Here are 15 hard SQL subquery MCQs based on hypothetical table structures. We'll assume two main tables for these examples:

Tables:

1. employees

- `employee\_id`: INT

- `employee\_name`: VARCHAR

- `salary`: DECIMAL

- `department\_id`: INT

2. departments

- `department\_id`: INT

- `department\_name`: VARCHAR

Questions:

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1. Which query will return employees who earn more than the average salary of their department?

- A: `SELECT employee\_name FROM employees WHERE salary > (SELECT AVG(salary) FROM employees);`

- B: `SELECT employee\_name FROM employees WHERE salary > (SELECT AVG(salary) FROM employees WHERE department\_id = employees.department\_id);`

- C: `SELECT employee\_name FROM employees WHERE salary = (SELECT AVG(salary) FROM employees WHERE department\_id = 2);`

- D: `SELECT employee\_name FROM employees WHERE salary < (SELECT AVG(salary) FROM employees);`

\*Correct Answer:\* B

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2. Which query returns the names of employees who work in the same department as "John"?

- A: `SELECT employee\_name FROM employees WHERE department\_id = (SELECT department\_id FROM employees WHERE employee\_name = 'John');`

- B: `SELECT employee\_name FROM employees WHERE employee\_id = (SELECT department\_id FROM departments WHERE employee\_name = 'John');`

- C: `SELECT employee\_name FROM employees WHERE department\_id = (SELECT employee\_id FROM employees WHERE employee\_name = 'John');`

- D: `SELECT employee\_name FROM employees WHERE employee\_name = 'John';`

\*Correct Answer:\* A

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3. Which of the following queries returns the department with the highest average salary?

- A: `SELECT department\_name FROM departments WHERE department\_id = (SELECT department\_id FROM employees GROUP BY department\_id ORDER BY AVG(salary) DESC LIMIT 1);`

- B: `SELECT department\_name FROM departments WHERE department\_id = (SELECT department\_id FROM employees WHERE salary = (SELECT MAX(salary) FROM employees));`

- C: `SELECT department\_name FROM departments WHERE department\_id = (SELECT MAX(AVG(salary)) FROM employees GROUP BY department\_id);`

- D: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees ORDER BY salary DESC LIMIT 1);`

\*Correct Answer:\* A

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4. Which query returns the names of employees who earn the maximum salary in their department?

- A: `SELECT employee\_name FROM employees WHERE salary = (SELECT MAX(salary) FROM employees WHERE department\_id = employees.department\_id);`

- B: `SELECT employee\_name FROM employees WHERE salary IN (SELECT MAX(salary) FROM employees);`

- C: `SELECT employee\_name FROM employees WHERE salary = (SELECT MAX(salary) FROM employees GROUP BY department\_id);`

- D: `SELECT employee\_name FROM employees WHERE salary = (SELECT AVG(salary) FROM employees WHERE department\_id = employees.department\_id);`

\*Correct Answer:\* A

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5. Which query returns departments that have more than 5 employees?

- A: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees GROUP BY department\_id HAVING COUNT(\*) > 5);`

- B: `SELECT department\_name FROM departments WHERE department\_id = (SELECT COUNT(employee\_id) FROM employees WHERE department\_id > 5);`

- C: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees WHERE COUNT(\*) > 5);`

- D: `SELECT department\_name FROM departments WHERE (SELECT COUNT(\*) FROM employees WHERE department\_id = departments.department\_id) > 5;`

\*Correct Answer:\* A

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6. Which query returns the name of the employee who has the highest salary?

- A: `SELECT employee\_name FROM employees WHERE salary = (SELECT MAX(salary) FROM employees);`

- B: `SELECT employee\_name FROM employees WHERE salary = (SELECT salary FROM employees ORDER BY salary DESC LIMIT 1);`

- C: `SELECT employee\_name FROM employees WHERE salary IN (SELECT MAX(salary) FROM employees WHERE department\_id = employees.department\_id);`

- D: `SELECT employee\_name FROM employees WHERE employee\_id = (SELECT MAX(salary) FROM employees);`

\*Correct Answer:\* A

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7. Which query returns departments that do not have any employees?

- A: `SELECT department\_name FROM departments WHERE department\_id NOT IN (SELECT department\_id FROM employees);`

- B: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees WHERE employee\_id IS NULL);`

- C: `SELECT department\_name FROM departments WHERE NOT EXISTS (SELECT \* FROM employees WHERE departments.department\_id = employees.department\_id);`

- D: `SELECT department\_name FROM departments WHERE department\_id = (SELECT COUNT(employee\_id) FROM employees WHERE employee\_id = NULL);`

\*Correct Answer:\* C

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8. Which query will return the employee(s) with the second highest salary?

- A: `SELECT employee\_name FROM employees WHERE salary = (SELECT MAX(salary) FROM employees WHERE salary < (SELECT MAX(salary) FROM employees));`

- B: `SELECT employee\_name FROM employees WHERE salary = (SELECT MIN(salary) FROM employees);`

- C: `SELECT employee\_name FROM employees WHERE salary = (SELECT MAX(salary) FROM employees LIMIT 1 OFFSET 1);`

- D: `SELECT employee\_name FROM employees WHERE salary = (SELECT AVG(salary) FROM employees ORDER BY salary DESC LIMIT 1);`

\*Correct Answer:\* A

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9. Which query returns departments where the average salary is higher than 5000?

- A: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees GROUP BY department\_id HAVING AVG(salary) > 5000);`

- B: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees WHERE salary > 5000);`

- C: `SELECT department\_name FROM departments WHERE department\_id = (SELECT AVG(salary) FROM employees WHERE salary > 5000);`

- D: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees WHERE COUNT(salary) > 5000);`

\*Correct Answer:\* A

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10. Which query returns employees who earn more than the highest salary in department 1?

- A: `SELECT employee\_name FROM employees WHERE salary > (SELECT MAX(salary) FROM employees WHERE department\_id = 1);`

- B: `SELECT employee\_name FROM employees WHERE salary = (SELECT MAX(salary) FROM employees WHERE department\_id = 1);`

- C: `SELECT employee\_name FROM employees WHERE salary IN (SELECT salary FROM employees WHERE department\_id = 1);`

- D: `SELECT employee\_name FROM employees WHERE salary < (SELECT MAX(salary) FROM employees WHERE department\_id = 1);`

\*Correct Answer:\* A

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11. Which query returns the employee(s) who earn more than 20% higher than the average salary?

- A: `SELECT employee\_name FROM employees WHERE salary > 1.2 \* (SELECT AVG(salary) FROM employees);`

- B: `SELECT employee\_name FROM employees WHERE salary = (SELECT AVG(salary) FROM employees) + 0.2;`

- C: `SELECT employee\_name FROM employees WHERE salary > (SELECT salary FROM employees) + 20;`

- D: `SELECT employee\_name FROM employees WHERE salary > (SELECT AVG(salary) FROM employees) \* 0.2;`

\*Correct Answer:\* A

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12. Which query returns the names of employees whose salary is below the average salary of department 3?

- A: `SELECT employee\_name FROM employees WHERE salary < (SELECT AVG(salary) FROM employees WHERE department\_id = 3);`

- B: `SELECT employee\_name FROM employees WHERE salary < (SELECT MIN(salary) FROM employees WHERE department\_id = 3);`

- C: `SELECT employee\_name FROM employees WHERE salary = (SELECT AVG(salary) FROM employees WHERE department\_id = 3);`

- D: `SELECT employee\_name FROM employees WHERE department\_id = 3;`

\*Correct Answer:\* A

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13. Which query returns the name of departments with fewer employees than the average number of employees across all departments?

- A: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees GROUP BY department\_id HAVING COUNT(\*) < (SELECT AVG(emp\_count) FROM (SELECT COUNT(\*) AS emp\_count FROM employees GROUP BY department\_id)));`

- B: `SELECT department\_name FROM departments WHERE department\_id = (SELECT COUNT(\*) FROM employees WHERE department\_id = departments.department\_id);`

- C: `SELECT department\_name FROM departments WHERE department\_id = (SELECT AVG(employee\_id) FROM employees WHERE department\_id = departments.department\_id);`

- D: `SELECT department\_name FROM departments WHERE department\_id = (SELECT MIN(department\_id) FROM employees);`

\*Correct Answer:\* A

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14. Which query returns the names of departments that have no employees with a salary higher than 5000?

- A: `SELECT department\_name FROM departments WHERE NOT EXISTS (SELECT \* FROM employees WHERE departments.department\_id = employees.department\_id AND salary > 5000);`

- B: `SELECT department\_name FROM departments WHERE department\_id NOT IN (SELECT department\_id FROM employees WHERE salary > 5000);`

- C: `SELECT department\_name FROM departments WHERE department\_id IN (SELECT department\_id FROM employees WHERE salary <= 5000);

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- D: `SELECT department\_name FROM departments WHERE salary > 5000;`

\*Correct Answer:\* A

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15. Which query returns the total salary of all employees in each department, only if the total is greater than 100,000?

- A: `SELECT department\_id, SUM(salary) FROM employees GROUP BY department\_id HAVING SUM(salary) > 100000;`

- B: `SELECT department\_name FROM departments WHERE department\_id = (SELECT SUM(salary) FROM employees GROUP BY department\_id HAVING SUM(salary) > 100000);`

- C: `SELECT department\_id, SUM(salary) FROM employees WHERE SUM(salary) > 100000;`

- D: `SELECT department\_id, COUNT(salary) FROM employees GROUP BY department\_id HAVING SUM(salary) > 100000;`

\*Correct Answer:\* A

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