**Week-2**

**PL/SQL programming**

**Exercise 1: Control Structures**

CREATE TABLE Customers (

CustomerID NUMBER PRIMARY KEY,

Name VARCHAR2(100),

DOB DATE,

Balance NUMBER,

LastModified DATE

);

CREATE TABLE Loans (

LoanID NUMBER PRIMARY KEY,

CustomerID NUMBER,

LoanAmount NUMBER,

InterestRate NUMBER,

StartDate DATE,

EndDate DATE,

FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)

);

INSERT INTO Customers (CustomerID, Name, DOB, Balance, LastModified)

VALUES (1, 'John Doe', TO\_DATE('1985-05-15', 'YYYY-MM-DD'), 10000, SYSDATE);

INSERT INTO Customers (CustomerID, Name, DOB, Balance, LastModified)

VALUES (2, 'Jane Smith', TO\_DATE('1990-07-20', 'YYYY-MM-DD'), 15000, SYSDATE);

INSERT INTO Customers (CustomerID, Name, DOB, Balance, LastModified)

VALUES (3, 'Will Buyer', TO\_DATE('1965-06-25', 'YYYY-MM-DD'), 5000, SYSDATE);

INSERT INTO Customers (CustomerID, Name, DOB, Balance, LastModified)

VALUES (4, 'Joyce Buyer', TO\_DATE('1950-02-15', 'YYYY-MM-DD'), 20000, SYSDATE);

INSERT INTO Loans (LoanID, CustomerID, LoanAmount, InterestRate, StartDate, EndDate)

VALUES (1, 1, 5000, 5, SYSDATE, ADD\_MONTHS(SYSDATE, 1));

INSERT INTO Loans (LoanID, CustomerID, LoanAmount, InterestRate, StartDate, EndDate)

VALUES (2, 2, 5000, 6, SYSDATE, ADD\_MONTHS(SYSDATE, 2));

INSERT INTO Loans (LoanID, CustomerID, LoanAmount, InterestRate, StartDate, EndDate)

VALUES (3, 3, 15000, 5, SYSDATE, ADD\_MONTHS(SYSDATE, 3));

INSERT INTO Loans (LoanID, CustomerID, LoanAmount, InterestRate, StartDate, EndDate)

VALUES (4, 4, 10000, 6, SYSDATE, ADD\_MONTHS(SYSDATE, 4));

ALTER TABLE Customers

ADD IsVIP CHAR(1) DEFAULT 'N';

SELECT CustomerID,

TO\_CHAR(DOB, 'YYYY-MM-DD') AS dob,

FLOOR(MONTHS\_BETWEEN(SYSDATE, DOB)/12) AS age

FROM Customers;

SELECT LoanID,

CustomerID,

LoanAmount,

InterestRate,

StartDate,

EndDate

FROM Loans;

-- Scenario one

SET SERVEROUTPUT ON;

DECLARE

CURSOR customer\_cursor IS

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

FROM Customers c

JOIN Loans l ON c.CustomerID = l.CustomerID;

v\_age NUMBER;

BEGIN

FOR cust\_rec IN customer\_cursor LOOP

v\_age := FLOOR(MONTHS\_BETWEEN(SYSDATE, cust\_rec.DOB) / 12);

IF v\_age > 60 THEN

UPDATE Loans

SET InterestRate = InterestRate - 1

WHERE LoanID = cust\_rec.LoanID;

DBMS\_OUTPUT.PUT\_LINE('Customer '||cust\_rec.CustomerID ||' is '

||v\_age|| ' years old -> new rate: ' || TO\_CHAR(cust\_rec.InterestRate - 1));

END IF;

END LOOP;

COMMIT;

END;

/

--Scenario 2

SET SERVEROUTPUT ON;

DECLARE

BEGIN

FOR cust\_rec IN (

SELECT CustomerID, Balance

FROM Customers

) LOOP

IF cust\_rec.Balance > 10000 THEN

UPDATE Customers

SET IsVIP = 'Y'

WHERE CustomerID = cust\_rec.CustomerID;

DBMS\_OUTPUT.PUT\_LINE(

'Customer ' || cust\_rec.CustomerID

|| ' (Balance=' || cust\_rec.Balance

|| ') promoted to VIP.'

);

END IF;

END LOOP;

COMMIT;

END;

/

--Scenario 3

SET SERVEROUTPUT ON;

DECLARE

CURSOR due\_soon\_cur IS

SELECT l.LoanID,l.CustomerID,

c.Name AS CustomerName,l.EndDate

FROM Loans l

JOIN Customers c ON l.CustomerID = c.CustomerID

WHERE l.EndDate BETWEEN SYSDATE AND SYSDATE + 30;

BEGIN

FOR loan\_rec IN due\_soon\_cur LOOP

DBMS\_OUTPUT.PUT\_LINE(

'Reminder Loan' || loan\_rec.LoanID

|| ' for ' || loan\_rec.CustomerName

|| ' ID ' || loan\_rec.CustomerID

|| ' is due on ' || TO\_CHAR(loan\_rec.EndDate, 'YYYY-MM-DD')

);

END LOOP;

COMMIT;

END;

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**Output:**

CUSTOMERID DOB AGE

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1 1985-05-15 40

2 1990-07-20 34

3 1965-06-25 60

4 1950-02-15 75

LOANID CUSTOMERID LOANAMOUNT INTERESTRATE STARTDATE ENDDATE

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1 1 5000 5 28-JUN-25 28-JUL-25

2 2 5000 6 28-JUN-25 28-AUG-25

3 3 15000 5 28-JUN-25 28-SEP-25

4 4 10000 6 28-JUN-25 28-OCT-25

Customer 4 is 75 years old -> new rate: 5

Customer 2 (Balance=15000) promoted to VIP.

Customer 4 (Balance=20000) promoted to VIP.

Reminder: Loan #1 for John Doe (ID=1) is due on 2025-07-28.

**Code image:**

