHERE duration IN('3 min', '6 min', '10 min')
HAVING ID < 50
GROUP by ID;
```

   d.
```
SELECT loc_type, rental_fee AS Fee
FROM d_venues
WHERE id <100
GROUP BY "Fee"
ORDER BY 2;
```

3. Rewrite the following query to accomplish the same result:

```
SELECT DISTINCT MAX(song_id)
FROM d_track_listings
WHERE track IN ( 1, 2, 3);
```

4. Indicate True or False
   _____ a. If you include a group function and any other individual columns in a SELECT clause, then each individual column must also appear in the GROUP BY clause.
   _____ b. You can use a column alias in the GROUP BY clause.
   _____ c. The GROUP BY clause always includes a group function.

5. Write a query that will return both the maximum and minimum average salary grouped by department from the employees table.

6. Write a query that will return the average of the maximum salaries in each department for the employees table.