**Week-2**

**PL/SQL**

**Exercise 1: Control Structures**

-- Enable output

SET SERVEROUTPUT ON;

-- Drop tables if re-running

BEGIN

EXECUTE IMMEDIATE 'DROP TABLE Transactions CASCADE CONSTRAINTS';

EXECUTE IMMEDIATE 'DROP TABLE Accounts CASCADE CONSTRAINTS';

EXECUTE IMMEDIATE 'DROP TABLE Loans CASCADE CONSTRAINTS';

EXECUTE IMMEDIATE 'DROP TABLE Customers CASCADE CONSTRAINTS';

EXECUTE IMMEDIATE 'DROP TABLE Employees CASCADE CONSTRAINTS';

EXCEPTION

WHEN OTHERS THEN NULL;

END;

/

-- Create Tables

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)

);

CREATE TABLE Employees (

EmployeeID NUMBER PRIMARY KEY,

Name VARCHAR2(100),

Position VARCHAR2(50),

Salary NUMBER,

Department VARCHAR2(50),

HireDate DATE

);

-- Insert Sample Data

INSERT INTO Customers VALUES (1, 'John Doe', TO\_DATE('1950-05-15', 'YYYY-MM-DD'), 12000, SYSDATE);

INSERT INTO Customers VALUES (2, 'Jane Smith', TO\_DATE('1990-07-20', 'YYYY-MM-DD'), 8000, 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, 2, SYSDATE, 300, 'Withdrawal');

INSERT INTO Loans VALUES (1, 1, 5000, 5, SYSDATE, SYSDATE + 15);

INSERT INTO Loans VALUES (2, 2, 4000, 6, SYSDATE, SYSDATE + 45);

INSERT INTO Employees VALUES (1, 'Alice Johnson', 'Manager', 70000, 'HR', TO\_DATE('2015-06-15', 'YYYY-MM-DD'));

INSERT INTO Employees VALUES (2, 'Bob Brown', 'Developer', 60000, 'IT', TO\_DATE('2017-03-20', 'YYYY-MM-DD'));

COMMIT;

-- Add IsVIP column

BEGIN

EXECUTE IMMEDIATE 'ALTER TABLE Customers ADD IsVIP VARCHAR2(5)';

EXCEPTION

WHEN OTHERS THEN

IF SQLCODE = -01430 THEN

NULL;

END IF;

END;

/

-- Senario 1: Apply 1% discount on interest rate for customers above 60

BEGIN

FOR c IN (

SELECT c.CustomerID, c.DOB, l.LoanID, l.InterestRate

FROM Customers c

JOIN Loans l ON c.CustomerID = l.CustomerID

) LOOP

IF MONTHS\_BETWEEN(SYSDATE, c.DOB) / 12 > 60 THEN

UPDATE Loans

SET InterestRate = InterestRate - 1

WHERE LoanID = c.LoanID;

DBMS\_OUTPUT.PUT\_LINE('1% discount applied to CustomerID: ' || c.CustomerID);

END IF;

END LOOP;

END;

/

-- Scenario 2: Set IsVIP to TRUE for customers with balance > 10000

BEGIN

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

IF c.Balance > 10000 THEN

UPDATE Customers

SET IsVIP = 'TRUE'

WHERE CustomerID = c.CustomerID;

DBMS\_OUTPUT.PUT\_LINE('Customer ' || c.CustomerID || ' marked as VIP.');

END IF;

END LOOP;

END;

/

-- Scenario 3: Print reminders for loans due in the next 30 days

BEGIN

FOR l IN (

SELECT l.LoanID, l.CustomerID, l.EndDate, c.Name

FROM Loans l

JOIN Customers c ON l.CustomerID = c.CustomerID

WHERE l.EndDate BETWEEN SYSDATE AND SYSDATE + 30

) LOOP

DBMS\_OUTPUT.PUT\_LINE(

' Reminder: Loan ' || l.LoanID || ' for ' || l.Name ||

' (CustomerID: ' || l.CustomerID || ') is due on ' || TO\_CHAR(l.EndDate, 'YYYY-MM-DD')

);

END LOOP;

END;

/

-- View updated tables

SELECT \* FROM Loans;

SELECT \* FROM Customers;

OUPUT:

A screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generated