

# TUTORIAL 4: ADVANCED SQL QUERIES

## BACKGROUND

Consider the following schema:

- position(code, title, income)
- employee(number, name, position.code position, employee.number supervisor, department.code department)
- department(code, name, location, employee.number director)
- commission(employee.number employee, date, value)
- history(employee.number employee, position.code position, start\_date)

Some information and constraints about the schema:

- An employee may not have a supervisor (supervisor = NULL)
- A department may not have a director (director = NULL)
- An employee may have a supervisor from a different department
- The income value denotes the monthly income of an employee
- It is assumed that a director of a department works for that department

## EXERCISE : NULL VALUES AND NON-NATURAL JOIN

Write SQL statements that return the following:

1. Codes of the positions and total number of employees of each position who has a higher income than the company's average income. Assume that a given position may NOT have any employee.
2. Names of the departments, positions' titles, starting dates and names of the employees who were the first employees with these positions. Assume that an employee cannot move to a different department.
3. Names of the departments and names of the respective employees who have the highest incomes of the department.
4. Names of the departments and codes of the positions which two or more employees belong to.
5. Create a view, named employees\_most\_positions\_department, which has two columns: names of the departments and names of the respective employees who already had more than 3 different positions. Assume that an employee cannot move to a different department.
6. Names of the departments where the average income of the respective employees is lower than all the average incomes of the departments which their directors' names start with the letter P.
7. Names of the departments which have employees from all positions. That is, names of the departments which there is no position for which there are no employees who have that position.