**Exercises: PL/SQL Functions 2024**

**Course:** Database Development with PL/SQL INSY 8311

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## I. Exercise: Calculate Employee Age

### Objective

Create a function that calculates the age of an employee based on their hire date.

### Problem Statement

Write a function Calculate_Age that takes an EMPLOYEE_ID as input and returns the employee's age in years. Use the HIRE_DATE from the Employees table for the calculation.

### Questions for Students

- How can you handle cases where the EMPLOYEE_ID does not exist? What built-in functions will you use to calculate the difference between dates?

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## II. Exercise: Get Employee Full Name

### Objective

Create a function to retrieve an employee's full name.

### Problem Statement

Write a function Get_Employee_Full_Name that takes an EMPLOYEE_ID and returns the full name of the employee in the format "FirstName LastName".

### Questions for Students

- How can you ensure that the function handles null or missing values in the names?
- What would happen if an invalid EMPLOYEE_ID is provided?

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## III. Exercise: Calculate Total Salary for Department

**Objective**

Create a function to calculate the total salary of all employees in a given department.

**Problem Statement**

Write a function Total_Salary_By_Department that takes a DEPARTMENT_ID and returns the total salary of all employees in that department.

**Questions for Students**

- What approach will you take if the DEPARTMENT_ID does not exist?
- How will you use aggregate functions to compute the total salary?

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## IV. Exercise: Employee Bonus Calculation

**Objective**

Create a function to calculate an employee's bonus based on their performance rating.

**Problem Statement**

Write a function Calculate_Bonus that takes an EMPLOYEE_ID and returns the bonus amount. The bonus is calculated as follows:

- 10% of the salary for a performance rating of 4 or higher.
- 5% of the salary for a performance rating between 3 and 4.
- 0 for a performance rating below 3.

**Questions for Students**

- How can you ensure the function checks for valid performance ratings?
- What approach will you take if the employee has no salary recorded?

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## V. Exercise: Get Employee Count by Department

**Objective**

Create a function that returns the count of employees in a specific department.

**Problem Statement**

Write a function Count_Employees_By_Department that takes a DEPARTMENT_ID as input and returns the number of employees in that department.

**Questions for Students**

- How can you handle a situation where a department has no employees?
- What data types will you choose for the return value and parameters?

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**Exercise: Calculate Customer Payment Amount**

**Objective**
Create a function that calculates the amount a customer needs to pay after considering insurance coverage and discounts.

**Problem Statement**
Write a function Calculate_Customer_Payment that takes the following parameters:

- total_cost: The total cost of the prescription.
- insurance_coverage: The percentage of the total cost covered by the customer's insurance (in decimal form, e.g., 0.8 for 80% coverage).
- discount: The discount percentage applied to the total cost (in decimal form, e.g., 0.1 for a 10% discount).

The function should return the amount the customer needs to pay after applying the insurance coverage and any applicable discounts.

**Questions for Students**

- How will you handle situations where the total cost is zero or negative?
- What data types will you choose for the return value and parameters?
- How would you ensure that the discount and insurance coverage do not exceed logical limits (e.g., both exceeding 100%)?
- What considerations should you make regarding error handling, such as invalid input types or negative percentages?

**Good luck with your Exercises!** If you need any more help, feel free to reach out.