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JAVA INTERVIEW - CODING ROUND

TOP-25

TOP 25 DATABASE SQL FAQ

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TOP 25 DATABASE SQL FAQ

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1. What is SQL?

- SQL is a language used to manage and interact with databases.

- It helps to create, update, delete, and retrieve data.

- It is used with relational database systems like MySQL, Oracle, etc.

2. What is a primary key?

- A primary key uniquely identifies each row in a table.

- It ensures that no two rows have the same key value.

- A table can have only one primary key.

3. What is a foreign key?

- A foreign key connects two tables.

- It is a column in one table that refers to the primary key in another table.

- It ensures data consistency between related tables.

4. What are constraints in SQL?

- Constraints are rules applied to table columns.

- Examples: NOT NULL, UNIQUE, PRIMARY KEY, and FOREIGN KEY.

- They ensure data is valid and consistent.

5. Write a query to retrieve all records from a table named employees.

- Query:

```sql
SELECT * FROM employees;
```

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6. What is the difference between DELETE and TRUNCATE?

- DELETE removes selected rows based on a condition.

- TRUNCATE removes all rows and cannot be rolled back.

- DELETE activates triggers; TRUNCATE does not.

7. Write a query to fetch the maximum salary from employees.

- Query:

```sql
SELECT MAX(salary) FROM employees;
```

9. What is a JOIN? Explain its types.

- JOIN combines rows from two or more tables.

- Types:

  - INNER JOIN: Matches rows in both tables.

  - LEFT JOIN: All rows from the left table, matching rows from the right.

  - RIGHT JOIN: All rows from the right table, matching rows from the left.

  - FULL JOIN: Rows from both tables, even if no match.

10. Write a query to fetch employee names and department names using JOIN.

Query:

```sql
SELECT e.name, d.department_name
FROM employees e
JOIN departments d
ON e.department_id = d.id;
```

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11. What is a GROUP BY clause?

- GROUP BY groups rows with the same value.

- It is used with aggregate functions like COUNT, SUM, or AVG.

- It helps summarize data.

12. Write a query to count employees in each department.

```sql
SELECT department_id, COUNT(*)
FROM employees
GROUP BY department_id;
```

13. What is the difference between WHERE and HAVING clauses?

WHERE filters rows before grouping.

- HAVING filters groups after grouping.

- HAVING is used with aggregate functions like COUNT or SUM.

14. Write a query to fetch departments with more than 5 employees.

```sql
SELECT department_id, COUNT(*)
FROM employees
GROUP BY department_id
HAVING COUNT(*) > 5;
```

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15. **Explain UNION and UNION ALL.**

- UNION combines results of two queries, removing duplicates.

- UNION ALL includes duplicates in the results.

- Both are used to merge data.

16. **What is a subquery in SQL?**

- A subquery is a query inside another query.

- It helps retrieve data for the main query.

- It is commonly used in WHERE or SELECT clauses.

17. **Write a query to find all employees with a salary greater than the average salary.**

```sql
SELECT *
FROM employees
WHERE salary > (SELECT AVG(salary) FROM employees);
```

18. **Write a query to fetch the current date in SQL.**

- Query:
```sql
SELECT CURRENT_DATE;
```

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19. What is indexing in SQL?

- Indexing makes searching for rows faster.

- It is a data structure created on table columns.

- Commonly used on primary and frequently searched keys.

20. What is normalization? Explain its types.

Normalization organizes data to reduce redundancy.

- Types:

    - 1NF: Removes duplicate columns.

    - 2NF: Eliminates partial dependencies.

    - 3NF: Removes transitive dependencies.

21. Write a query to add a new column to a table.

```sql
ALTER TABLE employees
ADD COLUMN email VARCHAR(255);
```

22. What is a stored procedure?

- A stored procedure is a reusable set of SQL commands.

- It is stored in the database and executed as needed.

- It improves efficiency and reusability.

23. Write a stored procedure to fetch all employees.

- Query:

```
CREATE PROCEDURE GetAllEmployees()
BEGIN
    SELECT * FROM employees;
END;
```

24. Write a query to calculate the total salary for each department.

- Query:

```
SELECT department_id, SUM(salary)
FROM employees
GROUP BY department_id;
```

25. What are the ACID properties in SQL?

- ACID ensures reliable transactions.

  - Atomicity: All actions succeed or fail as a unit.

  - Consistency: Keeps data valid before and after a transaction.

  - Isolation: Transactions do not affect each other.

  - Durability: Changes are permanent after a transaction.