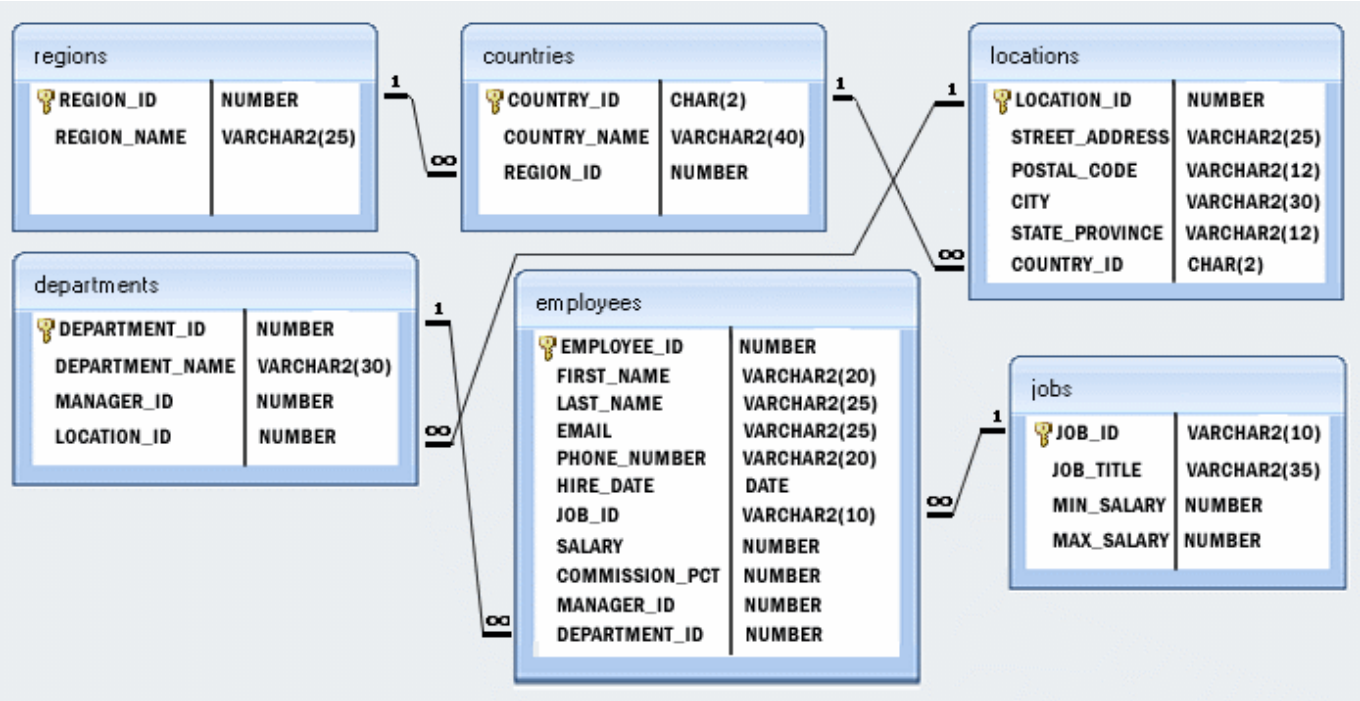
TD - Séance 3

La base de données associée au fichier `Lab12_TD1_SQL_humanresources.sql` contient 7 tables :



Question 1 : Write a query to get the number of employees by job id.

```sql
SELECT job_id, COUNT(*) AS number_of_employees
FROM employees
GROUP BY job_id;
```

Question 2 : Write a query to get the job titles where the number of employees is greater than 4, ordered by descending order

```sql
SELECT job_title, COUNT(*) AS number_of_employees
FROM employees
JOIN jobs ON employees.job_id = jobs.job_id
GROUP BY job_title
HAVING COUNT(*) > 4
ORDER BY number_of_employees DESC;
```

Question 3 : Write a query to find the manager ID and the salary of the lowest-paid employee for that manager.

```sql
SELECT manager_id, MIN(salary) AS lowest_salary
FROM employees
GROUP BY manager_id;
```

Question 4 : Same question as above but with the managers' lastnames

```
SELECT e.manager_id, e.salary AS lowest_salary, m.last_name
FROM employees e
JOIN employees m ON e.manager_id = m.employee_id
WHERE e.salary = (SELECT MIN(salary) FROM employees WHERE manager_id =
e.manager_id);
```

Question 5 : Write a query to get the months in which more than 10 employees joined.

```
SELECT EXTRACT(MONTH FROM hire_date) AS month_joined, COUNT(*) AS
number_of_employees
FROM employees
GROUP BY month_joined
HAVING COUNT(*) > 10;
```

Question 6 : Write a query to get the average salary for each job having more than 5 employees, ordered by the number of employees, in decreasing order.

```
SELECT job_id, AVG(salary) AS average_salary, COUNT(*) AS number_of_employees
FROM employees
GROUP BY job_id
HAVING COUNT(*) > 5
ORDER BY number_of_employees DESC;
```

Question 7 : Write a query to get the average salary for all departments employing more than 10 employees.

```
SELECT d.department_id, AVG(e.salary) AS average_salary
FROM employees e
JOIN departments d ON e.department_id = d.department_id
GROUP BY d.department_id
HAVING COUNT(e.employee_id) > 10;
```

Question 8 : Write a query to return the total bonus (commission times salary) by department. What informations may you find behind this department_id ? Who is the faulty manager ?

```
SELECT department_id, SUM(commission_pct * salary) AS total_bonus
FROM employees
GROUP BY department_id;
```

Question 9 : Write a query to find the departments having an average salary higher than the company-wide average salary

```
SELECT department_id, AVG(salary) AS average_salary
FROM employees
GROUP BY department_id
HAVING AVG(salary) > (SELECT AVG(salary) FROM employees);
```

Question 10 : Extend the previous query to get the average salaries for each department, the column « higher » indicates wether this average is larger than the company one. Hint : use UNION.

```
SELECT department_id, AVG(salary) AS average_salary,
       CASE WHEN AVG(salary) > (SELECT AVG(salary) FROM employees) THEN 'yes' ELSE
'no' END AS higher
FROM employees
GROUP BY department_id
UNION
SELECT department_id, AVG(salary) AS average_salary,
       CASE WHEN AVG(salary) > (SELECT AVG(salary) FROM employees) THEN 'yes' ELSE
'no' END AS higher
FROM employees
GROUP BY department_id;
```

Question 11 : Write a query to find the number of employees per region

```
SELECT l.region_id, COUNT(e.employee_id) AS number_of_employees
FROM employees e
JOIN locations l ON e.location_id = l.location_id
GROUP BY l.region_id;
```

Question 12 : If you do not find the total number of employees in the previous result, it is because there are inconsistencies in the database (study the locations tables and correct it). Verify that you obtain the previous result.

Cette question nécessite une étude des données pour identifier les incohérences et peut impliquer une mise à jour des enregistrements de localisation avant de vérifier à nouveau le résultat de la question 11.

Question 13 : The total sum of employees of the above result, does not give the total number of employees. Find out the problem and solve it. (hint : have a look to employees).

Cela pourrait nécessiter l'examen des relations entre les tables pour s'assurer que toutes les entrées sont correctement liées.

Question 14 : Write a query to return the number of people with the same job, ordered in descending order.

```
SELECT job_id, COUNT(*) AS number_of_people
FROM employees
GROUP BY job_id
ORDER BY number_of_people DESC;
```

Question 15 : Write a query to find the number of job positions occupied by more than one employee, as well as the total number of employees in these positions.

```
SELECT job_id, COUNT(*) AS total_employees
FROM employees
GROUP BY job_id
HAVING COUNT(*) > 1;
```

Question 16 : The commission of an employee is equal to its salary multiplied by its percentage. Write a query to find the total commissions spent by department, sorted by decreasing total spent.

```
SELECT department_id, SUM(salary * commission_pct) AS total_commissions
FROM employees
GROUP BY department_id
ORDER BY total_commissions DESC;
```

Question 17 : Write a query to find the average salary by job for people working in Seattle, display also the department for each job.

```
SELECT e.job_id, AVG(e.salary) AS average_salary, d.department_id
FROM employees e
JOIN departments d ON e.department_id = d.department_id
JOIN locations l ON d.location_id = l.location_id
WHERE l.city = 'Seattle'
GROUP BY e.job_id, d.department_id;
```