

Session 6-8 Grouping Data 2

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GROUP BY and HAVING Syntax

```
SELECT *|columnname, columnname...  
FROM tablename  
[WHERE condition]  
[GROUP BY columnname, columnname...]  
[HAVING group condition];
```

{ }

FIGURE 11-2 Location of multiple-row functions in the SELECT statement

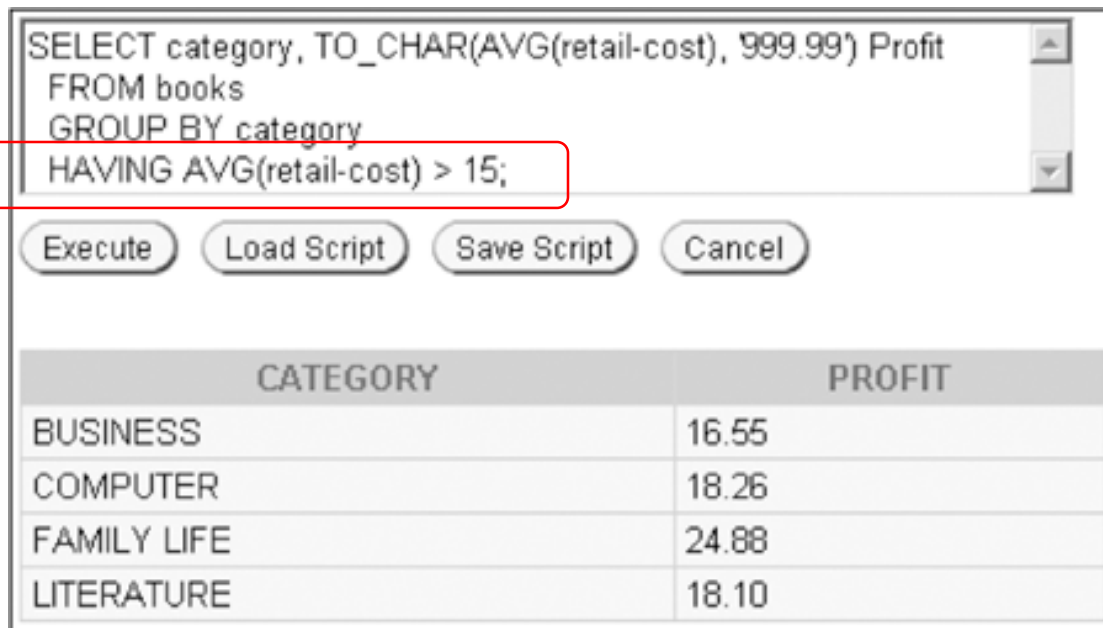


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Restricting Aggregated Output

- HAVING clause serves as the WHERE clause for grouped data



The screenshot shows a SQL query editor window. The query text is:

```
SELECT category, TO_CHAR(AVG(retail-cost), '999.99') Profit
FROM books
GROUP BY category
HAVING AVG(retail-cost) > 15;
```

The `HAVING AVG(retail-cost) > 15;` line is highlighted with a red rectangle. Below the query editor are four buttons: `Execute`, `Load Script`, `Save Script`, and `Cancel`.

Below the buttons is a table with the following data:

CATEGORY	PROFIT
BUSINESS	16.55
COMPUTER	18.26
FAMILY LIFE	24.88
LITERATURE	18.10

FIGURE 11-16 Using a HAVING clause to restrict groups displayed

Restricting Aggregated Output (cont'd)

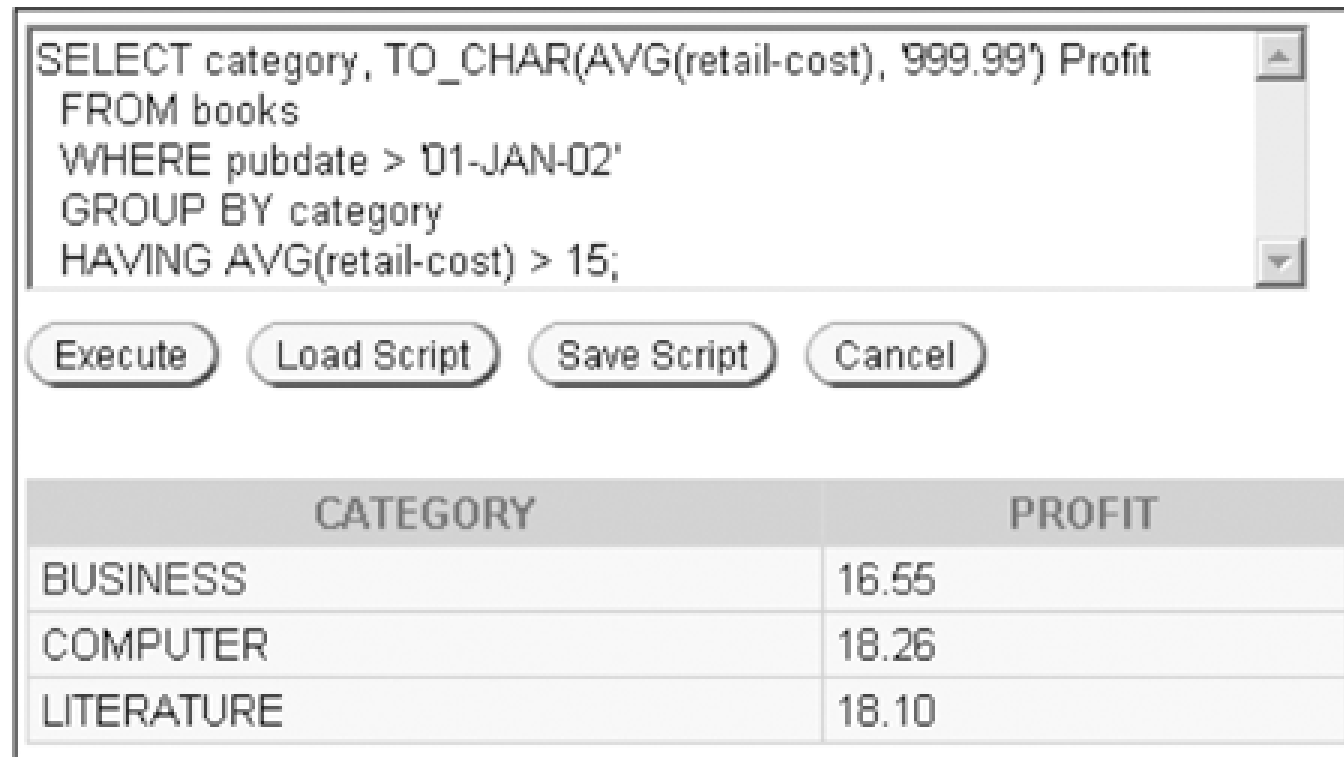
- When included in the same SELECT statement, the clauses are evaluated in the order of:
 - WHERE
 - GROUP BY
 - HAVING



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Restricting Aggregated Output (cont'd)



The screenshot shows a SQL query window with the following text:

```
SELECT category, TO_CHAR(AVG(retail-cost), '999.99') Profit
FROM books
WHERE pubdate > '01-JAN-02'
GROUP BY category
HAVING AVG(retail-cost) > 15;
```

Below the query text are four buttons: Execute, Load Script, Save Script, and Cancel.

Below the buttons is a table with the following data:

CATEGORY	PROFIT
BUSINESS	16.55
COMPUTER	18.26
LITERATURE	18.10

FIGURE 11-17 Using both the WHERE and HAVING clauses



Nesting Functions

- Inner function is resolved first
- Maximum nesting depth: 2

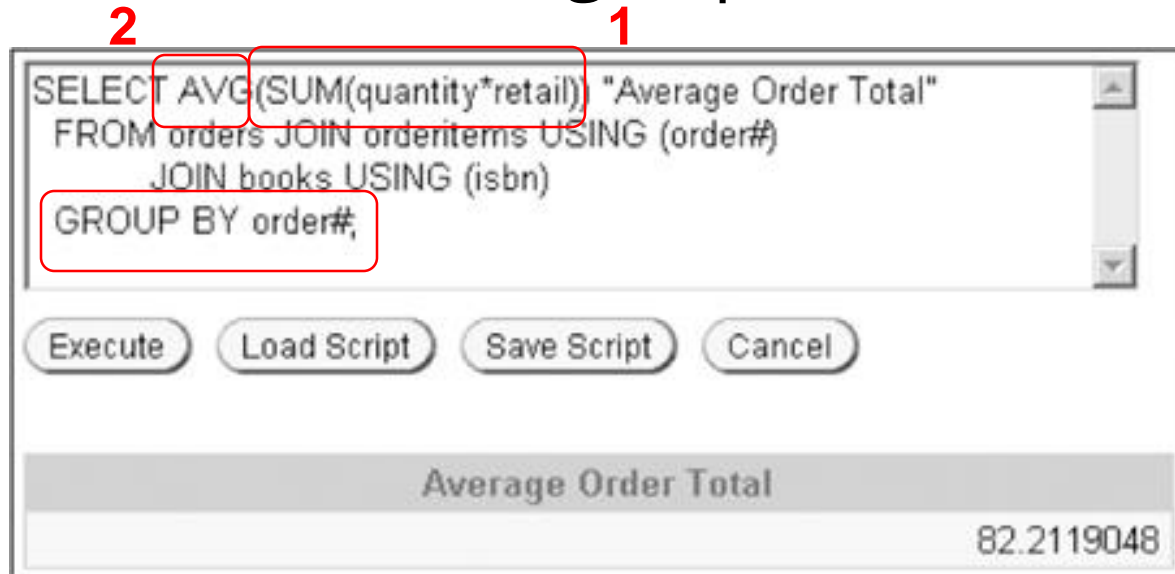


FIGURE 11-19 Nesting group functions

Statistical Group Functions

- Oracle provides basic statistical functions
- Descriptive statistics
 - Median
 - STDDEV
 - VARIANCE
 - ...
- Hypothesis testing
- Correlation
- Regression



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STDDEV/VARIANCE Function

SELECT category, AVG(retail-cost), STDDEV(retail-cost)
FROM books
GROUP BY category;

Execute Load Script Save Script Cancel

CATEGORY	AVG(RETAIL-COST)	STDDEV(RETAIL-COST)
BUSINESS	16.55	0
CHILDREN	12.89	13.0956176
COMPUTER	18.2625	11.2267074
COOKING	8.6	1.6263456
FAMILY LIFE	24.875	24.1476966
FITNESS	12.2	0
LITERATURE	18.1	0
SELF HELP	12.1	0

8 rows selected.

FIGURE 11-20 Using the STDDEV function

SELECT category, VARIANCE(retail-cost), MIN(retail-cost), MAX(retail-cost)
FROM books
GROUP BY category;

Execute Load Script Save Script Cancel

CATEGORY	VARIANCE(RETAIL-COST)	MIN(RETAIL-COST)	MAX(RETAIL-COST)
BUSINESS	0	16.55	16.55
CHILDREN	171.4952	3.63	22.15
COMPUTER	126.038958	3.2	28.7
COOKING	2.645	7.45	9.75
FAMILY LIFE	583.11125	7.8	41.95
FITNESS	0	12.2	12.2
LITERATURE	0	18.1	18.1
SELF HELP	0	12.1	12.1

8 rows selected.

FIGURE 11-21 Using the VARIANCE function



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Wrap-up

- HAVING clause
- Statistical Group Functions
 - STDDEV/VARIANCE

