**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.

**Answer:**

DECLARE

CURSOR cur\_transactions IS

SELECT c.CustomerID, c.Name, t.TransactionDate, t.Amount, t.TransactionType

FROM Customers c

JOIN Accounts a ON c.CustomerID = a.CustomerID

JOIN Transactions t ON a.AccountID = t.AccountID

WHERE t.TransactionDate BETWEEN TRUNC(SYSDATE, 'MM') AND LAST\_DAY(SYSDATE);

v\_customerID Customers.CustomerID%TYPE;

v\_name Customers.Name%TYPE;

v\_transactionDate Transactions.TransactionDate%TYPE;

v\_amount Transactions.Amount%TYPE;

v\_transactionType Transactions.TransactionType%TYPE;

BEGIN

OPEN cur\_transactions;

LOOP

FETCH cur\_transactions INTO v\_customerID, v\_name, v\_transactionDate, v\_amount, v\_transactionType;

EXIT WHEN cur\_transactions%NOTFOUND;

DBMS\_OUTPUT.PUT\_LINE('Customer: ' || v\_name || ' (' || v\_customerID || ')');

DBMS\_OUTPUT.PUT\_LINE('Transaction Date: ' || v\_transactionDate);

DBMS\_OUTPUT.PUT\_LINE('Amount: ' || v\_amount || ' Type: ' || v\_transactionType);

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

END LOOP;

CLOSE cur\_transactions;

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.

**Answer:**

DECLARE

CURSOR cur\_accounts IS

SELECT AccountID, Balance

FROM Accounts;

v\_accountID Accounts.AccountID%TYPE;

v\_balance Accounts.Balance%TYPE;

v\_annualFee CONSTANT NUMBER := 100;

BEGIN

OPEN cur\_accounts;

LOOP

FETCH cur\_accounts INTO v\_accountID, v\_balance;

EXIT WHEN cur\_accounts%NOTFOUND;

UPDATE Accounts

SET Balance = Balance - v\_annualFee

WHERE AccountID = v\_accountID;

DBMS\_OUTPUT.PUT\_LINE('Account ID: ' || v\_accountID || ' New Balance: ' || (v\_balance - v\_annualFee));

END LOOP;

CLOSE cur\_accounts;

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.

**Answer:**

DECLARE

CURSOR cur\_loans IS

SELECT LoanID, InterestRate

FROM Loans;

v\_loanID Loans.LoanID%TYPE;

v\_interestRate Loans.InterestRate%TYPE;

v\_newInterestRate CONSTANT NUMBER := 5;

BEGIN

OPEN cur\_loans;

LOOP

FETCH cur\_loans INTO v\_loanID, v\_interestRate;

EXIT WHEN cur\_loans%NOTFOUND;

UPDATE Loans

SET InterestRate = v\_newInterestRate

WHERE LoanID = v\_loanID;

DBMS\_OUTPUT.PUT\_LINE('Loan ID: ' || v\_loanID || ' New Interest Rate: ' || v\_newInterestRate);

END LOOP;

CLOSE cur\_loans;

END;