

# Table Structure

## department Table

- **Primary Key:** deptid
- **Columns:**
  - deptid – Primary key, Auto-incremented
  - deptname – Department name (Not Null) 50
  - city – City (Not Null)

## employee Table

- **Primary Key:** empid
- **Foreign Key:** deptid references department(deptid)
- **Columns:**
  - empid – Primary key, Auto-incremented
  - empname – Employee name (Not Null) 50
  - desig – Designation (Not Null) 50
  - salary – Positive salary (Check constraint)
  - hiredate – Hire date (Default to current date)
  - mgrno – Manager ID (Self-referencing)
  - deptid – Department ID (Foreign key, Nullable)
  - city – City (Not Null)
  - email – Unique email (Not Null)

# Sample Data

## department Table (4 rows)

deptid	deptname	city
1	HR	Mumbai
2	Finance	Delhi
3	IT	Chennai
4	Marketing	Kolkata

**employee Table (15 rows)**

emp id	empname	design	salary	hiredate	Mgr no	dept id	city	email
1	Rajesh Kumar	Manager	90000.00	2023-01-01	NULL	1	Mumbai	Rajesh.kumar@example.com
2	Sita Sharma	Analyst	70000.00	2023-05-10	1	2	Delhi	Sita.sharma@example.com
3	Anil Mehra	Developer	60000.00	2023-03-15	1	3	Chennai	Anil.mehra@example.com
4	Priya Nair	Executive	50000.00	2023-07-25	2	4	Kolkata	Priya.nair@example.com
5	Mohan Gupta	Developer	65000.00	2023-06-05	1	3	Chennai	Mohan.gupta@example.com
6	Kavita Singh	Analyst	72000.00	2023-04-20	2	2	Delhi	Kavita.singh@example.com
7	Vikram Desai	Manager	95000.00	2023-02-01	NULL	1	Mumbai	Vikram.desai@example.com
8	Ananya Rao	Executive	52000.00	2023-08-10	4	NULL	Bangalore	Ananya.rao@example.com
9	Suraj Patil	Developer	60000.00	2023-07-01	3	3	Chennai	Suraj.patil@example.com
10	Meera Iyer	Executive	51000.00	2023-07-15	2	4	Kolkata	Meera.iyer@example.com
11	Arun Menon	Developer	68000.00	2023-03-01	1	3	Chennai	Arun.menon@example.com
12	Sunil Yadav	Analyst	75000.00	2023-06-10	2	2	Delhi	Sunil.yadav@example.com
13	Deepa Joshi	Executive	55000.00	2023-09-01	4	4	Kolkata	Deepa.joshi@example.com
14	Naveen Sharma	Manager	92000.00	2023-01-10	NULL	1	Mumbai	Naveen.sharma@example.com
15	Rakesh Nair	Developer	62000.00	2023-05-01	3	3	Chennai	Rakesh.nair@example.com

## **CTE (Common Table Expression) Questions**

1. Write a query using a CTE to find the total number of employees in each department in ascending order.
2. Use a CTE to retrieve employees and salary along with the average salary of its city employees.
3. Create a CTE that lists employees along with the number of employees in their respective cities descending order.
4. Use a CTE to calculate the total and average salary for each designation where total salary>200000 and average salary> 60000.

## **ROLLUP Query Questions**

1. Write a query using ROLLUP to get the total salary by department and city, including subtotals.
2. Use ROLLUP to find the total number of employees grouped by department and designation, including subtotals for each department.
3. Write a query using ROLLUP to get the total and average salary for each city, including grand totals.

## **CUBE Query Questions**

1. Write a query using CUBE to find the total salary grouped by department and city, including all possible combinations of totals.
2. Use CUBE to retrieve the number of employees for each designation and city, including all combinations of subtotals.
3. Write a query using CUBE to get the total salary paid by department, city, and designation, including all combinations of subtotals.

## **PARTITION BY & ROW\_NUMBER() Questions**

1. Use ROW\_NUMBER() with PARTITION BY to list employees in each department, ordered by salary in descending order.
2. Retrieve the top 2 highest-paid employees in each city using PARTITION BY and ROW\_NUMBER().
3. Use ROW\_NUMBER() to get the second highest-paid employee from each department.
4. List the first 3 employees hired in each department using PARTITION BY and ROW\_NUMBER().

## **PARTITION BY & RANK() Questions**

1. Use RANK() to find employees with the second highest salary in each department.
2. Use RANK() to list employees who are ranked 1st or 2nd by salary within each department.
3. Use RANK() to list the highest-paid employees in each department who have a salary greater than 80,000.
4. Retrieve the employees who are ranked in the top 5 based on salary in their respective cities.