Week-2

PL SQL programming

**Exercise 6: Cursors**

BEGIN

EXECUTE IMMEDIATE 'DROP TABLE Transactions CASCADE CONSTRAINTS';

EXCEPTION WHEN OTHERS THEN IF SQLCODE != -942 THEN RAISE; END IF;

END;

/

BEGIN

EXECUTE IMMEDIATE 'DROP TABLE Accounts CASCADE CONSTRAINTS';

EXCEPTION WHEN OTHERS THEN IF SQLCODE != -942 THEN RAISE; END IF;

END;

/

BEGIN

EXECUTE IMMEDIATE 'DROP TABLE Loans CASCADE CONSTRAINTS';

EXCEPTION WHEN OTHERS THEN IF SQLCODE != -942 THEN RAISE; END IF;

END;

/

BEGIN

EXECUTE IMMEDIATE 'DROP TABLE Employees CASCADE CONSTRAINTS';

EXCEPTION WHEN OTHERS THEN IF SQLCODE != -942 THEN RAISE; END IF;

END;

/

BEGIN

EXECUTE IMMEDIATE 'DROP TABLE Customers CASCADE CONSTRAINTS';

EXCEPTION WHEN OTHERS THEN IF SQLCODE != -942 THEN RAISE; END IF;

END;

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-- Now recreate schema

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CREATE TABLE Customers (

CustomerID NUMBER PRIMARY KEY,

Name VARCHAR2(100),

DOB DATE,

Balance NUMBER,

LastModified DATE

);

CREATE TABLE Accounts (

AccountID NUMBER PRIMARY KEY,

CustomerID NUMBER,

AccountType VARCHAR2(20),

Balance NUMBER,

LastModified DATE,

FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)

);

CREATE TABLE Transactions (

TransactionID NUMBER PRIMARY KEY,

AccountID NUMBER,

TransactionDate DATE,

Amount NUMBER,

TransactionType VARCHAR2(10),

FOREIGN KEY (AccountID) REFERENCES Accounts(AccountID)

);

CREATE TABLE Loans (

LoanID NUMBER PRIMARY KEY,

CustomerID NUMBER,

LoanAmount NUMBER,

InterestRate NUMBER,

StartDate DATE,

EndDate DATE,

FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)

);

------------------------------------------------------

-- Insert sample data

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INSERT INTO Customers VALUES (1, 'John Doe', TO\_DATE('1985-05-15','YYYY-MM-DD'), 1000, SYSDATE);

INSERT INTO Customers VALUES (2, 'Jane Smith', TO\_DATE('1990-07-20','YYYY-MM-DD'), 1500, SYSDATE);

INSERT INTO Accounts VALUES (1, 1, 'Savings', 1000, SYSDATE);

INSERT INTO Accounts VALUES (2, 2, 'Checking', 1500, SYSDATE);

INSERT INTO Transactions VALUES (1, 1, SYSDATE, 200, 'Deposit');

INSERT INTO Transactions VALUES (2, 1, SYSDATE-40, 300, 'Withdrawal');

INSERT INTO Transactions VALUES (3, 2, SYSDATE, 500, 'Deposit');

INSERT INTO Loans VALUES (1, 1, 5000, 5, SYSDATE-400, ADD\_MONTHS(SYSDATE, 60));

INSERT INTO Loans VALUES (2, 2, 6000, 6, SYSDATE-300, ADD\_MONTHS(SYSDATE, 48));

COMMIT;

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SET SERVEROUTPUT ON SIZE 1000000;

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-- Scenario 1: Generate monthly statements for all customers

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BEGIN

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

FOR c IN (SELECT CustomerID, Name FROM Customers) LOOP

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

FOR txn IN (

SELECT TransactionDate, Amount, TransactionType

FROM Transactions t

JOIN Accounts a ON t.AccountID = a.AccountID

WHERE a.CustomerID = c.CustomerID AND TRUNC(TransactionDate,'MM') = TRUNC(SYSDATE,'MM')

) LOOP

DBMS\_OUTPUT.PUT\_LINE(' '||TO\_CHAR(txn.TransactionDate,'YYYY-MM-DD')||' - '||txn.TransactionType||' - $'||txn.Amount);

END LOOP;

END LOOP;

END;

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-- Scenario 2: Apply annual fee to all accounts

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BEGIN

DBMS\_OUTPUT.PUT\_LINE('--- Applying Annual Fee ---');

FOR acc IN (SELECT AccountID, Balance FROM Accounts) LOOP

UPDATE Accounts SET Balance = Balance - 50 WHERE AccountID = acc.AccountID;

DBMS\_OUTPUT.PUT\_LINE('Account '||acc.AccountID||': Deducted annual fee of $50');

END LOOP;

COMMIT;

END;

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-- Scenario 3: Update loan interest rates

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BEGIN

DBMS\_OUTPUT.PUT\_LINE('--- Updating Loan Interest Rates ---');

FOR l IN (SELECT LoanID, InterestRate FROM Loans) LOOP

UPDATE Loans SET InterestRate = InterestRate + 0.5 WHERE LoanID = l.LoanID;

DBMS\_OUTPUT.PUT\_LINE('Loan '||l.LoanID||': InterestRate increased from '||l.InterestRate||' to '||(l.InterestRate + 0.5));

END LOOP;

COMMIT;

END;

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