**Exercise 4: Functions**

**Scenario 1:** Calculate the age of customers for eligibility checks.

* **Question:** Write a function CalculateAge that takes a customer's date of birth as input and returns their age in years.

**Answer:**

DELIMITER //

CREATE FUNCTION CalculateAge(dob DATE) RETURNS INT

DETERMINISTIC

READS SQL DATA

BEGIN

DECLARE age INT;

SET age = TIMESTAMPDIFF(YEAR, dob, CURDATE());

RETURN age;

END //

DELIMITER ;

**Scenario 2:** The bank needs to compute the monthly installment for a loan.

* **Question:** Write a function CalculateMonthlyInstallment that takes the loan amount, interest rate, and loan duration in years as input and returns the monthly installment amount.

**Answer:**

DELIMITER //

CREATE FUNCTION CalculateMonthlyInstallment (loanAmount DECIMAL(10,2), interestRate DECIMAL(5,2), loanDurationYears INT) RETURNS DECIMAL(10,2)

DETERMINISTIC

READS SQL DATA

BEGIN

DECLARE monthlyRate DECIMAL(5,2);

DECLARE numberOfPayments INT;

DECLARE monthlyInstallment DECIMAL(10,2);

SET monthlyRate = interestRate / 1200;

SET numberOfPayments = loanDurationYears \* 12;

SET monthlyInstallment = loanAmount \* monthlyRate / (1 - POWER(1 + monthlyRate, -numberOfPayments));

RETURN monthlyInstallment;

END//

DELIMITER ;

**Scenario 3:** Check if a customer has sufficient balance before making a transaction.

* **Question:** Write a function HasSufficientBalance that takes an account ID and an amount as input and returns a boolean indicating whether the account has at least the specified amount.

**Answer:**

DELIMITER //

CREATE FUNCTION HasSufficientBalance(accountID INT, amount DECIMAL(10,2)) RETURNS BOOLEAN

DETERMINISTIC

READS SQL DATA

BEGIN

DECLARE balance DECIMAL(10,2);

SET balance = (SELECT Balance FROM Accounts WHERE AccountID = accountID);

RETURN balance >= amount;

END//

DELIMITER ;