**PL/SQL PROGRAMMING**

**Exercise 1: Control Structures**

**SCENARIO 1:**

BEGIN

FOR x IN (SELECT customer\_id, interest\_rate FROM customers WHERE age > 60) LOOP

UPDATE customers

SET interest\_rate = interest\_rate - 0.01

WHERE customer\_id =x.customer\_id;

END LOOP;

COMMIT;

END;

**SCENARIO 2:**

BEGIN

FOR x IN (SELECT customer\_id FROM customers WHERE balance > 10000) LOOP

UPDATE customers

SET is\_vip = 'TRUE'

WHERE customer\_id =x.customer\_id;

END LOOP;

COMMIT;

END;

**SCENARIO 3:**

BEGIN

FOR loan\_rec IN (

SELECT customer\_id, loan\_id, due\_date

FROM loans

WHERE due\_date BETWEEN SYSDATE AND SYSDATE + 30

) LOOP

DBMS\_OUTPUT.PUT\_LINE('Reminder: Loan ' || loan\_rec.loan\_id ||

' for Customer ' || loan\_rec.customer\_id ||

' is due on ' || TO\_CHAR(loan\_rec.due\_date, 'DD-MON-YYYY'));

END LOOP;

END;

**Exercise 3: Stored Procedures**

**SCENARIO 1:**

CREATE OR REPLACE PROCEDURE ProcessMonthlyInterest IS

BEGIN

FOR acc IN (

SELECT account\_id, balance

FROM accounts

WHERE account\_type = 'SAVINGS'

) LOOP

UPDATE accounts

SET balance = acc.balance + (acc.balance \* 0.01)

WHERE account\_id = acc.account\_id;

END LOOP;

COMMIT;

END;

**SCENARIO 2:**

CREATE OR REPLACE PROCEDURE UpdateEmployeeBonus(

p\_dept\_id IN NUMBER,

p\_bonus\_percent IN NUMBER

) IS

BEGIN

FOR emp IN (

SELECT employee\_id, salary

FROM employees

WHERE department\_id = p\_dept\_id

) LOOP

UPDATE employees

SET salary = emp.salary + (emp.salary \* p\_bonus\_percent / 100)

WHERE employee\_id = emp.employee\_id;

END LOOP;

COMMIT;

END;

**SCENARIO 3:**

CREATE OR REPLACE PROCEDURE TransferFunds(

p\_from\_account IN NUMBER,

p\_to\_account IN NUMBER,

p\_amount IN NUMBER

) IS

v\_balance NUMBER;

BEGIN

-- Check source account balance

SELECT balance INTO v\_balance

FROM accounts

WHERE account\_id = p\_from\_account

FOR UPDATE;

IF v\_balance < p\_amount THEN

RAISE\_APPLICATION\_ERROR(-20001, 'Insufficient funds in source account');

END IF;

-- Deduct from source

UPDATE accounts

SET balance = balance - p\_amount

WHERE account\_id = p\_from\_account;

-- Add to destination

UPDATE accounts

SET balance = balance + p\_amount

WHERE account\_id = p\_to\_account;

COMMIT;

END;