WORKFORCE MANAGEMENT INSIGHTS

DATA-DRIVEN EMPLOYEE, PAYROLL, AND PERFORMANCE INSIGHTS USING SQL

- AISHWARYA

INTRODUCTION

▶ This presentation gives an overview of the Employee Management System SQL project.

▶ This project is designed to make handling employee data easier and more organized.

▶ Key queries are shown with simple explanations to make data management easy to understand.

▶ The focus is on insights into employee data, payroll, salary, bonus, department analysis, roles, and leave management.

OBJECTIVE

▶ To design and implement a system that efficiently stores and manages employee-related data.

▶ To track employee information including personal details, job roles, salary, qualifications, leaves, and payroll..

▶ To ensure integrity and consistency of data using relational tables and foreign keys.

▶ To simplify HR operations by making employee data easily accessible and accurate.

ABOUT THE TABLES

The project uses multiple interconnected tables to manage and analyze workforce data efficiently.

Key Tables:

▶ **Employee** – Stores personal details like Employee ID, Name, Age, Gender, and Department.

▶ **Job Role** & **Department** – Contains Department ID, Department Name, and Manager information. Lists Job Role ID, Job Title, Department ID, and Salary Range.

▶ **Qualification & Skills** – Tracks educational and professional qualifications for each employee. Contains employee skills and proficiency levels.

▶ **Leave** – Records leave types, start and end dates, leave duration, and employee ID.

▶ **Payroll** – Contains salary, bonus, deductions, and total payroll processed for each employee.

▶ **Promotion** – Tracks employee promotions over the years.

ANALYSIS QUESTIONS
1. Employee Insights

➤ How many unique employees are currently in the system?

```
select distinct count(emp_id) as unique_employees
from employee;
```
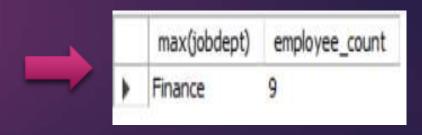
	unique_employees
▶	60

➤ Which departments have the highest number of employees?

```
select max(jobdept), count(jobdept) as employee_count
from jobdepartment
group by jobdept
order by count(jobdept) desc
limit 1;
```

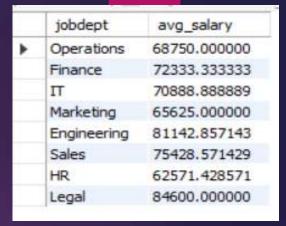|	max(jobdept)	employee_count
▶	Finance	9

➢ What is the average salary per department?

```sql
select jd.jobdept, avg(sb.amount) as avg_salary
from salarybonus sb
join jobdepartment jd on sb.job_id = jd.job_id
group by jd.jobdept;
```

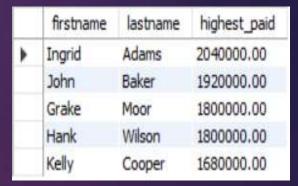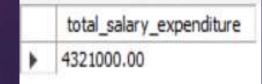| jobdept	avg_salary
Operations	68750.000000
Finance	72333.333333
IT	70888.888889
Marketing	65625.000000
Engineering	81142.857143
Sales	75428.571429
HR	62571.428571
Legal	84600.000000

➢ Who are the top 5 highest-paid employees?

```sql
select e.firstname, e.lastname, annual as highest_paid
from employee e
join salarybonus sb on e.job_id = sb.job_id
order by sb.amount desc
limit 5;
```

firstname	lastname	highest_paid
Ingrid	Adams	2040000.00
John	Baker	1920000.00
Grake	Moor	1800000.00
Hank	Wilson	1800000.00
Kelly	Cooper	1680000.00

➢ What is the total salary expenditure across the company?

```sql
select sum(amount) as total_salary_expenditure
from salarybonus;
```

total_salary_expenditure
4321000.00

2. Job Role & Department Analysis

➤ How many different job roles exist in each department?

```sql
select jobdept, count(job_id) as total_job_roles
from jobdepartment
group by jobdept;
```

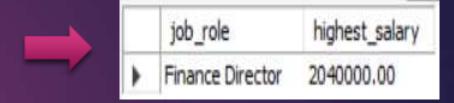| jobdept	total_job_roles
Operations	8
Finance	9
IT	9
Marketing	8
Engineering	7
Sales	7
HR	7
Legal	5

▶ What is the average salary range per department?

```sql
select jd.jobdept, avg(sb.annual) as avg_salary
from jobdepartment jd
join salarybonus sb on jd.job_id = sb.job_id
group by jd.jobdept
order by avg_salary desc;
```

jobdept	avg_salary
Legal	1015200.000000
Engineering	973714.285714
Sales	905142.857143
Finance	868000.000000
IT	850666.666667
Operations	825000.000000
Marketing	787500.000000
HR	750857.142857

▶ Which job roles offer the highest salary?

```sql
select jd.name as job_role, max(sb.annual) as highest_salary
from jobdepartment jd
join salarybonus sb on jd.job_id = sb.job_id
group by jd.name
order by highest_salary desc
limit 1;
```

job_role	highest_salary
Finance Director	2040000.00

▶ Which departments have the highest total salary allocation?

```sql
select jd.jobdept, sum(annual) as total_salary
from jobdepartment jd
join salarybonus sb on jd.job_id = sb.job_id
group by jd.jobdept
order by total_salary desc
limit 1;
```

jobdept	total_salary
Finance	7812000.00

3. Qualification & Skills Analysis

▶ How many employees have at least one qualification listed?

```
select count(requirements) as employees_with_qualification
from qualification;
```

employees_with_qualification
60

▶ Which positions require the most qualifications?

```
select position,requirements,length(requirements) as req_len
from qualification
order by req_len desc
limit 1;
```

position	requirements	req_len
HR Intern	BBA (Pursuing) Communication	28

4. Leaves & Absence Patterns

▶ Which year had the most employees taking leaves?

```
select year(date) as leave_year, count(emp_id) as employees_on_leave
from leaves
group by year(date);
```

leave_year	employees_on_leave
2024	60

▶ What is the average number of leave days taken by its employees per department?

```
select jd.jobdept, avg(l.leave_id) as avg_leave_days
from leaves l
inner join jobdepartment jd
on l.emp_id = jd.job_id
group by jd.jobdept;
```

jobdept	avg_leave_days
Operations	29.6250
Finance	29.0000
IT	29.6667
Marketing	29.6250
Engineering	30.1429
Sales	31.2857
HR	32.7143
Legal	33.8000

▶ What is the total number of leave days taken company-wide?

```
select count(*) as total_leaves
from leaves;
```

total_leaves
60

5. Payroll & Compensation

▶ What is the total monthly payroll processed?

```sql
select year(p.date) as year,
       month(p.date) as month,
       sum(p.total_amount) as total_monthly_payroll
from payroll p
group by year(p.date), month(p.date);
```

➡️

year	month	total_monthly_payroll
2024	4	2778000.00

▶ What is the average bonus given per department?

```sql
select jd.jobdept, avg(sb.bonus) as avg_bonus
from jobdepartment jd
inner join salarybonus sb
on sb.job_id=jd.job_id
group by jd.jobdept;
```

➡️

jobdept	avg_bonus
Operations	9687.500000
Finance	10666.666667
IT	10444.444444
Marketing	9125.000000
Engineering	12571.428571
Sales	11214.285714
HR	8171.428571
Legal	13300.000000

▶ Which department receives the highest total bonuses?

```sql
select jd.jobdept, sum(sb.bonus) as total_bonus
from salarybonus sb
join jobdepartment jd on sb.job_id = jd.job_id
group by jd.jobdept
order by total_bonus desc
limit 1;
```

jobdept	total_bonus
Finance	96000.00

▶ What is the average value of total_amount after considering leave deductions?

```sql
select avg(total_amount) as avg_total_after_leave
from payroll;
```

avg_total_after_leave
46300.000000

6. Employee Performance & Growth

▶ Which year had the highest number of employee promotions?

```sql
select count(sb.bonus) as total_bonus,year(p.date)
from salarybonus sb
inner join payroll p
on sb.salary_id=p.salary_id
group by year(date);
```

total_bonus	year(p.date)
60	2024

FINAL BUSINESS INSIGHTS & RECOMMENDATIONS

Insights

- IT & Finance departments have the highest salaries and workforce.
- Directors & Senior Managers account for the largest payroll expenses.
- Most employees have at least one qualification; some roles require more.
- Leave requests peak during festivals and vacation months.
- Payroll and promotions are closely tied to bonuses and performance.

Recommendations

- Balance workforce across departments.
- Benchmark salaries and bonuses with industry standards.
- Encourage employee upskilling programs.
- Plan leave schedules around peak periods.
- Automate payroll for better accuracy and efficiency.
- Link promotions and bonuses to measurable KPIs.

CONCLUSION

► This SQL project successfully designs an **Employee and Payroll Management System** that manages employee records, job roles, salaries, bonuses, qualifications, leaves, and payroll reports.

► By executing SQL queries, the system generates **actionable insights** that enable data-driven HR decisions and provide a strong foundation for organizational strategies aimed at optimizing workforce management and improving productivity.

Project Workforce Management