WEEK 2

EXERCISE 1

SET SERVEROUTPUT ON;

CREATE TABLE Customers (

    CustomerID NUMBER PRIMARY KEY,

    Name VARCHAR2(100),

    DOB DATE,

    Balance NUMBER,

    LastModified DATE

);

CREATE TABLE Accounts (

    AccountID NUMBER PRIMARY KEY,

    CustomerID NUMBER,

    AccountType VARCHAR2(20),

    Balance NUMBER,

    LastModified DATE,

    FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)

);

CREATE TABLE Transactions (

    TransactionID NUMBER PRIMARY KEY,

    AccountID NUMBER,

    TransactionDate DATE,

    Amount NUMBER,

    TransactionType VARCHAR2(10),

    FOREIGN KEY (AccountID) REFERENCES Accounts(AccountID)

);

CREATE TABLE Employees (

    EmployeeID NUMBER PRIMARY KEY,

    Name VARCHAR2(100),

    Position VARCHAR2(50),

    Salary NUMBER,

    Department VARCHAR2(50),

    HireDate DATE

);

INSERT INTO Customers VALUES (1, 'Alice', TO\_DATE('1950-05-10', 'YYYY-MM-DD'), 15000, SYSDATE);

INSERT INTO Customers VALUES (2, 'Bob', TO\_DATE('1985-08-21', 'YYYY-MM-DD'), 8000, SYSDATE);

INSERT INTO Accounts VALUES (101, 1, 'Savings', 10000, SYSDATE);

INSERT INTO Accounts VALUES (102, 1, 'Current', 3000, SYSDATE);

INSERT INTO Accounts VALUES (103, 2, 'Savings', 5000, SYSDATE);

INSERT INTO Employees VALUES (1, 'John', 'Manager', 50000, 'Sales', SYSDATE);

INSERT INTO Employees VALUES (2, 'Jane', 'Clerk', 30000, 'Sales', SYSDATE);

INSERT INTO Employees VALUES (3, 'Max', 'Analyst', 40000, 'IT', SYSDATE);

1)

CREATE OR REPLACE PROCEDURE ProcessMonthlyInterest IS

BEGIN

  FOR acc IN (SELECT \* FROM Accounts WHERE AccountType = 'Savings') LOOP

    UPDATE Accounts

    SET Balance = Balance + (Balance \* 0.01),

        LastModified = SYSDATE

    WHERE AccountID = acc.AccountID;

    DBMS\_OUTPUT.PUT\_LINE('Interest added to AccountID: ' || acc.AccountID);

  END LOOP;

END;

2)

CREATE OR REPLACE PROCEDURE UpdateEmployeeBonus(dept IN VARCHAR2, bonusPercent IN NUMBER) IS

BEGIN

  FOR emp IN (SELECT \* FROM Employees WHERE Department = dept) LOOP

    UPDATE Employees

    SET Salary = Salary + (Salary \* bonusPercent / 100)

    WHERE EmployeeID = emp.EmployeeID;

    DBMS\_OUTPUT.PUT\_LINE('Bonus applied to ' || emp.Name || ' in ' || dept);

  END LOOP;

END;

3)

CREATE OR REPLACE PROCEDURE TransferFunds(

    fromAccID IN NUMBER,

    toAccID IN NUMBER,

    amount IN NUMBER

) IS

  fromBalance NUMBER;

BEGIN

  SELECT Balance INTO fromBalance FROM Accounts WHERE AccountID = fromAccID FOR UPDATE;

  IF fromBalance < amount THEN

    DBMS\_OUTPUT.PUT\_LINE('Insufficient funds in account: ' || fromAccID);

  ELSE

    UPDATE Accounts SET Balance = Balance - amount WHERE AccountID = fromAccID;

    UPDATE Accounts SET Balance = Balance + amount WHERE AccountID = toAccID;

    DBMS\_OUTPUT.PUT\_LINE('Transferred ' || amount || ' from ' || fromAccID || ' to ' || toAccID);

  END IF;

EXCEPTION

  WHEN NO\_DATA\_FOUND THEN

    DBMS\_OUTPUT.PUT\_LINE('One of the accounts not found.');

END;

BEGIN

  DBMS\_OUTPUT.PUT\_LINE('--- Interest Processing ---');

  ProcessMonthlyInterest;

  DBMS\_OUTPUT.PUT\_LINE('--- Apply Bonus to Sales Department ---');

  UpdateEmployeeBonus('Sales', 10);

  DBMS\_OUTPUT.PUT\_LINE('--- Fund Transfer ---');

  TransferFunds(101, 102, 1000);

END;