

SQL part 5.2. Using multiple tables. Advanced joins.

1. Display all employees' names and surnames. If employee works in a department, display department's name and address.

name	surname	dept_name	address
Tom	Bell		
Mark	Clark	ADMINISTRATION	GRANT AVE 2
Ana	Edwards	DISTRIBUTED SYSTEMS	GRANT AVE 3
Ian	Green	DISTRIBUTED SYSTEMS	GRANT AVE 3
Peter	Jackson	EXPERT SYSTEMS	47TH STR
Chris	Johnson	DISTRIBUTED SYSTEMS	GRANT AVE 3
Carl	Jones	ALGORITHMS	45TH STR
Arnold	Lewis	DISTRIBUTED SYSTEMS	GRANT AVE 3
John	Smith	ADMINISTRATION	GRANT AVE 2
Mary	White	DISTRIBUTED SYSTEMS	GRANT AVE 3
Andrew	Williams	EXPERT SYSTEMS	47TH STR
Peter	Wilson	DISTRIBUTED SYSTEMS	GRANT AVE 3
Adam	Wood	EXPERT SYSTEMS	47TH STR
Wayne	Young	DISTRIBUTED SYSTEMS	GRANT AVE 3

2. Modify previous query. If employees has no department, display text "no department" in columns *dept_name* and *address*.

name	surname	dept_name	address
Tom	Bell	no department	no department
Mark	Clark	ADMINISTRATION	GRANT AVE 2
Ana	Edwards	DISTRIBUTED SYSTEMS	GRANT AVE 3
Ian	Green	DISTRIBUTED SYSTEMS	GRANT AVE 3
Peter	Jackson	EXPERT SYSTEMS	47TH STR
Chris	Johnson	DISTRIBUTED SYSTEMS	GRANT AVE 3
Carl	Jones	ALGORITHMS	45TH STR
Arnold	Lewis	DISTRIBUTED SYSTEMS	GRANT AVE 3
John	Smith	ADMINISTRATION	GRANT AVE 2
Mary	White	DISTRIBUTED SYSTEMS	GRANT AVE 3
Andrew	Williams	EXPERT SYSTEMS	47TH STR
Peter	Wilson	DISTRIBUTED SYSTEMS	GRANT AVE 3
Adam	Wood	EXPERT SYSTEMS	47TH STR
Wayne	Young	DISTRIBUTED SYSTEMS	GRANT AVE 3

3. Change previous query and display also departments without employees.

name	surname	dept_name	address
Tom	Bell	no department	no department
Mark	Clark	ADMINISTRATION	GRANT AVE 2
Ana	Edwards	DISTRIBUTED SYSTEMS	GRANT AVE 3
Ian	Green	DISTRIBUTED SYSTEMS	GRANT AVE 3
Peter	Jackson	EXPERT SYSTEMS	47TH STR
Chris	Johnson	DISTRIBUTED SYSTEMS	GRANT AVE 3
Carl	Jones	ALGORITHMS	45TH STR
Arnold	Lewis	DISTRIBUTED SYSTEMS	GRANT AVE 3
John	Smith	ADMINISTRATION	GRANT AVE 2
Mary	White	DISTRIBUTED SYSTEMS	GRANT AVE 3
Andrew	Williams	EXPERT SYSTEMS	47TH STR
Peter	Wilson	DISTRIBUTED SYSTEMS	GRANT AVE 3
Adam	Wood	EXPERT SYSTEMS	47TH STR
Wayne	Young	DISTRIBUTED SYSTEMS	GRANT AVE 3
no employee	no employee	OPERATIONAL RESEARCH	PLAINFIELD ROAD

4. For every department find the number of employees and sum of employees' salaries. Take into account also departments without employees.

department	employees_at_dept	salaries_at_dept
ADMINISTRATION	2	7340.20
ALGORITHMS	1	3350.00
DISTRIBUTED SYSTEMS	7	17325.20
EXPERT SYSTEMS	3	4870.00
OPERATIONAL RESEARCH	0	

5. Find surnames of employees with surnames of their bosses. Display also employees who have no bosses (display text "no boss" instead of boss' name).

employee	boss
Bell	Williams
Clark	Smith
Edwards	Wilson
Green	Wilson
Jackson	Wilson
Johnson	Wilson
Jones	Smith
Lewis	Johnson
Smith	no boss
White	Wilson
Williams	Smith
Wilson	Smith
Wood	Johnson
Young	Jones

6. Modify previous query and display only those employees whose bosses are Wilson or Smith and employees who have no boss.

employee	boss
Clark	Smith
Edwards	Wilson
Green	Wilson
Jackson	Wilson
Johnson	Wilson
Jones	Smith
Smith	no boss
White	Wilson
Williams	Smith
Wilson	Smith

7. For each employee display difference between employees annual salary (twelve times of employees salary plus additional salary) and his/her boss' annual salary.

employee	emp_annual_salary	less_than_boss
Bell	22590.00	14250.00
Clark	31322.40	26418.10
Edwards	19080.00	28440.00
Green	22556.90	24963.10
Jackson	11370.60	36149.40
Johnson	39565.00	7955.00
Jones	40810.00	16930.50
Lewis	23652.00	15913.00
White	34146.00	13374.00
Williams	36840.00	20900.50
Wilson	47520.00	10220.50
Wood	10800.00	28765.00
Young	22668.00	18142.00

8. For each employee count the number of his/hers subordinates.

boss	subordinates
Bell	0
Clark	0
Edwards	0
Green	0
Jackson	0
Johnson	2
Jones	1
Lewis	0
Smith	4
White	0
Williams	1
Wilson	5
Wood	0
Young	0

9. Display following report.

employee	employee_department	boss	boss_department
Adam Wood	EXPERT SYSTEMS	Chris Johnson	DISTRIBUTED SYSTEMS
Ana Edwards	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Andrew Williams	EXPERT SYSTEMS	John Smith	ADMINISTRATION
Arnold Lewis	DISTRIBUTED SYSTEMS	Chris Johnson	DISTRIBUTED SYSTEMS
Carl Jones	ALGORITHMS	John Smith	ADMINISTRATION
Chris Johnson	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Ian Green	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Mark Clark	ADMINISTRATION	John Smith	ADMINISTRATION
Mary White	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Peter Jackson	EXPERT SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Peter Wilson	DISTRIBUTED SYSTEMS	John Smith	ADMINISTRATION
Wayne Young	DISTRIBUTED SYSTEMS	Carl Jones	ALGORITHMS

10. Modify previous query to display also employees without departments and without bosses.

employee	employee_department	boss	boss_department
Adam Wood	EXPERT SYSTEMS	Chris Johnson	DISTRIBUTED SYSTEMS
Ana Edwards	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Andrew Williams	EXPERT SYSTEMS	John Smith	ADMINISTRATION
Arnold Lewis	DISTRIBUTED SYSTEMS	Chris Johnson	DISTRIBUTED SYSTEMS
Carl Jones	ALGORITHMS	John Smith	ADMINISTRATION
Chris Johnson	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Ian Green	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
John Smith	ADMINISTRATION	no boss	no department
Mark Clark	ADMINISTRATION	John Smith	ADMINISTRATION
Mary White	DISTRIBUTED SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Peter Jackson	EXPERT SYSTEMS	Peter Wilson	DISTRIBUTED SYSTEMS
Peter Wilson	DISTRIBUTED SYSTEMS	John Smith	ADMINISTRATION
Tom Bell	no department	Andrew Williams	EXPERT SYSTEMS
Wayne Young	DISTRIBUTED SYSTEMS	Carl Jones	ALGORITHMS

11. Count the number of records of Cartesian product built with tables *Employees*, *Departments* and *Jobs*.

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rows_of_cartesian_product
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                        420
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