

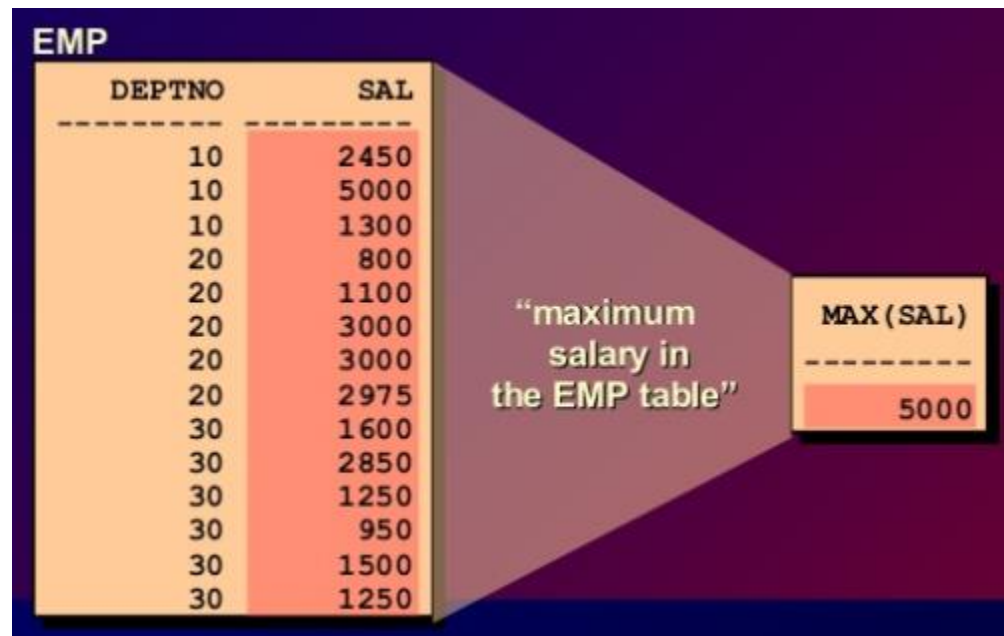
Session 6-7 Grouping Data 1

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Maximum Salary of All Employees



The diagram illustrates the process of finding the maximum salary from a table. On the left, a table titled 'EMP' lists department numbers (DEPTNO) and salaries (SAL). A callout box points to the highest salary value in the table, which is 5000.

DEPTNO	SAL
10	2450
10	5000
10	1300
20	800
20	1100
20	3000
20	3000
20	2975
30	1600
30	2850
30	1250
30	950
30	1500
30	1250

“maximum salary in the EMP table”

MAX (SAL)
5000



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Grouping Data: Average Salary by Department

EMP	
DEPTNO	SAL
10	2450
10	5000
10	1300
20	800
20	1100
20	3000
20	3000
20	2975
30	1600
30	2850
30	1250
30	950
30	1500
30	1250

“average salary in EMP table for each department”

DEPTNO	AVG (SAL)
10	2916.6667
20	2175
30	1566.6667



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Grouping Data

- GROUP BY clause:
 - Used to group data
 - Must be used for any individual column in the SELECT clause with a group function
 - Cannot reference column aliases



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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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GROUP BY Example

Q) Calculate the average profit by the book category

```
select category, retail-cost Profit  
from books
```

Execute

Load Script

Save Script

Cancel

CATEGORY	PROFIT
FITNESS	12.2
FAMILY LIFE	7.8
CHILDREN	22.15
COMPUTER	24.55
COOKING	7.45
COMPUTER	28.7
COMPUTER	3.2
COMPUTER	16.6
FAMILY LIFE	41.95
COOKING	9.75
CHILDREN	3.63
SELF HELP	12.1
BUSINESS	16.55
LITERATURE	18.1

14 rows selected.



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GROUP BY Example (cont'd)

Q) Calculate the average profit by the book category

```
select category, avg(retail-cost) Profit
from books
group by category|
```

Execute

Load Script

Save Script

Cancel

CATEGORY	PROFIT
COMPUTER	18.2625
COOKING	8.6
CHILDREN	12.89
LITERATURE	18.1
BUSINESS	16.55
FITNESS	12.2
FAMILY LIFE	24.875
SELF HELP	12.1

8 rows selected.



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Common Error - Not a Group Function

SELECT category, TO_CHAR(AVG(retail-cost), '999.99') Profit
FROM books;

ExecuteLoad ScriptSave ScriptCancel

SELECT category, TO_CHAR(AVG(retail-cost), '999.99') Profit
*

ERROR at line 1:
ORA-00937: not a single-group group function



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Number of Rows Returned Not Matched

No Group Function used

```
select category  
from books
```

Execute

Load Script

Save Script

Cancel

CATEGORY
FITNESS
FAMILY LIFE
CHILDREN
COMPUTER
COOKING
COMPUTER
COMPUTER

Group Function

```
select TO_CHAR(AVG(retail-cost), '999.99') Profit  
from books
```

Execute

Load Script

Save Script

Cancel

PROFIT
16.05



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Wrap-up

- GROUP BY
- Common error: Inconsistency in the number of returned rows

