THỰC HÀNH HỆ QUẢN TRỊ CƠ SỞ DỮ LIỆU -LAB03

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Câu a. Hiển thị danh sách các phòng ban (department_name, city) kèm theo số lượng nhân viên, mức lương thấp nhất, cao nhất, trung bình và tổng lương của phòng ban tương ứng, sắp xếp theo id.

```
SELECT d.department_id,
    d.department_name,
    l.city,
    COUNT(e.employee_id) AS total_employee,
    MIN(e.salary) AS min_salary,
    MAX(e.salary) AS max_salary,
    AVG(e.salary) AS avg_salary,
    SUM(e.salary) AS total_salary
FROM departments d
INNER JOIN locations l ON d.location_id = l.location_id
INNER JOIN employees e ON d.department_id = e.department_id
GROUP BY d.department_id, d.department_name, l.city
ORDER BY d.department_id;
```

	department_id integer	department_name character varying (50)	city character varying (50)	total_employee bigint	min_salary numeric	max_salary numeric	avg_salary numeric	total_salary numeric
1	1	Administration	Seattle	1	4400.00	4400.00	4400.0000000000000000	4400.00
2	2	Marketing	Toronto	2	6000.00	13000.00	9500.0000000000000000	19000.00
3	3	Purchasing	Seattle	6	2500.00	11000.00	4150.0000000000000000	24900.00
4	4	Human Resources	London	1	6500.00	6500.00	6500.0000000000000000	6500.00
5	5	Shipping	South San Francisco	7	2700.00	8200.00	5885.7142857142857143	41200.00
6	6	IT	Southlake	5	4200.00	9000.00	5760.0000000000000000	28800.00
7	7	Public Relations	Munich	1	10000.00	10000.00	10000.0000000000000000	10000.00
8	8	Sales	Oxford	6	6200.00	14000.00	9616.6666666666666667	57700.00
9	9	Executive	Seattle	3	17000.00	24000.00	19333.333333333333	58000.00
10	10	Finance	Seattle	6	6900.00	12000.00	8600.0000000000000000	51600.00
11	11	Accounting	Seattle	2	8300.00	12000.00	10150.0000000000000000	20300.00

Câu b. Hiển thị danh sách các phòng ban (department_name, city) chỉ thuộc khu vực Americas kèm theo số lượng nhân viên, tổng lương của phòng ban tương ứng, sắp xếp theo tổng lương từ cao đến thấp và chỉ hiển thị danh sách có tổng lương > 30000.

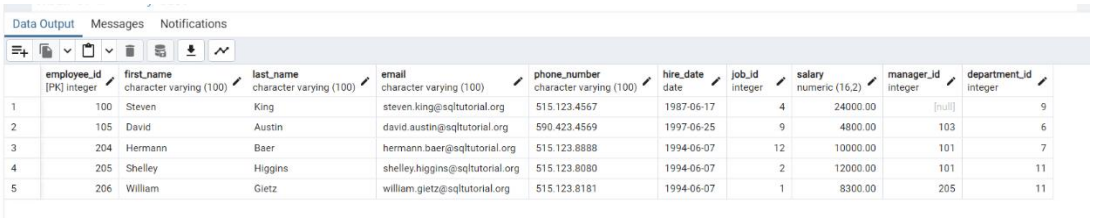
```
SELECT d.department_name,
    loc.city,
    COUNT(e.employee_id) AS total_employee,
    SUM(e.salary) AS total_salary
FROM departments d
JOIN locations loc ON d.location_id = loc.location_id
JOIN countries c ON loc.country_id = c.country_id
JOIN regions r ON c.region_id = r.region_id
JOIN employees e ON d.department_id = e.department_id
WHERE r.region_name = 'Americas'
GROUP BY d.department_name, loc.city
HAVING SUM(e.salary) > 30000
ORDER BY total_salary DESC;
```

	department_name character varying (50)	city character varying (50)	total_employee bigint	total_salary numeric
1	Executive	Seattle	3	58000.00
2	Finance	Seattle	6	51600.00
3	Shipping	South San Francisco	7	41200.00

Câu c. Hiển thị danh sách các nhân viên được tuyển dụng vào tháng 6 nhưng loại trừ những nhân viên ở London.

```
SELECT e.*
FROM employees e
JOIN departments d ON e.department_id = d.department_id
JOIN locations l ON d.location_id = l.location_id
WHERE EXTRACT(MONTH FROM e.hire_date) = 6
```

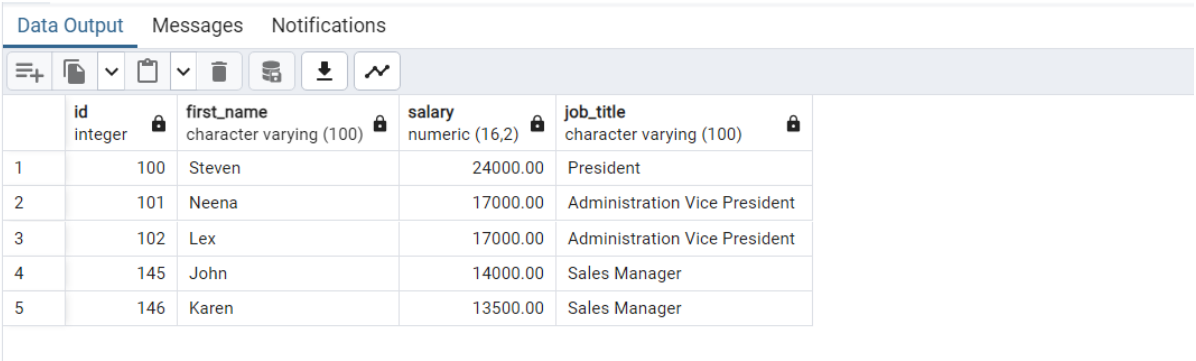
AND l.city != 'London';



	employee_id [PK] integer	first_name character varying (100)	last_name character varying (100)	email character varying (100)	phone_number character varying (100)	hire_date date	job_id integer	salary numeric (16,2)	manager_id integer	department_id integer
1	100	Steven	King	steven.king@sqltutorial.org	515.123.4567	1987-06-17	4	24000.00	[null]	9
2	105	David	Austin	david.austin@sqltutorial.org	590.423.4569	1997-06-25	9	4800.00	103	6
3	204	Hermann	Baer	hermann.baer@sqltutorial.org	515.123.8888	1994-06-07	12	10000.00	101	7
4	205	Shelley	Higgins	shelley.higgins@sqltutorial.org	515.123.8080	1994-06-07	2	12000.00	101	11
5	206	William	Gietz	william.gietz@sqltutorial.org	515.123.8181	1994-06-07	1	8300.00	205	11

Câu d. Hiển thị danh sách các manager (id, first_name, salary, job_title) có mức lương thuộc vào top 5 mức lương cao nhất

```
SELECT m.employee_id AS id,
    m.first_name,
    m.salary,
    j.job_title
FROM employees as m
LEFT JOIN employees as e ON e.employee_id = m.manager_id
JOIN jobs j ON m.job_id = j.job_id
GROUP BY id, e.first_name, m.salary, j.job_title
ORDER BY m.salary DESC
LIMIT 5;
```



	id integer	first_name character varying (100)	salary numeric (16,2)	job_title character varying (100)
1	100	Steven	24000.00	President
2	101	Neena	17000.00	Administration Vice President
3	102	Lex	17000.00	Administration Vice President
4	145	John	14000.00	Sales Manager
5	146	Karen	13500.00	Sales Manager

Câu e. Hiển thị first_name, last_name, salary, manager_id của những nhân viên chịu sự quản lý của các manager làm việc ở 'United States of America' mà có mức lương lớn hơn mức lương trung bình của các thành viên trong nhóm tương ứng.

```
SELECT e.first_name,   e.last_name,  e.salary,  e.manager_id
```

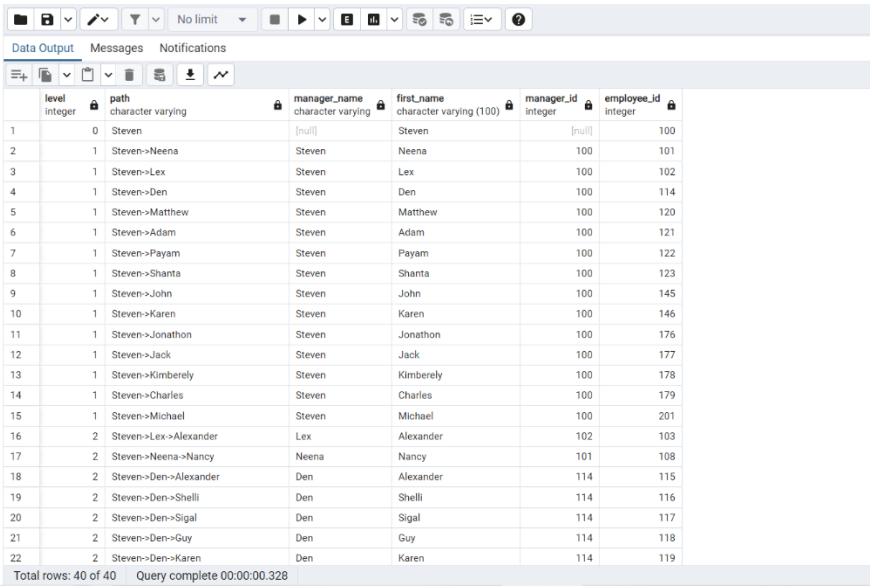
```
FROM employees e
RIGHT JOIN employees m ON e.manager_id = m.employee_id
JOIN (
    SELECT AVG(salary) AS avg_salary, manager_id
    FROM employees
    GROUP BY manager_id
) AS avg_salary_per_manager ON e.manager_id = avg_salary_per_manager.manager_id
INNER JOIN departments d ON e.department_id = d.department_id
INNER JOIN locations l ON d.location_id = l.location_id
INNER JOIN countries c ON l.country_id = c.country_id
WHERE c.country_name = 'United States of America'
AND e.salary > avg_salary_per_manager.avg_salary;
```

	first_name character varying (100)	last_name character varying (100)	salary numeric (16,2)	manager_id integer
1	Sigal	Tobias	2800.00	114
2	Shelli	Baida	2900.00	114
3	Alexander	Khoo	3100.00	114
4	Den	Raphaely	11000.00	100
5	Sarah	Bell	4000.00	123
6	Bruce	Ernst	6000.00	103
7	Lex	De Haan	17000.00	100
8	Neena	Kochhar	17000.00	100
9	John	Chen	8200.00	108
10	Daniel	Faviet	9000.00	108
11	Nancy	Greenberg	12000.00	101
12	Shelley	Higgins	12000.00	101

Câu f

```
WITH RECURSIVE employee_tree(level, path, manager_name, first_name, manager_id, employee_id)
AS (
    SELECT
        0 AS level,
        first_name::varchar AS path,
        NULL::varchar AS manager_name,
        first_name,
        NULL::integer AS manager_id,
```

```
    employee_id
  FROM
    employees
  WHERE
    manager_id IS NULL
  UNION ALL
  SELECT
    et.level + 1,
    et.path || '->' || e.first_name,
    et.first_name AS manager_name,
    e.first_name,
    et.employee_id AS manager_id,
    e.employee_id
  FROM
    employees e
  INNER JOIN
    employee_tree et ON e.manager_id = et.employee_id
)
SELECT * FROM employee_tree;
```



Data Output | Messages | Notifications

	level integer	path character varying	manager_name character varying	first_name character varying (100)	manager_id integer	employee_id integer
1	0	Steven	[null]	Steven	[null]	100
2	1	Steven->Neena	Steven	Neena	100	101
3	1	Steven->Lex	Steven	Lex	100	102
4	1	Steven->Den	Steven	Den	100	114
5	1	Steven->Matthew	Steven	Matthew	100	120
6	1	Steven->Adam	Steven	Adam	100	121
7	1	Steven->Payam	Steven	Payam	100	122
8	1	Steven->Shanta	Steven	Shanta	100	123
9	1	Steven->John	Steven	John	100	145
10	1	Steven->Karen	Steven	Karen	100	146
11	1	Steven->Jonathon	Steven	Jonathon	100	176
12	1	Steven->Jack	Steven	Jack	100	177
13	1	Steven->Kimberely	Steven	Kimberely	100	178
14	1	Steven->Charles	Steven	Charles	100	179
15	1	Steven->Michael	Steven	Michael	100	201
16	2	Steven->Lex->Alexander	Lex	Alexander	102	103
17	2	Steven->Neena->Nancy	Neena	Nancy	101	108
18	2	Steven->Den->Alexander	Den	Alexander	114	115
19	2	Steven->Den->Shelli	Den	Shelli	114	116
20	2	Steven->Den->Sigal	Den	Sigal	114	117
21	2	Steven->Den->Guy	Den	Guy	114	118
22	2	Steven->Den->Karen	Den	Karen	114	119

Total rows: 40 of 40 Query complete 00:00:00.328