**Exercise 6: Cursors**

**Scenario 1:** Generate monthly statements for all customers.

**Question:** Write a PL/SQL block using an explicit cursor **GenerateMonthlyStatements** that retrieves all transactions for the current month and prints a statement for each customer.

DECLARE

CURSOR c\_transactions IS

SELECT

t.TransactionID,

t.AccountID,

a.CustomerID,

t.TransactionDate,

t.Amount,

t.TransactionType

FROM Transactions t

JOIN Accounts a ON t.AccountID = a.AccountID

WHERE EXTRACT(MONTH FROM t.TransactionDate) = EXTRACT(MONTH FROM SYSDATE)

AND EXTRACT(YEAR FROM t.TransactionDate) = EXTRACT(YEAR FROM SYSDATE);

v\_customer\_id Accounts.CustomerID%TYPE;

v\_statement VARCHAR2(4000);

BEGIN

FOR r\_transaction IN c\_transactions LOOP

v\_customer\_id := r\_transaction.CustomerID;

v\_statement := 'Customer ID: ' || v\_customer\_id || CHR(10) ||

'Transaction ID: ' || r\_transaction.TransactionID || CHR(10) ||

'Account ID: ' || r\_transaction.AccountID || CHR(10) ||

'Date: ' || TO\_CHAR(r\_transaction.TransactionDate, 'YYYY-MM-DD') || CHR(10) ||

'Amount: ' || r\_transaction.Amount || CHR(10) ||

'Type: ' || r\_transaction.TransactionType || CHR(10);

DBMS\_OUTPUT.PUT\_LINE(v\_statement);

END LOOP;

END;

**Scenario 2:** Apply annual fee to all accounts.

**Question:** Write a PL/SQL block using an explicit cursor **ApplyAnnualFee** that deducts an annual maintenance fee from the balance of all accounts.

DECLARE

CURSOR c\_accounts IS

SELECT AccountID, Balance

FROM Accounts;

v\_account\_id Accounts.AccountID%TYPE;

v\_balance Accounts.Balance%TYPE;

v\_annual\_fee NUMBER := 50;

BEGIN

FOR r\_account IN c\_accounts LOOP

v\_account\_id := r\_account.AccountID;

v\_balance := r\_account.Balance;

UPDATE Accounts

SET Balance = Balance - v\_annual\_fee

WHERE AccountID = v\_account\_id;

DBMS\_OUTPUT.PUT\_LINE('Account ID: ' || v\_account\_id || ' - New Balance: ' || (v\_balance - v\_annual\_fee));

END LOOP;

COMMIT;

END;

**Scenario 3:** Update the interest rate for all loans based on a new policy.

**Question:** Write a PL/SQL block using an explicit cursor **UpdateLoanInterestRates** that fetches all loans and updates their interest rates based on the new policy.

DECLARE

CURSOR c\_loans IS

SELECT LoanID, InterestRate

FROM Loans;

v\_loan\_id Loans.LoanID%TYPE;

v\_interest\_rate Loans.InterestRate%TYPE;

v\_new\_interest\_rate NUMBER;

BEGIN

FOR r\_loan IN c\_loans LOOP

v\_loan\_id := r\_loan.LoanID;

v\_interest\_rate := r\_loan.InterestRate;

v\_new\_interest\_rate := v\_interest\_rate \* 1.05;

UPDATE Loans

SET InterestRate = v\_new\_interest\_rate

WHERE LoanID = v\_loan\_id;

DBMS\_OUTPUT.PUT\_LINE('Loan ID: ' || v\_loan\_id || ' - New Interest Rate: ' || v\_new\_interest\_rate);

END LOOP;

COMMIT;

END;