SQL PROJECT

Employee & Sales Data Analysis

Presented by - Vinay Kumar Panika

Project Overview: Employee & Sales Data Analysis Using SQL Server

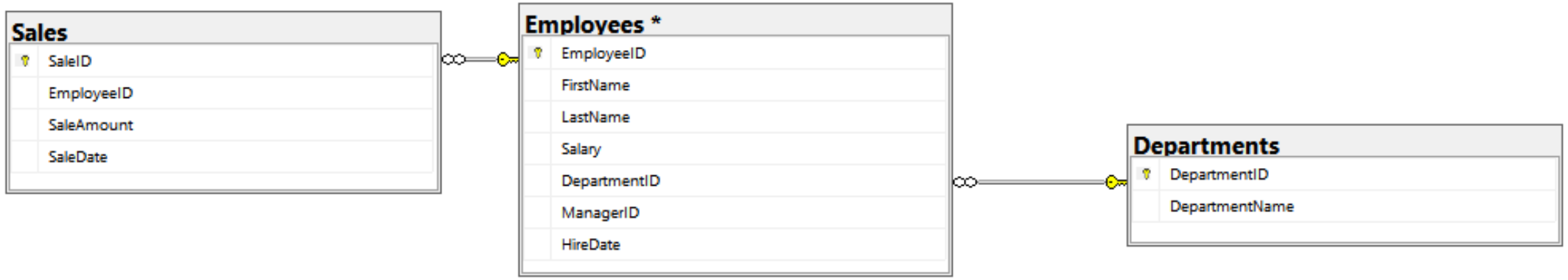
Objective:

This project aims to analyze employee and sales data using SQL Server to derive meaningful insights related to workforce management, salary distribution, departmental performance, and sales trends. By leveraging SQL queries, we can efficiently retrieve, aggregate, and interpret data to support data-driven decision-making.

Database Structure

The database consists of three main tables: Departments, Employees, and Sales, each designed to store specific information related to the organization's workforce and sales performance.

ER Diagram


Sales
SaleID
EmployeeID
SaleAmount
SaleDate
Employees *
EmployeeID
FirstName
LastName
Salary
DepartmentID
ManagerID
HireDate
Departments
DepartmentID
DepartmentName

List of Analysis Questions

Employee Analysis

1.Retrieve all employee details.
2.List employees who earn more than ₹75,000.
3.Find the total number of employees in each department.
4.Retrieve employees who were hired before 2020.
5.List employees along with their managers' names.
6.Find the highest salary in the company.
7.Find employees working in the Sales department.
8.Retrieve employees with the same salary (if any).
9.List the top 3 highest-paid employees.
10.Find employees who haven't made any sales.
11.Retrieve department-wise average salary.
12.Find employees earning more than their department's average salary.
13.Find the department with the highest total salary expenditure.
14.Find employees hired in the last 3 years.
15.Retrieve employees whose name starts with 'V'.
16.Retrieve employees not reporting to anyone (Top-Level Managers).
17.Get the second highest salary.
18.Find employees who joined before their manager.
19.Rank employees based on salary within each department.

Sales Analysis

20.Retrieve sales employees who have made more than ₹2000 in sales.
21.Find employees who made sales in both January & February 2024.
22.Find the month with the highest total sales.
23.Retrieve employees who never made a sale but belong to the Sales department.

Departmental Analysis

24.Find the department with the lowest average salary.
25.Find the percentage of employees working in each department.

1.Retrieve all employee details.

```
select * from employees;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
1	Vinay	Panika	70000	2	NULL	2018-06-12
2	Awadhesh	Yadav	75000	2	1	2019-07-19
3	Nevendra	Rajput	80000	3	1	2020-08-05
4	Himanshu	Sahu	60000	1	2	2021-09-10
5	Piyush	Chaturvedi	80000	3	3	2022-03-25
6	Rituraj	Pawar	90000	4	NULL	2017-02-28
7	Ashish	Singh	72000	2	2	2017-01-15
8	Divyansh	Kumar	65000	3	3	2023-07-10
9	Chetan	Singh	75000	3	3	2023-06-15

2.List employees who earn more than ₹75,000.

```
select * from employees
where salary > 75000;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
3	Nevendra	Rajput	80000	3	1	2020-08-05
5	Piyush	Chaturvedi	80000	3	3	2022-03-25
6	Rituraj	Pawar	90000	4	NULL	2017-02-28

3.Find the total number of employees in each department.

```
select d.Departmentname, count(e.employeeid) as Employee_count from employees as e
inner join departments as d on e.departmentid = d.departmentid
group by d.departmentname;
```

Departmentname	Employee_count
Finance	1
HR	1
IT	3
Sales	4

4.Retrieve employees who were hired before 2020.

```
select * from employees
where hiredate <'2020-01-01';
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
1	Vinay	Panika	70000	2	NULL	2018-06-12
2	Awadhesh	Yadav	75000	2	1	2019-07-19
6	Rituraj	Pawar	90000	4	NULL	2017-02-28
7	Ashish	Singh	72000	2	2	2017-01-15

5.List employees along with their managers' names.

```
select e1.firstname as Employee_name, e2.firstName as Managername from employees as e1
left join employees as e2 on e1.managerid=e2.employeeid;
```

Employee_name	Managername
Vinay	NULL
Awadhesh	Vinay
Nevendra	Vinay
Himanshu	Awadhesh
Piyush	Nevendra
Rituraj	NULL
Ashish	Awadhesh
Divyansh	Nevendra
Chetan	Nevendra

6.Find the highest salary in the company.

```
select Employeeid,Firstname,Lastname,Salary from employees
where salary = (select max(salary) from employees);
```

Employeeid	Firstname	Lastname	Salary
6	Rituraj	Pawar	90000

7.Find employees working in the Sales department.

```
select e.Employeeid,e.Firstname,e.Lastname,e.Salary,e.Managerid
from employees as e
inner join departments as d on d.departmentid = e.departmentid
where d.departmentname = 'sales';
```

Employeeid	Firstname	Lastname	Salary	Managerid
3	Nevendra	Rajput	80000	1
5	Piyush	Chaturvedi	80000	3
8	Divyansh	Kumar	65000	3
9	Chetan	Singh	75000	3

8.Retrieve employees with the same salary (if any).

```
select Salary, count(*) as Employee_Count from employees
group by salary
having count(*)>1
```

Salary	Employee_Count
75000	2
80000	2

9.List the top 3 highest-paid employees.

```
select top 3 * from employees
order by salary desc;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
6	Rituraj	Pawar	90000	4	NULL	2017-02-28
3	Nevendra	Rajput	80000	3	1	2020-08-05
5	Piyush	Chaturvedi	80000	3	3	2022-03-25

10.Find employees who haven't made any sales.

```
select e.* from employees as e
left join sales as s on e.employeeid = s.employeeid
where s.employeeid is null;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
1	Vinay	Panika	70000	2	NULL	2018-06-12
6	Rituraj	Pawar	90000	4	NULL	2017-02-28
7	Ashish	Singh	72000	2	2	2017-01-15
8	Divyansh	Kumar	65000	3	3	2023-07-10
9	Chetan	Singh	75000	3	3	2023-06-15

11.Retrieve department-wise average salary.

```
select d.Departmentname, avg(e.salary) as Average_Salary from departments as d
inner join employees as e on d.departmentid = e.departmentid
group by d.Departmentname;
```

Departmentname	Average_Salary
Finance	90000
HR	60000
IT	72333
Sales	75000

12.Find employees earning more than their department's average salary.

```sql
select e.* from employees as e
inner join (
select departmentid,avg(salary) as dept_avg_salary from employees
group by departmentid) as t
on e.departmentid = t.departmentid
where e.salary > t.dept_avg_salary;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
2	Awadhesh	Yadav	75000	2	1	2019-07-19
3	Nevendra	Rajput	80000	3	1	2020-08-05
5	Piyush	Chaturvedi	80000	3	3	2022-03-25

13.Find the department with the highest total salary expenditure.

```sql
select top 1 d.Departmentname, sum(e.salary) as Salary_Expenditure
from departments as d
inner join employees as e on d.departmentid = e.departmentid
group by d.Departmentname
order by sum(e.salary) desc;
```

Departmentname	Salary_Expenditure
Sales	300000

14.Find employees hired in the last 3 years.

```
select * from employees
where HireDate >= Dateadd(year, -3,getdate());
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
5	Piyush	Chaturvedi	80000	3	3	2022-03-25
8	Divyansh	Kumar	65000	3	3	2023-07-10
9	Chetan	Singh	75000	3	3	2023-06-15

15.Retrieve employees whose name starts with 'V'.

```
select * from employees
where firstname like 'V%';
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
1	Vinay	Panika	70000	2	NULL	2018-06-12

16.Retrieve sales employees who have made more than ₹2000 in sales.

```
select e.Firstname, e.Lastname, sum(s.saleamount) as Total_sales
from employees as e
inner join sales as s on e.employeeid = s.employeeid
group by e.Firstname, e.Lastname
having sum(s.saleamount)>2000;
```

Firstname	Lastname	Total_sales
Nevendra	Rajput	4001.25
Himanshu	Sahu	2750.90
Awadhesh	Yadav	2200.30

17.Retrieve employees not reporting to anyone (Top-Level Managers).

```
select * from employees
where managerid is null;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
1	Vinay	Panika	70000	2	NULL	2018-06-12
6	Rituraj	Pawar	90000	4	NULL	2017-02-28

18 Get the second highest salary.

```
select top 1 * from employees
where salary<(select max(salary) from employees)
order by salary desc;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
5	Piyush	Chaturvedi	80000	3	3	2022-03-25

19.Find employees who made sales in both January & February 2024.

```
select distinct e.Employeeid, e.Firstname, e.Lastname from Employees as e
join sales as s1 on e.employeeid = s1.employeeid and month(s1.saledate) = 1
join sales as s2 on e.employeeid = s2.employeeid and month(s2.saledate) = 2;
```

Employeeid	Firstname	Lastname
3	Nevendra	Rajput

20.Find the department with the lowest average salary.

```
select top 1 d.Departmentname, avg(e.salary) as Average_salary from employees as e
inner join departments as d on d.departmentid = e.departmentid
group by d.Departmentname
order by avg(e.salary);
```

Departmentname	Average_salary
HR	60000

21.Find the percentage of employees working in each department.

```
select d.Departmentname,
count(e.employeeid)*100.0/(select count(*) from employees) as percentage
from employees as e
inner join departments as d on e.departmentid = d.departmentid
group by d.Departmentname;
```

Departmentname	percentage
Finance	11.111111111111
HR	11.111111111111
IT	33.333333333333
Sales	44.444444444444

22.Find the month with the highest total sales.

```
select top 1 format(saledate, 'yyyy-MM') as Salemonth, sum(saleamount) as TotalSales
from sales
group by format(saledate, 'yyyy-MM')
order by sum(saleamount) desc;
```

Salemonth	TotalSales
2024-03	4000.30

23.Find employees who joined before their manager.

```
select e1.Firstname, e1.Lastname, e1.HireDate, e2.firstname as Manager, e2.HireDate as Manager_hire_date
from employees as e1
inner join employees e2 on e1.managerid = e2.employeeid
where e1.HireDate < e2.hiredate;
```

Firstname	Lastname	HireDate	Manager	Manager_hire_date
Ashish	Singh	2017-01-15	Awadhesh	2019-07-19

24.Retrieve employees who never made a sale but belong to the Sales department.

```
select e.* from employees as e
inner join departments as d on e.departmentid = d.departmentid
left join sales as s on e.employeeid = s.employeeid
where d.departmentname = 'Sales' and s.employeeid is null;
```

EmployeeID	FirstName	LastName	Salary	DepartmentID	ManagerID	HireDate
8	Divyansh	Kumar	65000	3	3	2023-07-10
9	Chetan	Singh	75000	3	3	2023-06-15

25.Rank employees based on salary within each department.

```
select Employeeid, Firstname,Lastname, Salary, Departmentid,
rank() over(partition by departmentid order by Salary desc) as Salary_ranking
from Employees;
```

Employeeid	Firstname	Lastname	Salary	Departmentid	Salary_ranking
4	Himanshu	Sahu	60000	1	1
2	Awadhesh	Yadav	75000	2	1
7	Ashish	Singh	72000	2	2
1	Vinay	Panika	70000	2	3
3	Nevendra	Rajput	80000	3	1
5	Piyush	Chaturvedi	80000	3	1
9	Chetan	Singh	75000	3	3
8	Divyansh	Kumar	65000	3	4
6	Rituraj	Pawar	90000	4	1

Contact Information

📌 **Name:** Vinay Kumar Panika

📧 **Email:** vinaypanika@gmail.com

🔗 **LinkedIn:** linkedin.com/in/vinaykumarpanika

💻 **GitHub:** github.com/Vinaypanika

🌐 **Portfolio:** sites.google.com/view/vinaykumarpanika/home

Thank you for your time and consideration.
I hope this project provides valuable insights.
Please feel free to connect with me for any discussions or suggestions.