SQL Practice Questions & Answers

Sample Database & Table

```
CREATE DATABASE practice_db;
USE practice_db;

CREATE TABLE employees (
   id INT PRIMARY KEY,
   name VARCHAR(50) NOT NULL,
   date_of_birth DATE,
   department VARCHAR(50),
   salary INT,
   country VARCHAR(50)
);

INSERT INTO employees VALUES
(1,'Amit Sharma','1990-05-12','IT',80000,'India'),
(2,'Neha Verma','1992-08-20','HR',60000,'India'),
(3,'Rahul Singh','1988-03-15','Finance',90000,'India'),
(4,'John Miller','1985-11-10','IT',95000,'USA'),
(5,'Sara Khan','1995-01-25','HR',55000,NULL),
(6,'David Lee','1991-07-19','Finance',72000,'USA'),
(7,'Ananya Gupta','1993-09-09','IT',82000,'India'),
(8,'Robert Brown','1987-02-14','Admin',50000,'UK');
```

Practice Questions & Answers

1.What does SQL stand for?

Answer: SQL stands for Structured Query Language.

2. Is SQL a programming language?

Answer: No. SQL is a query language used to interact with databases.

3. Write a query to view all records from employees table.

Answer: SELECT * FROM employees;

4. Display only name and salary.

Answer: SELECT name, salary FROM employees;

5. Find employees working in IT department.

Answer: SELECT * FROM employees WHERE department = 'IT';

6. List employees with salary greater than 80000.

Answer: SELECT * FROM employees WHERE salary > 80000;

7. Show distinct departments.

Answer: SELECT DISTINCT department FROM employees;

8. Count total employees.

Answer: SELECT COUNT(*) FROM employees;

9. Find maximum salary.

Answer: SELECT MAX(salary) FROM employees;

10. Find minimum salary.

Answer: SELECT MIN(salary) FROM employees;

11. Find average salary.

Answer: SELECT AVG(salary) FROM employees;

12. Find total salary paid.

Answer: SELECT SUM(salary) FROM employees;

13. Count employees per department.

Answer: SELECT department, COUNT(*) FROM employees GROUP BY department;

14. Average salary per department.

Answer: SELECT department, AVG(salary) FROM employees GROUP BY department;

15. Departments with average salary > 80000.

Answer: SELECT department, AVG(salary) FROM employees GROUP BY department
HAVING AVG(salary) > 80000;

16. Employees from India.

Answer: SELECT * FROM employees WHERE country = 'India';

17. Employees not from India.

Answer: SELECT * FROM employees WHERE country <> 'India';

18. Employees with NULL country.

Answer: SELECT * FROM employees WHERE country IS NULL;

19. Replace NULL country with 'Unknown'.

Answer: SELECT name, IFNULL(country,'Unknown') FROM employees;

20. Use COALESCE for country.

Answer: SELECT name, COALESCE(country,'Unknown') FROM employees;

21. Employees with salary between 60000 and 85000.

Answer: SELECT * FROM employees WHERE salary BETWEEN 60000 AND 85000;

22. Employees in HR or Finance.

Answer: SELECT * FROM employees WHERE department IN ('HR','Finance');

23. Employees not in IT.

Answer: SELECT * FROM employees WHERE department != 'IT';

24. Names starting with 'A'.

Answer: SELECT * FROM employees WHERE name LIKE 'A%';

25. Names ending with 'a'.

Answer: SELECT * FROM employees WHERE name LIKE '%a';

26. Order employees by salary ascending.

Answer: SELECT * FROM employees ORDER BY salary ASC;

27. Order employees by salary descending.

Answer: SELECT * FROM employees ORDER BY salary DESC;

28. Show top 3 highest paid employees.

Answer: SELECT * FROM employees ORDER BY salary DESC LIMIT 3;

29. Find 2nd highest salary.

Answer: SELECT salary FROM employees ORDER BY salary DESC LIMIT 1 OFFSET 1;

30. Update salary of Amit to 85000.

Answer: UPDATE employees SET salary = 85000 WHERE name = 'Amit Sharma';

31. Update department and country for id=5.

Answer: UPDATE employees SET department='HR', country='India' WHERE id = 5;

32. Delete employees from Admin department.

Answer: DELETE FROM employees WHERE department = 'Admin';

33. Remove all rows from employees.

Answer: TRUNCATE TABLE employees;

34. Drop employees table.

Answer: DROP TABLE employees;

35. Rename employees table to emp.

Answer: RENAME TABLE employees TO emp;

36. Add gender column.

Answer: ALTER TABLE employees ADD gender VARCHAR(10);

37. Rename column name to emp_name.

Answer: ALTER TABLE employees RENAME COLUMN name TO emp_name;

38. Modify salary datatype.

Answer: ALTER TABLE employees MODIFY salary BIGINT;

Practice Questions & Answers (More Practice Questions)

1. Find employees whose names start with 'A' and end with 'a'.

Answer: SELECT * FROM employees WHERE name LIKE 'A%a';

2. Find employees whose name contains 'ha'.

Answer: SELECT * FROM employees WHERE name LIKE '%ha%';

3. Find employees whose name starts with letters A to D using REGEXP.

Answer: SELECT * FROM employees WHERE name REGEXP '^[A-D]';

4. List employees not working in IT or HR.

Answer: SELECT * FROM employees WHERE department NOT IN ('IT','HR');

5. Fetch employees earning exactly 80000 or 90000.

Answer: SELECT * FROM employees WHERE salary IN (80000,90000);

6. Display employees whose salary is NOT between 60000 and 85000.

Answer: SELECT * FROM employees WHERE salary NOT BETWEEN 60000 AND 85000;

7. Sort employees by department (ASC) and salary (DESC).

Answer: SELECT * FROM employees ORDER BY department ASC, salary DESC;

8. Display top 5 highest-paid employees.

Answer: SELECT * FROM employees ORDER BY salary DESC LIMIT 5;

9. Fetch the employee with the lowest salary.

Answer: SELECT * FROM employees ORDER BY salary ASC LIMIT 1;

10. Find the 3rd highest salary.

Answer: SELECT salary FROM employees ORDER BY salary DESC LIMIT 1 OFFSET 2;

11. Count number of employees in each country.

Answer: SELECT country, COUNT(*) FROM employees GROUP BY country;

12. Find total salary paid per department.

Answer: SELECT department, SUM(salary) FROM employees GROUP BY department;

13. Find departments having more than 2 employees.

Answer: SELECT department, COUNT(*) FROM employees GROUP BY department HAVING COUNT(*) > 2;

14. Find departments where average salary is greater than 75000.

Answer: SELECT department, AVG(salary) FROM employees GROUP BY department HAVING AVG(salary) > 75000;

15. Count employees from India in each department.

Answer: SELECT department, COUNT(*) FROM employees WHERE country='India' GROUP BY department;

16. Show only departments with at least 1 employee from USA.

Answer: SELECT department, COUNT(*) FROM employees WHERE country='USA' GROUP BY department HAVING COUNT(*) >= 1;

17. Display employees whose country is NULL.

Answer: SELECT * FROM employees WHERE country IS NULL;

18. Replace NULL country values with 'Unknown' while displaying data.

Answer: SELECT name, IFNULL(country,'Unknown') AS country FROM employees;

19. Show country if available, else department, else 'NA'.

Answer: SELECT name, COALESCE(country, department,'NA') FROM employees;

20. Find employees where department is NOT NULL.

Answer: SELECT * FROM employees WHERE department IS NOT NULL;

21. Increase salary by 10% for IT employees.

Answer: UPDATE employees SET salary = salary * 1.10 WHERE department='IT';

22. Set country as 'India' for employees where country is NULL.

Answer: UPDATE employees SET country='India' WHERE country IS NULL;

23. Change department to 'Tech' where department is IT.

Answer: UPDATE employees SET department='Tech' WHERE department='IT';

24. Delete employees earning less than 55000.

Answer: DELETE FROM employees WHERE salary < 55000;

25. Delete employees whose country is NULL.

Answer: DELETE FROM employees WHERE country IS NULL;

26. Remove all records from employees table but keep structure.

Answer: TRUNCATE TABLE employees;

27. Add a new column email to employees table.

Answer: ALTER TABLE employees ADD email VARCHAR(100);

28. Rename column name to emp_name.

Answer: ALTER TABLE employees RENAME COLUMN name TO emp_name;

29. Change salary column type to BIGINT.

Answer: ALTER TABLE employees MODIFY salary BIGINT;

30. Drop email column.

Answer: ALTER TABLE employees DROP email;

31. Rename table employees to employee_master.

Answer: RENAME TABLE employees TO employee_master;

32. List employees ordered by salary, skip first 2 rows.

Answer: SELECT * FROM employees ORDER BY salary DESC LIMIT 100 OFFSET 2;

33. Count total employees excluding NULL countries.

Answer: SELECT COUNT(country) FROM employees;

34. Difference between COUNT(*) and COUNT(column).

Answer: COUNT(*) counts all rows. COUNT(column) skips NULL values.

35. Show departments sorted by average salary descending.

Answer: SELECT department, AVG(salary) FROM employees GROUP BY department ORDER BY AVG(salary) DESC;

36. Find highest salary in each department.

Answer: SELECT department, MAX(salary) FROM employees GROUP BY department;

37. Find lowest salary among Indian employees.

Answer: SELECT MIN(salary) FROM employees WHERE country='India';

38. Get total number of departments.

Answer: SELECT COUNT(DISTINCT department) FROM employees;

39. Find employees whose salary is above department average.

Answer: SELECT * FROM employees e WHERE salary > (SELECT AVG(salary) FROM employees WHERE department=e.department);

40. Why HAVING cannot replace WHERE always?

Answer: WHERE filters rows before grouping, HAVING filters groups after aggregation.