

Project 2

Title: Employee Payroll Management System (PostgreSQL)

Task 1 Database Setup:

Question:

Create a database named payroll_database.

Create a table employees with columns: EMPLOYEE_ID (integer), NAME (text), DEPARTMENT (text), EMAIL (text), PHONE_NO (numeric), JOINING_DATE (date), SALARY (numeric), BONUS (numeric), TAX_PERCENTAGE (numeric).

Query:

```
CREATE DATABASE payroll_database;  
  
USE payroll_database;  
  
CREATE TABLE employees (  
    EMPLOYEE_ID INT PRIMARY KEY,  
    NAME TEXT NOT NULL,  
    DEPARTMENT TEXT NOT NULL,  
    EMAIL TEXT NOT NULL,  
    PHONE_NO NUMERIC NOT NULL,  
    JOINING_DATE DATE,  
    SALARY NUMERIC,  
    BONUS NUMERIC,  
    TAX_PERCENTAGE NUMERIC  
);
```

Task 2 Data Entry:

Question:

Insert 10 sample employee records.

Query:

INSERT INTO employees VALUES

(1, 'Allan', 'Sales', 'allan@gmail.com', 9904567890, '2025-04-10', 75000, 8000, 10),
(2, 'Carol', 'IT', 'carol@gamil.com', 9345678901, '2023-08-12', 95000, 5000, 12),
(3, 'Whilson', 'HR', 'whilson@gmail.com', 7356789012, '2025-03-20', 60000, 3000, 8),
(4, 'David', 'Finance', 'david@gmail.com', 9667890123, '2024-12-01', 88000, 7000, 15),
(5, 'Eva', 'Sales', 'eva@gmail.com', 9678901234, '2025-06-05', 72000, 6000, 9),
(6, 'Frank', 'IT', 'frank@gmail.com', 7789012345, '2023-11-30', 105000, 10000, 18),
(7, 'Grace', 'HR', 'grace@gmail.com', 7390123456, '2025-08-01', 68000, 2000, 7),
(8, 'Henry', 'Finance', 'henry@gmail.com', 9901234567, '2024-01-15', 99000, 5000, 14),
(9, 'Thomas', 'Sales', 'thomas@gmail.com', 9012345678, '2025-05-20', 76000, 8500, 10),
(10, 'Jack', 'IT', 'jack@gmail.com', 9923456789, '2025-02-28', 97000, 4000, 11),
(11, 'Joe', 'Sales', 'Joe@gmail.com', 9704567890, '2025-04-10', 75000, 8000, 10);

Task 3 Payroll Queries:

Question:

a) Retrieve the list of employees sorted by salary in descending order.

Query:

```
SELECT * FROM employees
```

```
ORDER BY SALARY DESC;
```

OUTPUT:

EMPLOYEE_ID	NAME	DEPARTMENT	EMAIL	PHONE_NO	JOINING_DATE	SALARY	BONUS	TAX_PERCENTAGE
6	Frank	IT	frank@gmail.com	7789012345	2023-11-30	105000	10000	18
8	Henry	Finance	henry@gmail.com	9901234567	2024-01-15	99000	5000	14
10	Jack	IT	jack@gmail.com	9923456789	2025-02-28	97000	4000	11
2	Carol	IT	carol@gamil.com	9345678901	2023-08-12	95000	5000	12
4	David	Finance	david@gmail.com	9667890123	2024-12-01	88000	7000	15
9	Thomas	Sales	thomas@gmail.com	9012345678	2025-05-20	76000	8500	10
1	Allan	Sales	allan@gmail.com	9904567890	2025-04-10	75000	8000	10
5	Eva	Sales	eva@gmail.com	9678901234	2025-06-05	72000	6000	9
7	Grace	HR	grace@gmail.com	7390123456	2025-08-01	68000	2000	7
3	Whilson	HR	whilson@gmail.com	7356789012	2025-03-20	60000	3000	8

Question:

b) Find employees with a total compensation (SALARY + BONUS) greater than \$100,000.

Query:

```
SELECT * FROM employees
```

```
WHERE (SALARY + BONUS) > 100000;
```

OUTPUT:

EMPLOYEE_ID	NAME	DEPARTMENT	EMAIL	PHONE_NO	JOINING_DATE	SALARY	BONUS	TAX_PERCENTAGE
6	Frank	IT	frank@gmail.com	7789012345	2023-11-30	105000	10000	18
8	Henry	Finance	henry@gmail.com	9901234567	2024-01-15	99000	5000	14
10	Jack	IT	jack@gmail.com	9923456789	2025-02-28	97000	4000	11

Question:

C) Update the bonus for employees in the 'Sales' department by 10%.

Query:

UPDATE employees

SET BONUS = BONUS * 1.10

WHERE DEPARTMENT = 'Sales';

SELECT EMPLOYEE_ID, NAME, DEPARTMENT, BONUS

FROM employees

WHERE DEPARTMENT = 'Sales';

OUTPUT:

EMPLOYEE_ID	NAME	DEPARTMENT	BONUS
1	Allan	Sales	8000
5	Eva	Sales	6000
9	Thomas	Sales	8500
11	Joe	Sales	8000

Question:

d) Calculate the net salary after deducting tax for all employees.

Query:

```
SELECT  
NAME,  
SALARY,  
BONUS,  
TAX_PERCENTAGE,  
ROUND((SALARY + BONUS) * (1 - TAX_PERCENTAGE / 100.0), 2) AS NET_SALARY  
FROM  
employees  
ORDER BY  
NET_SALARY DESC;
```

OUTPUT:

NAME	SALARY	BONUS	TAX_PERCENTAGE	NET_SALARY
Frank	105000	10000	18	94300.00
Jack	97000	4000	11	89890.00
Henry	99000	5000	14	89440.00
Carol	95000	5000	12	88000.00
David	88000	7000	15	80750.00
Thomas	76000	8500	10	76050.00
Allan	75000	8000	10	74700.00
Joe	75000	8000	10	74700.00
Eva	72000	6000	9	70980.00
Grace	68000	2000	7	65100.00
Whilson	60000	3000	8	57960.00

Question:

e) Retrieve the average, minimum, and maximum salary per department.

Query:

```
SELECT DEPARTMENT,  
ROUND(AVG(SALARY),0) AS AVERAGE_SALARY,  
MIN(SALARY) AS MIN_SALARY,  
MAX(SALARY) AS MAX_SALARY  
FROM employees  
GROUP BY DEPARTMENT;
```

OUTPUT:

DEPARTMENT	AVERAGE_SALARY	MIN_SALARY	MAX_SALARY
Sales	74500	72000	76000
IT	99000	95000	105000
HR	64000	60000	68000
Finance	93500	88000	99000

Task 4 Advanced Queries:**Question:**

a) Retrieve employees who joined in the last 6 months.

Query:

```
SELECT * FROM employees  
WHERE JOINING_DATE >= CURDATE() - INTERVAL 6 MONTH;
```

OUTPUT:

EMPLOYEE_ID	NAME	DEPARTMENT	EMAIL	PHONE_NO	JOINING_DATE	SALARY	BONUS	TAX_PERCENTAGE
1	Allan	Sales	allan@gmail.com	9904567890	2025-04-10	75000	8000	10
3	Whilson	HR	whilson@gmail.com	7356789012	2025-03-20	60000	3000	8
5	Eva	Sales	eva@gmail.com	9678901234	2025-06-05	72000	6000	9
7	Grace	HR	grace@gmail.com	7390123456	2025-08-01	68000	2000	7
9	Thomas	Sales	thomas@gmail.com	9012345678	2025-05-20	76000	8500	10
10	Jack	IT	jack@gmail.com	9923456789	2025-02-28	97000	4000	11
11	Joe	Sales	Joe@gmail.com	9704567890	2025-04-10	75000	8000	10

Question:

b) Group employees by department and count how many employees each has.

Query:

```
SELECT DEPARTMENT, COUNT(*) AS EMPLOYEE_COUNT
FROM employees
GROUP BY DEPARTMENT;
```

OUTPUT:

DEPARTMENT	EMPLOYEE_COUNT
Sales	4
IT	3
HR	2
Finance	2

Question:

c) Find the department with the highest average salary.

Query:

```
SELECT  
DEPARTMENT,  
Round(AVG(SALARY),0) as AVG_SALARY  
FROM employees  
GROUP BY DEPARTMENT  
ORDER BY AVG_SALARY DESC  
LIMIT 1;
```

OUTPUT:

DEPARTMENT	AVG_SALARY
IT	99000

Question:

d) Identify employees who have the same salary as at least one other employee.

Query:

```
SELECT * FROM employees  
WHERE SALARY IN (  
SELECT SALARY  
FROM employees  
GROUP BY SALARY  
HAVING COUNT(*) > 1  
);
```


OUTPUT:

EMPLOYEE_ID	NAME	DEPARTMENT	EMAIL	PHONE_NO	JOINING_DATE	SALARY	BONUS	TAX_PERCENTAGE
1	Allan	Sales	allan@gmail.com	9904567890	2025-04-10	75000	8000	10
11	Joe	Sales	Joe@gmail.com	9704567890	2025-04-10	75000	8000	10