

Instructions

- Complete all tasks below.
- **TOPIC:** DATABASE DESIGN PRINCIPLES

QUESTION

1. Write a query to select all columns from a table named `employees`.
2. Write a query to retrieve the first names and last names of employees who work in the `Sales` department.
3. Write a query to count the number of employees in each department.
4. Write a query to find the average salary of employees in the `Engineering` department.
5. Given two tables, `students` and `courses`, write a query to list all students along with the courses they are enrolled in.
6. Write a query to retrieve the names of employees and their corresponding managers from the `employees` table (assuming there's a `manager_id` column).
7. Write a query that retrieves the names of employees who earn more than the average salary of all employees.
8. Write a query to find all students who have completed courses that are worth more than 3 credits.
9. Write a query to insert a new employee into the `employees` table.
10. Write a query to update the department of an employee with `employee_id = 101` to `Marketing`.
11. Write a query to delete all records of students who have not enrolled in any courses.
12. Write a query that retrieves the top 5 highest-paid employees.
13. Write a query to find the departments that have more than 10 employees.
14. Explain what an index is in SQL and how it improves query performance.

15. Create a view that combines the employee and department tables to show a simplified employee list with their department names.
16. Explain the concept of database normalization and perform normalization on a given dataset. Provide an example of transforming a table into 1NF, 2NF, and 3NF.
17. Write a transaction that ensures that two related operations (e.g., transferring funds between accounts) are performed successfully or not at all.
18. Write a query to add a new customer to the `customers` table with sample data.
19. Write a query to insert a new product into the `products` table.
20. Write a query to change the email address of a customer with `customer_id = 5`.
21. Write a query to update the price of a product with `product_id = 10`.
22. Write a query to remove a customer from the `customers` table where `customer_id = 8`.
23. Write a query to delete all products that are out of stock from the `products` table.

END