# **500 INTERVIEW QUESTIONS**

**Part 1: Basic SELECT (50 Questions)**

1. Display all columns from the EMP table.
2. Display only employee names and salaries.
3. Display unique job titles from the EMP table.
4. Display employee details who work in department 30.
5. Display employees whose salary is greater than 2000.
6. Display employees whose job is ‘MANAGER’.
7. Display employees hired after 01-JAN-1981.
8. Display employees whose commission is not null.
9. Display employees working in department 10 or 20.
10. Display employees who do not have a manager.
11. Display employee names in alphabetical order.
12. Display employees with salary between 1000 and 2000.
13. Display employees whose names start with ‘S’.
14. Display employees whose names end with ‘N’.
15. Display employees whose names contain the letter ‘A’.
16. Display employees who are not working as SALESMAN.
17. Display employees with salaries not between 1500 and 3000.
18. Display employees with job ‘CLERK’ or salary greater than 2500.
19. **Display employees whose commission is greater than their salary.**
20. Display the 5 highest paid employees.
21. Display the 5 lowest paid employees.
22. Display the second highest paid employee.
23. Display the employee hired most recently.
24. Display the employee hired first in the company.
25. Display employees who joined in 1981.
26. Display employees who joined in September 1981.
27. Display employees who joined on 1st May 1981.
28. Display the length of each employee’s name.
29. Display employee names in uppercase.
30. Display employee names in lowercase.
31. Display the first three characters of each employee’s name.
32. Display the last two characters of each employee’s name.
33. Display employee names along with their job titles in one column.
34. Display employees along with their annual salary.
35. Display employees along with their salary increased by 10%.
36. Display employees who earn more than ALLEN.
37. Display employees who earn less than MARTIN.
38. Display employees with the same job as SCOTT.
39. Display employees who work in the same department as JONES.
40. Display employees with the same salary as FORD.
41. Display employees with salary greater than their manager.
42. Display employees who earn more than average salary.
43. Display employees who earn less than average salary of department 30.
44. Display the highest paid employee in each department.
45. Display the lowest paid employee in each job.
46. Display the number of employees in each department.
47. Display the number of employees in each job.
48. Display total salary paid to each department.
49. Display average salary for each job.

**Part 2 (Questions 51–100: Filtering, Sorting, Aggregates)**

**Part 2: Filtering, Sorting & Aggregates (51–100)**

1. Display all employees ordered by their salary in ascending order.
2. Display all employees ordered by their salary in descending order.
3. Display employees ordered by department number and then by salary.
4. Display employees ordered by hire date (earliest first).
5. Display employees ordered by name length.
6. Display top 3 employees with the highest salaries.
7. Display top 3 employees with the lowest salaries.
8. Display employees ordered by job and then by name.
9. Display employees ordered by commission in descending order.
10. Display employees ordered by department location and then by name.
11. Find the total number of employees in the company.
12. Find the total salary paid to all employees.
13. Find the maximum salary in the company.
14. Find the minimum salary in the company.
15. Find the average salary in the company.
16. Find the total commission paid to employees.
17. Find the number of employees with commission.
18. Find the highest commission received.
19. Find the lowest commission received.
20. Find the average commission given.
21. Find the number of managers in the company.
22. Find the number of distinct job titles in the company.
23. Find the number of employees hired in 1981.
24. Find the number of employees in department 30.
25. Find the number of employees with salary greater than 2000.
26. Find the number of employees without commission.
27. Find the total salary of employees in department 20.
28. Find the average salary of employees in department 10.
29. Find the highest salary in department 30.
30. Find the lowest salary in department 20.
31. Display department-wise employee count.
32. Display department-wise total salary.
33. Display department-wise average salary.
34. Display department-wise maximum salary.
35. Display department-wise minimum salary.
36. Display job-wise employee count.
37. Display job-wise total salary.
38. Display job-wise average salary.
39. Display job-wise maximum salary.
40. Display job-wise minimum salary.
41. Display department and job-wise total employees.
42. Display department and job-wise total salary.
43. Display department and job-wise average salary.
44. Display department and job-wise highest salary.
45. Display department and job-wise lowest salary.
46. Display the total number of employees in each location.
47. Display the average salary of employees for each location.
48. Display the maximum salary paid in each location.
49. Display the minimum salary paid in each location.
50. Display the count of employees who do not have a manager, grouped by department.

**📌 Part 3 (Questions 101–150: String, Date & Numeric Functions)**

1. Display employee names in uppercase.
2. Display employee names in lowercase.
3. Display the length of each employee’s name.
4. Display employee names along with the number of characters in them.
5. Display the first three letters of each employee’s name.
6. Display the last two letters of each employee’s name.
7. Display employee names with ‘\_EMP’ appended at the end.
8. Display employee names with their job titles concatenated in one column.
9. Display employee names reversed.
10. Display employee names with spaces removed.
11. Display employees whose names are exactly five characters long.
12. Display employees whose names are in uppercase and job in lowercase.
13. Display employee names with only the first letter capitalized.
14. Display employees whose names start with ‘A’ and have 4 letters.
15. Display employees whose names contain double letters like ‘LL’.
16. Display employees whose names are palindromes (same forwards and backwards).
17. Display the ASCII value of the first character of each employee’s name.
18. Display employee names padded with ‘\*’ on the left to make them 10 characters long.
19. Display employee names padded with ‘-’ on the right to make them 15 characters long.
20. Display employee names with their job repeated twice.
21. Display employees hired in the year 1980.
22. Display employees hired in the year 1981.
23. Display employees hired in the month of May.
24. Display employees hired on a Monday.
25. Display employees hired before January 1981.
26. Display employees hired after June 1981.
27. Display the number of years each employee has worked.
28. Display the number of months each employee has worked.
29. Display the number of days each employee has worked.
30. Display the next salary review date as 6 months after hiredate.
31. Display employees hired in the last 40 years.
32. Display employees hired more than 44 years ago.
33. Display employees hired exactly 44 years ago.
34. Display employees hired between two specific dates.
35. Display employees hired within the last 3 months of 1981.
36. Display employees hired in the first quarter of 1981.
37. Display employees hired in the second quarter of 1981.
38. Display employees hired in the third quarter of 1981.
39. Display employees hired in the fourth quarter of 1981.
40. Display the day of the week on which each employee was hired.
41. Display employee names along with the current system date.
42. Display employee names and the difference between current date and hiredate in years.
43. Display employee names and their hiredate in format ‘DD-Mon-YYYY’.
44. Display employee names and hiredate in the format ‘Day, Month DD, YYYY’.
45. Display employee names and hiredate in the format ‘YYYY/MM/DD’.
46. Display employees with hiredate as the last day of the month.
47. Display employees with hiredate as the first day of the month.
48. Display the month name in which each employee was hired.
49. Display the year in which each employee was hired.
50. Display the quarter (Q1, Q2, Q3, Q4) in which each employee was hired.

**📌 Part 4 (Questions 151–200: Subqueries)**

1. Find employees who earn more than ALLEN.
2. Find employees who earn less than MARTIN.
3. Find employees who work in the same department as JONES.
4. Find employees with the same job as SCOTT.
5. Find employees with the same salary as FORD.
6. Find employees who were hired after BLAKE.
7. Find employees who were hired before CLARK.
8. Find employees who earn more than the average salary of all employees.
9. Find employees who earn less than the average salary of their department.
10. Find employees who earn more than the highest salary in department 30.
11. Find employees whose salary is higher than at least one SALESMAN.
12. Find employees whose salary is higher than all SALESMANs.
13. Find employees who work in departments where at least one employee earns more than 3000.
14. Find employees who work in departments where the maximum salary is below 2500.
15. Find employees who earn the minimum salary in their department.
16. Find employees who earn the maximum salary in their job.
17. Find employees who joined after the most recently hired MANAGER.
18. Find employees who joined before the earliest hired CLERK.
19. Find employees who earn the same as the second highest salary.
20. Find employees who earn the same as the second lowest salary.
21. Find employees working in departments located in CHICAGO.
22. Find employees working in departments located in DALLAS.
23. Find employees who work in the same department as MILLER.
24. Find employees who work in the department with the maximum number of employees.
25. Find employees who work in the department with the least number of employees.
26. Find employees who work in the department with the highest total salary.
27. Find employees who work in the department with the lowest total salary.
28. Find employees who work in the department with the highest average salary.
29. Find employees who work in the department with the lowest average salary.
30. Find employees who work in the department with the maximum commission.
31. Find employees whose salary is greater than their manager’s salary.
32. Find employees whose salary is less than their manager’s salary.
33. Find employees who were hired before their manager.
34. Find employees who were hired after their manager.
35. Find the manager who earns the highest salary.
36. Find the manager who earns the lowest salary.
37. Find employees whose salary is greater than the average salary of managers.
38. Find employees who do not report to any manager in the EMP table.
39. Find managers who have at least one employee reporting to them.
40. Find managers who have no employees reporting to them.
41. Find employees who work in departments that have no CLERKs.
42. Find employees who work in departments that have at least one ANALYST.
43. Find employees who work in departments that have both MANAGERs and SALESMANs.
44. Find employees who work in departments that have no employees earning more than 2000.
45. Find employees whose salary is greater than the average salary of SALESMANs.
46. Find employees whose salary is less than the minimum salary of ANALYSTs.
47. Find employees who joined before the earliest hiredate in department 10.
48. Find employees who joined after the latest hiredate in department 20.
49. Find employees whose salary is equal to the maximum salary of department 10.
50. Find employees whose salary is equal to the minimum salary of department 30.

**📌 Part 5 (Questions 201–250: Joins — INNER, OUTER, SELF, CROSS)**

1. Display employee names along with their department names.
2. Display employee names, job titles, and department locations.
3. Display employees working in DALLAS.
4. Display employees working in CHICAGO.
5. Display employees along with department name and location.
6. Display employees whose department name is ACCOUNTING.
7. Display employees whose department location is NEW YORK.
8. Display employees working in the RESEARCH department.
9. Display employees working in the SALES department.
10. Display employees working in the OPERATIONS department.
11. Display department names along with the number of employees in each.
12. Display department names with the total salary of employees.
13. Display department names with the average salary of employees.
14. Display department names with the maximum salary of employees.
15. Display department names with the minimum salary of employees.
16. Display all departments and their employees, including departments with no employees.
17. Display all employees and their departments, including employees without departments.
18. Display departments with no employees.
19. Display employees who are not assigned to any department.
20. Display employees along with their department, sorted by department name.
21. Display the names of employees and their managers.
22. Display employees along with their manager’s job.
23. Display employees who have the same job as their manager.
24. Display employees who earn more than their manager.
25. Display employees who joined before their manager.
26. Display employees along with their manager’s name, department name, and location.
27. Display managers who have more than one employee reporting to them.
28. Display managers with the highest number of employees reporting.
29. Display managers with the least number of employees reporting.
30. Display employees with their managers, including employees without managers.
31. Display employees along with their department and all other employees in the same department.
32. Display employees who have colleagues with the same job.
33. Display employees who have colleagues with higher salaries.
34. Display employees who have colleagues with lower salaries.
35. Display employees along with the highest-paid employee in their department.
36. Display employees along with the lowest-paid employee in their job.
37. Display employees along with the average salary of their department.
38. Display employees along with the total salary of their job group.
39. Display employees along with the count of colleagues in their department.
40. Display employees along with the count of colleagues with the same job.
41. Display all possible employee-department combinations (CROSS JOIN).
42. Display all possible job-department combinations.
43. Display employees matched with every location (CROSS JOIN).
44. Display every employee paired with every other employee.
45. Display employees paired with every manager.
46. Display every department paired with every job.
47. Display employees and their departments using NATURAL JOIN.
48. Display employees and their departments using INNER JOIN.
49. Display employees and their departments using LEFT JOIN.
50. Display employees and their departments using RIGHT JOIN.

**📌 Part 6 (Questions 251–300: Set Operators — UNION, INTERSECT, MINUS, etc.)**

1. List all employee job titles and all department names in one column (UNION).
2. List all department numbers from EMP and DEPT tables (UNION).
3. List all department numbers present in both EMP and DEPT tables (INTERSECT).
4. List department numbers present in DEPT but not in EMP (MINUS).
5. List department numbers present in EMP but not in DEPT (MINUS).
6. Display all job titles from EMP and department names from DEPT (UNION ALL).
7. Display distinct job titles from EMP and department names from DEPT (UNION).
8. Find common department numbers between EMP and DEPT tables.
9. Find job titles that exist in both EMP and DEPT names (if any overlap).
10. Find department numbers that are in EMP but missing in DEPT.
11. Display employees who earn more than 3000 UNION employees working in department 10.
12. Display employees who are MANAGERs UNION employees who are ANALYSTs.
13. Display employees who are CLERKs UNION ALL SALESMANs.
14. Display employees who joined in 1980 INTERSECT employees earning more than 2000.
15. Display employees working in department 20 INTERSECT employees with commission.
16. Display employees hired before 1981 MINUS employees working in department 30.
17. Display employees earning more than 2500 MINUS employees working in department 10.
18. Display employees with commission MINUS employees with job = SALESMAN.
19. Display employees in department 10 UNION employees in department 20 UNION employees in department 30.
20. Display employees in department 10 INTERSECT employees hired in 1981.
21. Display jobs UNION managers’ names.
22. Display department locations UNION employees’ job titles.
23. Display all employee names UNION ALL department names.
24. Display department names INTERSECT job titles.
25. Display department numbers INTERSECT employee numbers.
26. Display employees working in NEW YORK UNION employees working in DALLAS.
27. Display employees working in CHICAGO INTERSECT employees earning more than 1500.
28. Display employees hired in 1981 MINUS employees in department 30.
29. Display SALESMANs UNION employees with commission > 500.
30. Display ANALYSTs INTERSECT employees earning more than 2500.
31. Display employees hired before 1981 UNION employees hired after 1983.
32. Display employees hired in 1982 MINUS employees earning less than 1500.
33. Display employees with salary > 2000 UNION ALL employees with commission.
34. Display employees whose job = CLERK INTERSECT employees earning more than 1000.
35. Display employees in department 20 MINUS employees with commission.
36. Display department names UNION employee jobs.
37. Display department names INTERSECT employee names.
38. Display department names MINUS employee jobs.
39. Display employee jobs MINUS department names.
40. Display all possible department numbers UNION employee numbers.
41. Display employees with job = MANAGER UNION employees with salary > 2500.
42. Display employees hired in 1981 UNION employees in department 10.
43. Display employees earning less than 2000 UNION employees in CHICAGO.
44. Display employees with commission INTERSECT employees in department 30.
45. Display employees in NEW YORK MINUS employees earning more than 3000.
46. Display employees in SALES department UNION employees in RESEARCH department.
47. Display employees in ACCOUNTING INTERSECT employees with job = CLERK.
48. Display employees in OPERATIONS MINUS employees with salary < 1500.
49. Display employees with hiredate before 1982 UNION employees with hiredate after 1983.
50. Display employees in DALLAS INTERSECT employees with salary between 1500 and 2500.

**Part 7 (Questions 301–350: Correlated Subqueries & EXISTS / NOT EXISTS)**

1. Find employees whose salary is greater than the average salary of their department.
2. Find employees whose salary is less than the average salary of their job.
3. Find employees who earn more than the manager of their department.
4. Find employees who joined earlier than all other employees in their department.
5. Find employees who joined later than all other employees in their department.
6. Find employees who earn more than at least one colleague in their department.
7. Find employees who earn less than at least one colleague in their department.
8. Find employees who earn the maximum salary in their department (correlated subquery).
9. Find employees who earn the minimum salary in their department (correlated subquery).
10. Find employees who have the same job as someone in department 10.
11. Find employees who have the same salary as someone in department 20.
12. Find employees who were hired before the manager of their department.
13. Find employees who were hired after the manager of their department.
14. Find employees who earn more than the average salary of department 30.
15. Find employees who earn less than the average salary of department 10.
16. Find employees who work in departments where at least one SALESMAN works.
17. Find employees who work in departments where no SALESMAN works.
18. Find employees who work in departments where at least one ANALYST works.
19. Find employees who work in departments where no CLERK works.
20. Find employees who work in departments where all employees earn more than 2000.
21. Find employees who work in departments where at least one employee earns less than 1000.
22. Find employees who earn more than any employee in department 20.
23. Find employees who earn less than every employee in department 10.
24. Find employees who joined before any employee in department 30.
25. Find employees who joined after all employees in department 20.
26. Find employees for whom no one in their department earns more.
27. Find employees for whom no one in their department earns less.
28. Find employees who have at least one colleague with the same salary.
29. Find employees who have at least one colleague with the same hiredate.
30. Find employees who have at least one colleague with the same job.
31. Find employees whose department has more than 5 employees (using correlated subquery).
32. Find employees whose department has fewer than 3 employees.
33. Find employees whose department pays more than 5000 in total salaries.
34. Find employees whose department average salary is above 2500.
35. Find employees whose department average salary is below 1500.
36. Find employees where EXISTS a colleague with the same commission.
37. Find employees where EXISTS a colleague with higher commission.
38. Find employees where EXISTS a colleague with lower salary.
39. Find employees where EXISTS a colleague in the same job and department.
40. Find employees where EXISTS a manager in the same department.
41. Find employees where NOT EXISTS a manager in their department.
42. Find employees where NOT EXISTS a colleague with the same job.
43. Find employees where NOT EXISTS a colleague with the same salary.
44. Find employees where NOT EXISTS a colleague hired in the same year.
45. Find employees where NOT EXISTS a SALESMAN in their department.
46. Find departments where EXISTS an employee earning more than 3000.
47. Find departments where EXISTS an employee earning less than 1000.
48. Find departments where NOT EXISTS a CLERK.
49. Find departments where NOT EXISTS an employee hired in 1981.
50. Find departments where NOT EXISTS an employee with commission.

**Part 8 (Questions 351–400: Advanced SQL — CTE, Window Functions, Ranking, Case Expressions)**

1. Display each employee along with their salary rank in the company.
2. Display each employee along with their salary rank within their department.
3. Display each employee along with their salary rank within their job.
4. Display the top 3 highest-paid employees using RANK().
5. Display the top 3 highest-paid employees in each department.
6. Display employees whose salary rank is 1 in their department (highest earners).
7. Display employees whose salary rank is last in their department (lowest earners).
8. Display the Nth highest salary using RANK().
9. Display the Nth highest salary using DENSE\_RANK().
10. Display employees with duplicate salaries using DENSE\_RANK().
11. Display each employee’s salary and difference from the department average.
12. Display each employee’s salary compared to the average salary of their job.
13. Display each employee’s salary as a percentage of the department total.
14. Display each employee’s salary difference from the highest salary in their department.
15. Display each employee’s salary difference from the lowest salary in their department.
16. Display a running total of salaries ordered by hiredate.
17. Display a running total of salaries within each department.
18. Display a running total of salaries within each job.
19. Display a moving average of salaries over 3 employees.
20. Display a moving average of salaries by hiredate within each department.
21. Display employees along with LAG() function to show the previous employee’s salary.
22. Display employees along with LEAD() function to show the next employee’s salary.
23. Display employees along with their manager’s salary difference (using window).
24. Display employees with the highest salary in each department using FIRST\_VALUE().
25. Display employees with the lowest salary in each department using LAST\_VALUE().
26. Display employees grouped into salary bands using NTILE(4).
27. Display employees divided into 3 equal groups based on salary.
28. Display employees divided into 5 equal groups based on hiredate.
29. Display the top 10% of employees based on salary.
30. Display the bottom 10% of employees based on salary.
31. Write a CTE to display all employees in department 10.
32. Write a CTE to display employees hired in 1981.
33. Write a CTE to display employees with salary > 2500.
34. Write a CTE to calculate department-wise average salary.
35. Write a CTE to calculate job-wise maximum salary.
36. Write a recursive CTE to display employees and their managers hierarchically.
37. Write a recursive CTE to display employees with multiple levels of reporting.
38. Write a recursive CTE to calculate total salary paid in each department.
39. Write a recursive CTE to display hiredate hierarchy from oldest to newest.
40. Write a recursive CTE to generate numbers from 1 to 10.
41. Use CASE to categorize employees as HIGH, MEDIUM, LOW salary.
42. Use CASE to display commission as “NO COMMISSION” if NULL.
43. Use CASE to display job description in full words (e.g., MGR → Manager).
44. Use CASE to classify employees by year of hire (before 1981, 1981, after 1981).
45. Use CASE to classify employees by department location.
46. Use DECODE to show salary categories (if Oracle syntax is used).
47. Use DECODE to show job descriptions in a custom format.
48. Use DECODE to show department names from deptno.
49. Use DECODE to replace NULL commission with 0.
50. Use DECODE to classify employees into salary ranges.

**Part 9 (Questions 401–450: Performance, Constraints, Indexes, Transactions,**

1. What are the different types of SQL constraints?
2. How to add a PRIMARY KEY constraint to the EMP table?
3. How to add a FOREIGN KEY constraint between EMP.deptno and DEPT.deptno?
4. How to add a UNIQUE constraint on employee names?
5. How to add a CHECK constraint to ensure salary > 0?
6. How to drop a PRIMARY KEY constraint from a table?
7. How to drop a FOREIGN KEY constraint from a table?
8. How to drop a UNIQUE constraint from a table?
9. How to disable and enable a constraint?
10. How to rename a constraint?
11. How to create an index on employee names?
12. How to create a composite index on job and deptno?
13. How to drop an index from EMP?
14. What is the difference between a unique index and a unique constraint?
15. What is the advantage of indexing in SQL?
16. How to create a view showing employee names and department names?
17. How to create a view showing only managers?
18. How to create a view showing employees earning more than 3000?
19. How to create a view showing department salary statistics?
20. How to update a view?
21. Can you insert data through a view? Explain.
22. Can you delete data through a view? Explain.
23. What are materialized views?
24. Difference between view and materialized view?
25. What are the limitations of views?
26. How to start a transaction in SQL?
27. How to commit a transaction?
28. How to rollback a transaction?
29. How to rollback to a savepoint?
30. What is the difference between COMMIT and ROLLBACK?
31. What are ACID properties of transactions?
32. What is the difference between DELETE and TRUNCATE?
33. What is the difference between TRUNCATE and DROP?
34. When would you prefer TRUNCATE over DELETE?
35. Can TRUNCATE be rolled back? Why or why not?
36. How do foreign keys affect DELETE operations?
37. What is ON DELETE CASCADE?
38. What is ON DELETE SET NULL?
39. What is ON UPDATE CASCADE?
40. What is referential integrity in SQL?
41. What is the difference between clustered and non-clustered indexes?
42. Can a table have more than one clustered index? Why?
43. What is a composite index?
44. What is index selectivity?
45. When should you avoid using indexes?
46. What is query optimization?
47. How to analyze a query execution plan?
48. What are database statistics and why are they important?
49. What are hints in SQL queries?
50. What are common causes of slow SQL queries?

**Part 10 (Questions 451–500: Theory, Design, Normalization, Advanced & Tricky Interview Questions)**

1. What is a database schema?
2. What is a database instance?
3. What is the difference between schema and instance?
4. What is data independence?
5. What is the difference between logical and physical data independence?
6. What is the difference between DBMS and RDBMS?
7. What are the advantages of RDBMS over file systems?
8. What is the difference between OLTP and OLAP systems?
9. What are star schema and snowflake schema?
10. What is a fact table and dimension table?
11. What is database normalization?
12. What is 1NF (First Normal Form)?
13. What is 2NF (Second Normal Form)?
14. What is 3NF (Third Normal Form)?
15. What is BCNF (Boyce-Codd Normal Form)?
16. What is 4NF (Fourth Normal Form)?
17. What is 5NF (Fifth Normal Form)?
18. What are the drawbacks of too much normalization?
19. What is denormalization and why is it used?
20. Give an example where denormalization is preferred.
21. What is a candidate key?
22. What is a super key?
23. What is the difference between candidate key and super key?
24. What is a composite key?
25. What is a surrogate key?
26. What is an alternate key?
27. What is the difference between primary key and unique key?
28. What is the difference between natural key and surrogate key?
29. What is a weak entity in ER model?
30. What is an ER diagram?
31. What is the difference between strong and weak relationships in ER diagrams?
32. What are the types of relationships in databases?
33. What is cardinality in ER diagrams?
34. What is total participation in ER diagrams?
35. What is partial participation?
36. What is a recursive relationship in ER modeling?
37. What are database anomalies?
38. What is an insertion anomaly?
39. What is a deletion anomaly?
40. What is an update anomaly?
41. What is a deadlock in DBMS?
42. What are the conditions for a deadlock?
43. How can deadlocks be prevented?
44. What is concurrency control?
45. What are different concurrency control techniques?
46. What is optimistic concurrency control?
47. What is pessimistic concurrency control?
48. What is the difference between 2-tier and 3-tier database architecture?
49. What is sharding in databases?
50. What are common tricky SQL interview questions asked to test problem-solving skills?