**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

*-- Define a record type for the cursor*

CURSOR transactions\_cursor IS

SELECT c.CustomerID, c.Name, t.TransactionID, 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);

transaction\_record transactions\_cursor%ROWTYPE;

BEGIN

*-- Open the cursor*

OPEN transactions\_cursor;

*-- Loop through the cursor*

LOOP

*-- Fetch each record*

FETCH transactions\_cursor INTO transaction\_record;

*-- Exit when no more records are found*

EXIT WHEN transactions\_cursor%NOTFOUND;

*-- Print the statement for each customer*

DBMS\_OUTPUT.PUT\_LINE('Customer ID: ' || transaction\_record.CustomerID);

DBMS\_OUTPUT.PUT\_LINE('Customer Name: ' || transaction\_record.Name);

DBMS\_OUTPUT.PUT\_LINE('Transaction ID: ' || transaction\_record.TransactionID);

DBMS\_OUTPUT.PUT\_LINE('Transaction Date: ' || TO\_CHAR(transaction\_record.TransactionDate, 'YYYY-MM-DD'));

DBMS\_OUTPUT.PUT\_LINE('Transaction Amount: ' || transaction\_record.Amount);

DBMS\_OUTPUT.PUT\_LINE('Transaction Type: ' || transaction\_record.TransactionType);

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

END LOOP;

*-- Close the cursor*

CLOSE transactions\_cursor;

END;

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**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

-- Define the annual maintenance fee

v\_AnnualFee NUMBER := 50; *-- Example annual fee amount*

*-- Define a cursor to retrieve all accounts*

CURSOR accounts\_cursor IS

SELECT AccountID, Balance

FROM Accounts;

*-- Define a record type for the cursor*

account\_record accounts\_cursor%ROWTYPE;

BEGIN

*-- Open the cursor*

OPEN accounts\_cursor;

*-- Loop through the cursor*

LOOP

*-- Fetch each record*

FETCH accounts\_cursor INTO account\_record;

*-- Exit when no more records are found*

EXIT WHEN accounts\_cursor%NOTFOUND;

*-- Deduct the annual fee from the account balance*

UPDATE Accounts

SET Balance = Balance - v\_AnnualFee,

LastModified = SYSDATE

WHERE AccountID = account\_record.AccountID;

*-- Print the updated account information*

DBMS\_OUTPUT.PUT\_LINE('Account ID: ' || account\_record.AccountID);

DBMS\_OUTPUT.PUT\_LINE('New Balance: ' || (account\_record.Balance - v\_AnnualFee));

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

END LOOP;

*-- Close the cursor*

CLOSE accounts\_cursor;

END;

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**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

*-- Define the new interest rate policy (example: increase by 0.5%)*

v\_NewInterestRateIncrease NUMBER := 0.5;

*-- Define a cursor to retrieve all loans*

CURSOR loans\_cursor IS

SELECT LoanID, InterestRate

FROM Loans;

*-- Define a record type for the cursor*

loan\_record loans\_cursor%ROWTYPE;

BEGIN

*-- Open the cursor*

OPEN loans\_cursor;

*-- Loop through the cursor*

LOOP

*-- Fetch each record*

FETCH loans\_cursor INTO loan\_record;

*-- Exit when no more records are found*

EXIT WHEN loans\_cursor%NOTFOUND;

*-- Update the interest rate based on the new policy*

UPDATE Loans

SET InterestRate = InterestRate + v\_NewInterestRateIncrease

WHERE LoanID = loan\_record.LoanID;

*-- Print the updated loan information*

DBMS\_OUTPUT.PUT\_LINE('Loan ID: ' || loan\_record.LoanID);

DBMS\_OUTPUT.PUT\_LINE('Old Interest Rate: ' || loan\_record.InterestRate);

DBMS\_OUTPUT.PUT\_LINE('New Interest Rate: ' || (loan\_record.InterestRate + v\_NewInterestRateIncrease));

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

END LOOP;

*-- Close the cursor*

CLOSE loans\_cursor;

END;

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