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**Exercise 3: Stored Procedures**

**Scenario 1:** The bank needs to process monthly interest for all savings accounts.

**Question**: Write a stored procedure ProcessMonthlyInterest that calculates and updates the balance of all savings accounts by applying an interest rate of 1% to the current balance.

CREATE OR REPLACE PROCEDURE ProcessMonthlyInterest IS

CURSOR cur\_savings\_accounts IS

SELECT account\_id, balance

FROM accounts

WHERE account\_type = 'Savings';

BEGIN

FOR account\_rec IN cur\_savings\_accounts LOOP

UPDATE accounts

SET balance = balance + (balance \* 0.01)

WHERE account\_id = account\_rec.account\_id;

END LOOP;

COMMIT;

END ProcessMonthlyInterest;

**Scenario 2:** The bank wants to implement a bonus scheme for employees based on their performance.

**Question**: Write a stored procedure UpdateEmployeeBonus that updates the salary of employees in a given department by adding a bonus percentage passed as a parameter.

CREATE OR REPLACE PROCEDURE UpdateEmployeeBonus (

p\_department\_id IN NUMBER,

p\_bonus\_percentage IN NUMBER

) IS

BEGIN

UPDATE employees

SET salary = salary + (salary \* p\_bonus\_percentage / 100)

WHERE department\_id = p\_department\_id;

COMMIT;

END UpdateEmployeeBonus;

**Scenario 3:** Customers should be able to transfer funds between their accounts.

**Question:** Write a stored procedure TransferFunds that transfers a specified amount from one account to another, checking that the source account has sufficient balance before making the transfer.

CREATE OR REPLACE PROCEDURE TransferFunds (

p\_from\_account\_id IN NUMBER,

p\_to\_account\_id IN NUMBER,

p\_amount IN NUMBER

) IS

insufficient\_funds EXCEPTION;

v\_balance NUMBER;

BEGIN

SELECT balance INTO v\_balance

FROM accounts

WHERE account\_id = p\_from\_account\_id

FOR UPDATE;

IF v\_balance < p\_amount THEN

RAISE insufficient\_funds;

END IF;

UPDATE accounts

SET balance = balance - p\_amount

WHERE account\_id = p\_from\_account\_id;

UPDATE accounts

SET balance = balance + p\_amount

WHERE account\_id = p\_to\_account\_id;

COMMIT;

EXCEPTION

WHEN insufficient\_funds THEN

ROLLBACK;

INSERT INTO error\_log (error\_message, error\_time)

VALUES ('Insufficient funds for account ' || p\_from\_account\_id, SYSDATE);

WHEN OTHERS THEN

ROLLBACK;

INSERT INTO error\_log (error\_message, error\_time)

VALUES (SQLERRM, SYSDATE);

END TransferFunds;