**OUTPUT + ANALYSIS**

**NOTE :** In this document, **only relevant analysis is written where patterns or insights are found.**For simple outputs, **only the result is shown** without additional explanation. Each SQL query includes **inline comments** to explain the logic and purpose professionally.

**Window function :-**

**Aggregate function:-**

**Sum():**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** | **DNAME** | **TOTAL\_SALARY\_BY\_DEPT** |
| 2 | jigna | 15000 | IT | 65000 |
| 3 | kartik | 35000 | IT | 65000 |
| 8 | nivya | 15000 | IT | 65000 |
| 1 | khushi | 30000 | Marketing | 35000 |
| 7 | fenil | 5000 | Marketing | 35000 |
| 4 | rihanshi | 10000 | Purchasing | 10000 |
| 5 | riyaan | 25000 | finance | 80000 |
| 9 | khyati | 55000 | finance | 80000 |
| 10 | dhruv | 5000 | sales | 25000 |
| 6 | anjali | 20000 | sales | 25000 |

Finance department gives the highest salary, and IT has the most employees. Some employees get much less salary than others in the same department this could mean different experience levels, roles, or designations. One department has only one employee, which shows it is very small Might need **more hiring.**

**Avg():**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** | **DNAME** | **TOTAL\_SALARY\_BY\_DEPT** |
| 2 | jigna | 15000 | IT | 21666.6666666666666666666666666666666667 |
| 3 | kartik | 35000 | IT | 21666.6666666666666666666666666666666667 |
| 8 | nivya | 15000 | IT | 21666.6666666666666666666666666666666667 |
| 1 | khushi | 30000 | Marketing | 17500 |
| 7 | fenil | 5000 | Marketing | 17500 |
| 4 | rihanshi | 10000 | Purchasing | 10000 |
| 5 | riyaan | 25000 | finance | 40000 |
| 9 | khyati | 55000 | finance | 40000 |
| 10 | dhruv | 5000 | sales | 12500 |
| 6 | anjali | 20000 | sales | 12500 |

In every department (except Purchasing), at least one employee earns less than the department average. Some employees like Kartik, Khushi, and Khyati earn more than their department’s average. Others like Fenil, Dhruv, and Jigna earn less than their department’s average. This shows that salaries are not equal within the same department.

**Count():**

|  |
| --- |
| **TOTAL\_EMP** |
| 10 |

The company has a **total of 10 employees** working across all departments.These employees are spread across **5 departments.**

|  |  |
| --- | --- |
| **DNAME** | **TOTAL\_EMP\_BY\_DEPT** |
| sales | 2 |
| Purchasing | 1 |
| finance | 2 |
| IT | 3 |
| Marketing | 2 |

**IT department has the most employees 3**, showing it may be the most active team. **Purchasing has only 1 employee**, which means it is a small or less focused area.

**Max():**

|  |  |
| --- | --- |
| **DNAME** | **MAX\_SALARY** |
| sales | 20000 |
| IT | 35000 |
| Marketing | 30000 |
| finance | 55000 |
| Purchasing | 10000 |

The **highest salary is in Finance 55000 ,** which means it may have senior or skilled roles**. IT and Marketing** also offer good salaries compared to other departments. **Sales and Purchasing** have lower top salaries, showing they may have less-paying roles.

**Min():**

|  |  |
| --- | --- |
| **GENDER** | **MIN\_SALARY\_BY\_GENDER** |
| male | 5000 |
| female | 10000 |

The **lowest salary for males is 5000**, while for females it is 10,000. This shows **some male employees earn less than the lowest-paid female**. It may indicate **gender-based role or position differences** in the company.

**Ranking function:**

**Rank():**

|  |  |  |  |
| --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** | **SALARY\_RANK** |
| 9 | khyati | 55000 | 1 |
| 3 | kartik | 35000 | 2 |
| 1 | khushi | 30000 | 3 |
| 5 | riyaan | 25000 | 4 |
| 6 | anjali | 20000 | 5 |
| 8 | nivya | 15000 | 6 |
| 2 | jigna | 15000 | 6 |
| 4 | rihanshi | 10000 | 8 |
| 10 | dhruv | 5000 | 9 |
| 7 | fenil | 5000 | 9 |

**Employees with the same salary share the same rank,** like Nivya & Jigna 15,000 and Dhruv & Fenil 5,000.**Top 3 earners** are Khyati, Kartik, and Khushi — showing they are in senior or high-paying roles.

**Dence\_rank():**

|  |  |  |  |
| --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** | **SALARY\_RANK** |
| 9 | khyati | 55000 | 1 |
| 3 | kartik | 35000 | 2 |
| 1 | khushi | 30000 | 3 |
| 5 | riyaan | 25000 | 4 |
| 6 | anjali | 20000 | 5 |
| 8 | nivya | 15000 | 6 |
| 2 | jigna | 15000 | 6 |
| 4 | rihanshi | 10000 | 7 |
| 10 | dhruv | 5000 | 8 |
| 7 | fenil | 5000 | 8 |

**Employees with same salary have same rank,** and no rank numbers are skipped.

**Row\_number():**

|  |  |  |
| --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **ROW\_NUMBER** |
| 1 | khushi | 1 |
| 2 | jigna | 2 |
| 3 | kartik | 3 |
| 4 | rihanshi | 4 |
| 5 | riyaan | 5 |
| 6 | anjali | 6 |
| 7 | fenil | 7 |
| 8 | nivya | 8 |
| 9 | khyati | 9 |
| 10 | dhruv | 10 |

**Present\_rank():**

|  |  |  |  |
| --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** | **PERCENT\_RANK** |
| 1 | khushi | 30000 | 0 |
| 2 | jigna | 15000 | .111111111111111111111111111111111111111 |
| 3 | kartik | 35000 | .222222222222222222222222222222222222222 |
| 4 | rihanshi | 10000 | .333333333333333333333333333333333333333 |
| 5 | riyaan | 25000 | .444444444444444444444444444444444444444 |
| 6 | anjali | 20000 | .555555555555555555555555555555555555556 |
| 7 | fenil | 5000 | .666666666666666666666666666666666666667 |
| 8 | nivya | 15000 | .777777777777777777777777777777777777778 |
| 9 | khyati | 55000 | .888888888888888888888888888888888888889 |
| 10 | dhruv | 5000 | 1 |

**Analytic/value function:**

**Lead():**

|  |  |
| --- | --- |
| **EMP\_ID** | **LEAD\_3** |
| 1 | 4 |
| 2 | 5 |
| 3 | 6 |
| 4 | 7 |
| 5 | 8 |
| 6 | 9 |
| 7 | 10 |
| 8 | - |
| 9 | - |
| 10 | - |

**Lag():**

|  |  |
| --- | --- |
| **EMP\_ID** | **LAG** |
| 1 | - |
| 2 | 1 |
| 3 | 2 |
| 4 | 3 |
| 5 | 4 |
| 6 | 5 |
| 7 | 6 |
| 8 | 7 |
| 9 | 8 |
| 10 | 9 |

**First\_value():**

|  |  |
| --- | --- |
| **EMP\_ID** | **FIRST\_VALUE** |
| 1 | 1 |
| 2 | 1 |
| 3 | 1 |
| 4 | 1 |
| 5 | 1 |
| 6 | 1 |
| 7 | 1 |
| 8 | 1 |
| 9 | 1 |
| 10 | 1 |

**Last\_value():**

|  |  |
| --- | --- |
| **EMP\_ID** | **LAST\_VALUE** |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| 10 | 10 |

**Subqueries :-**

**Single row subquery**

|  |  |  |
| --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** |
| 9 | khyati | 55000 |

**Khyati has the highest salary of 55,000**, which likely means she holds a senior or high-responsibility role. Since this is a **single record**, it may represent the **top-paid employee** in the company.

**Multiple row subquery**

|  |  |  |
| --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **DNAME** |
| 2 | jigna | IT |
| 3 | kartik | IT |
| 8 | nivya | IT |

This shows that **IT is a larger team** compared to departments with fewer employees. The **IT department has multiple members**, suggesting it may play a central role in the company.

**Multiple column subquery**

|  |  |  |
| --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **DID** |
| 1 | khushi | 1 |
| 2 | jigna | 3 |
| 3 | kartik | 3 |
| 4 | rihanshi | 2 |
| 5 | riyaan | 5 |
| 6 | anjali | 4 |
| 7 | fenil | 1 |
| 8 | nivya | 3 |
| 9 | khyati | 5 |
| 10 | dhruv | 4 |

**Correlated subquery**

|  |  |  |
| --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** |
| 1 | khushi | 30000 |
| 3 | kartik | 35000 |
| 5 | riyaan | 25000 |
| 9 | khyati | 55000 |

**50% of the employees Khushi & Riyaan** earn **below the average salary**.There's a **30,000 gap** between the lowest and highest salary — showing a wide pay range. This pattern may suggest **different job levels or roles**. All salaries are **above 20,000,** indicating **mid-level or above positions** in the company.

**Nested subquery**

|  |  |  |
| --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** |
| 3 | kartik | 35000 |

**Subquery in from clause**

|  |  |
| --- | --- |
| **DID** | **MAX\_SALARY** |
| 1 | 30000 |
| 2 | 10000 |
| 3 | 35000 |
| 4 | 20000 |
| 5 | 55000 |

The **difference between highest and lowest** maximum salary is 45,000, showing a **large salary gap across departments.**

**Subquery in select clause**

|  |  |  |  |
| --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** | **MAX\_SALARY** |
| 1 | khushi | 30000 | 55000 |
| 2 | jigna | 15000 | 55000 |
| 3 | kartik | 35000 | 55000 |
| 4 | rihanshi | 10000 | 55000 |
| 5 | riyaan | 25000 | 55000 |
| 6 | anjali | 20000 | 55000 |
| 7 | fenil | 5000 | 55000 |
| 8 | nivya | 15000 | 55000 |
| 9 | khyati | 55000 | 55000 |
| 10 | dhruv | 5000 | 55000 |

Only **1 out of 10 employees earns the maximum**, and **9 employees earn below** it.This shows a **pyramid-like salary structure**, where **few earn high**, and **most earn mid or low** salaries.

**Subquery in where clause**

|  |  |
| --- | --- |
| **EMP\_ID** | **EMP\_NAME** |
| 2 | jigna |
| 3 | kartik |
| 8 | nivya |

**Subquery in having clause**

|  |  |
| --- | --- |
| **DID** | **MAX\_SAL** |
| 5 | 55000 |

**Subquery with exists / not exists**

**Exists**

|  |  |
| --- | --- |
| **EMP\_ID** | **EMP\_NAME** |
| 2 | jigna |
| 3 | kartik |
| 8 | nivya |

**Not exists**

|  |  |
| --- | --- |
| **DID** | **DNAME** |
| 2 | Purchasing |

**CTE queries :-**

**1.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **EMAIL** | **PHONE** | **GENDER** | **DOB** | **SALARY** | **DID** | **AVG\_SAL** |
| 1 | khushi | khushi@gmail.com | 9988776655 | female | 01-JAN-05 | 30000 | 1 | 21500 |
| 3 | kartik | kartik@gmail.com | 8899045329 | male | 18-DEC-01 | 35000 | 3 | 21500 |
| 5 | riyaan | riyaan@gmail.com | 8990914545 | male | 02-FEB-04 | 25000 | 5 | 21500 |
| 9 | khyati | khyati@gmail.com | 9229223411 | female | 25-AUG-00 | 55000 | 5 | 21500 |

All employees in this list are **above their department’s average salary**, suggesting they might be **top performers.**

**2.**

|  |  |  |
| --- | --- | --- |
| **DID** | **DNAME** | **SUM\_SALARY** |
| 5 | finance | 80000 |
| 3 | IT | 65000 |

This shows that **Finance may have higher salaries or more senior roles.**

## **3.**

|  |  |  |
| --- | --- | --- |
| **EMP\_NAME** | **SALARY** | **DNAME** |
| khushi | 30000 | Marketing |
| jigna | 15000 | IT |
| kartik | 35000 | IT |
| rihanshi | 10000 | Purchasing |
| riyaan | 25000 | finance |
| anjali | 20000 | sales |
| fenil | 5000 | Marketing |
| nivya | 15000 | IT |
| khyati | 55000 | finance |
| dhruv | 5000 | sales |

**Salaries vary widely** within departments, like Marketing 30,000 vs 5,000). **Purchasing** has only one employee **Rihanshi**, indicating a small team.**Finance** seems to be a **high-paying department**, with both employees earning above ₹20,000.

**4.**

|  |  |
| --- | --- |
| **DID** | **COUNT\_EMP** |
| 3 | 3 |

**5.**

|  |  |  |  |
| --- | --- | --- | --- |
| **EMP\_ID** | **EMP\_NAME** | **SALARY** | **MAX\_SAL** |
| 9 | khyati | 55000 | 55000 |