**Exercise 3: Stored Procedures**

**Scenario 1:** The bank needs to process monthly interest for all savings accounts.

* + **Question:** Write a stored procedure **ProcessMonthlyInterest** that calculates and updates the balance of all savings accounts by applying an interest rate of 1% to the current balance.

**Scenario 2:** The bank wants to implement a bonus scheme for employees based on their performance.

* + **Question:** Write a stored procedure **UpdateEmployeeBonus** that updates the salary of employees in a given department by adding a bonus percentage passed as a parameter.

**Scenario 3:** Customers should be able to transfer funds between their accounts.

* + **Question:** Write a stored procedure **TransferFunds** that transfers a specified amount from one account to another, checking that the source account has sufficient balance before making the transfer.

-- Create tables with sample data

CREATE TABLE accounts (

    account\_id NUMBER PRIMARY KEY,

    account\_type VARCHAR2(20),

    balance NUMBER

);

INSERT INTO accounts VALUES (1, 'SAVINGS', 1000);

INSERT INTO accounts VALUES (2, 'SAVINGS', 2000);

INSERT INTO accounts VALUES (3, 'CHECKING', 500);

COMMIT;

CREATE TABLE employees (

    employee\_id NUMBER PRIMARY KEY,

    department\_id NUMBER,

    salary NUMBER

);

INSERT INTO employees VALUES (1, 10, 3000);

INSERT INTO employees VALUES (2, 10, 4000);

INSERT INTO employees VALUES (3, 20, 5000);

COMMIT;

-- Stored procedure to process monthly interest

CREATE OR REPLACE PROCEDURE ProcessMonthlyInterest AS

BEGIN

    UPDATE accounts

    SET balance = balance + (balance \* 0.01)

    WHERE account\_type = 'SAVINGS';

END;

/

EXEC ProcessMonthlyInterest;

SELECT \* FROM accounts;

-- Stored procedure to update employee bonuses

CREATE OR REPLACE PROCEDURE UpdateEmployeeBonus(p\_department\_id NUMBER, p\_bonus\_percent NUMBER) AS

BEGIN

    UPDATE employees

    SET salary = salary + (salary \* p\_bonus\_percent / 100)

    WHERE department\_id = p\_department\_id;

END;

/

EXEC UpdateEmployeeBonus(10, 10);

SELECT \* FROM employees;

-- Stored procedure to transfer funds

CREATE OR REPLACE PROCEDURE TransferFunds(p\_from\_account NUMBER, p\_to\_account NUMBER, p\_amount NUMBER) AS

    v\_balance NUMBER;

BEGIN

    SELECT balance INTO v\_balance FROM accounts WHERE account\_id = p\_from\_account FOR UPDATE;

    IF v\_balance >= p\_amount THEN

        UPDATE accounts SET balance = balance - p\_amount WHERE account\_id = p\_from\_account;

        UPDATE accounts SET balance = balance + p\_amount WHERE account\_id = p\_to\_account;

        COMMIT;

    ELSE

        RAISE\_APPLICATION\_ERROR(-20001, 'Insufficient balance');

    END IF;

END;

/

EXEC TransferFunds(2, 3, 500);

SELECT \* FROM accounts;

-- Show tables to verify

SELECT \* FROM accounts;

SELECT \* FROM employees;









