**📄 Day 55 – SQL Challenge**

**Dataset Theme:** HR Analytics (Employees, Departments, Salaries, Performance, Attendance)

**Tables & Sample Data**

**Departments**

|  |  |  |
| --- | --- | --- |
| DeptID | DeptName | Location |
| 1 | IT | New York |
| 2 | HR | London |
| 3 | Finance | Berlin |
| 4 | Sales | Mumbai |

**Employees**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| EmpID | Name | Gender | HireDate | DeptID | Salary | ManagerID |
| 101 | Alice | F | 2018-01-15 | 1 | 85000 | NULL |
| 102 | Bob | M | 2019-03-22 | 1 | 60000 | 101 |
| 103 | Charlie | M | 2020-07-19 | 2 | 50000 | NULL |
| 104 | David | M | 2017-11-11 | 3 | 95000 | NULL |
| 105 | Eva | F | 2021-05-01 | 4 | 45000 | 104 |
| 106 | Frank | M | 2020-02-20 | 1 | 70000 | 101 |
| 107 | Grace | F | 2022-06-30 | 2 | 52000 | 103 |

**Performance**

|  |  |  |  |
| --- | --- | --- | --- |
| PerfID | EmpID | Year | Rating |
| 1 | 101 | 2021 | 5 |
| 2 | 102 | 2021 | 4 |
| 3 | 103 | 2021 | 3 |
| 4 | 104 | 2021 | 5 |
| 5 | 105 | 2021 | 2 |
| 6 | 106 | 2021 | 4 |
| 7 | 107 | 2021 | 3 |
| 8 | 101 | 2022 | 4 |
| 9 | 102 | 2022 | 3 |
| 10 | 103 | 2022 | 5 |
| 11 | 104 | 2022 | 5 |
| 12 | 105 | 2022 | 4 |
| 13 | 106 | 2022 | 2 |
| 14 | 107 | 2022 | 3 |

**Attendance**

|  |  |  |  |
| --- | --- | --- | --- |
| AttID | EmpID | Month | DaysPresent |
| 1 | 101 | Jan | 20 |
| 2 | 102 | Jan | 18 |
| 3 | 103 | Jan | 22 |
| 4 | 104 | Jan | 21 |
| 5 | 105 | Jan | 15 |
| 6 | 106 | Jan | 19 |
| 7 | 107 | Jan | 23 |

**Questions**

1. Find the **highest-paid employee** in each department.
2. List employees who have **never received a performance rating of 4 or 5**.
3. Calculate the **average salary by department** and compare it with the company average.
4. Show the **top 3 employees with the highest average performance rating** (use **AVG + RANK()**).
5. Identify employees who are **managers** and count how many employees report to them.
6. Find employees who have worked for the company for **more than 3 years** (use **DATEDIFF/EXTRACT**).
7. Show the **correlation between attendance and performance** by finding employees with **DaysPresent > 20 and Rating >= 4**.
8. Calculate the **year-over-year performance change** for each employee (use **LAG/LEAD**).
9. Find departments where the **average salary is above the overall average salary**.
10. Identify employees who **changed from low performance (<3) in 2021 to high performance (>=4) in 2022** (performance improvement).

**Bonus (Advanced):**  
Find the **attrition risk employees** – employees with:

* **Low performance** (rating ≤ 2 in last year), AND
* **Low attendance** (< 18 days average), AND
* Salary below company median.