**Exercise 6: Cursors**

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

DECLARE

CURSOR GenerateMonthlyStatements 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 EXTRACT(MONTH FROM t.TransactionDate) = EXTRACT(MONTH FROM SYSDATE)

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

FOR rec IN GenerateMonthlyStatements LOOP

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

DBMS\_OUTPUT.PUT\_LINE('Name: ' || rec.Name);

DBMS\_OUTPUT.PUT\_LINE('Transaction Date: ' || rec.TransactionDate);

DBMS\_OUTPUT.PUT\_LINE('Amount: ' || rec.Amount);

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

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

END LOOP;

END;

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

DECLARE

CURSOR ApplyAnnualFee IS

SELECT AccountID, Balance

FROM Accounts;

v\_AccountID Accounts.AccountID%TYPE;

v\_Balance Accounts.Balance%TYPE;

annual\_fee CONSTANT NUMBER := 50; -- Example annual maintenance fee

BEGIN

FOR rec IN ApplyAnnualFee LOOP

UPDATE Accounts

SET Balance = rec.Balance - annual\_fee, LastModified = SYSDATE

WHERE AccountID = rec.AccountID;

DBMS\_OUTPUT.PUT\_LINE('Account ID: ' || rec.AccountID || ' - Fee Applied: ' || annual\_fee);

END LOOP;

COMMIT;

END;

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

ALTER TABLE Loans

ADD (LastModified TIMESTAMP);

DECLARE

CURSOR UpdateLoanInterestRates IS

SELECT LoanID, InterestRate

FROM Loans;

v\_LoanID Loans.LoanID%TYPE;

v\_InterestRate Loans.InterestRate%TYPE;

new\_interest\_rate CONSTANT NUMBER := 6.0;

BEGIN

FOR rec IN UpdateLoanInterestRates LOOP

BEGIN

UPDATE Loans

SET InterestRate = new\_interest\_rate,

LastModified = SYSDATE -- Or SYSTIMESTAMP if using TIMESTAMP

WHERE LoanID = rec.LoanID;

DBMS\_OUTPUT.PUT\_LINE('Loan ID: ' || rec.LoanID || ' - New Interest Rate: ' || new\_interest\_rate);

EXCEPTION

WHEN OTHERS THEN

DBMS\_OUTPUT.PUT\_LINE('Error updating Loan ID: ' || rec.LoanID || ' - ' || SQLERRM);

END;

END LOOP;

COMMIT;

EXCEPTION

WHEN OTHERS THEN

DBMS\_OUTPUT.PUT\_LINE('General Error: ' || SQLERRM);

ROLLBACK;

END;

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