**Exercise 1: Control Structures**

**Step 1: Applying a Discount to Loan Interest Rates**

DECLARE

CURSOR c\_customers IS

SELECT customer\_id, age, loan\_interest\_rate

FROM customers;

v\_customer\_id customers.customer\_id%TYPE;

v\_age customers.age%TYPE;

v\_loan\_interest\_rate customers.loan\_interest\_rate%TYPE;

BEGIN

OPEN c\_customers;

LOOP

FETCH c\_customers INTO v\_customer\_id, v\_age, v\_loan\_interest\_rate;

EXIT WHEN c\_customers%NOTFOUND;

IF v\_age > 60 AND v\_loan\_interest\_rate IS NOT NULL THEN

UPDATE customers

SET loan\_interest\_rate = v\_loan\_interest\_rate \* 0.99

WHERE customer\_id = v\_customer\_id;

END IF;

END LOOP;

CLOSE c\_customers;

COMMIT;

END;

/

**Step 2: Promoting Customers to VIP Status**

DECLARE

CURSOR c\_customers IS

SELECT customer\_id, balance

FROM customers;

v\_customer\_id customers.customer\_id%TYPE;

v\_balance customers.balance%TYPE;

BEGIN

OPEN c\_customers;

LOOP

FETCH c\_customers INTO v\_customer\_id, v\_balance;

EXIT WHEN c\_customers%NOTFOUND;

IF v\_balance > 10000 THEN

UPDATE customers

SET IsVIP = TRUE

WHERE customer\_id = v\_customer\_id;

ELSE

UPDATE customers

SET IsVIP = FALSE

WHERE customer\_id = v\_customer\_id;

END IF;

END LOOP;

CLOSE c\_customers;

COMMIT;

END;

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**Step 3: Sending Loan Due Reminders**

SET SERVEROUTPUT ON;

DECLARE

CURSOR c\_loans IS

SELECT l.loan\_id, l.customer\_id, l.due\_date, c.customer\_name

FROM loans l

JOIN customers c ON l.customer\_id = c.customer\_id

WHERE l.due\_date BETWEEN SYSDATE AND SYSDATE + 30;

v\_loan\_id loans.loan\_id%TYPE;

v\_customer\_id loans.customer\_id%TYPE;

v\_due\_date loans.due\_date%TYPE;

v\_customer\_name customers.customer\_name%TYPE;

BEGIN

OPEN c\_loans;

LOOP

FETCH c\_loans INTO v\_loan\_id, v\_customer\_id, v\_due\_date, v\_customer\_name;

EXIT WHEN c\_loans%NOTFOUND;

DBMS\_OUTPUT.PUT\_LINE('Reminder: Dear ' || v\_customer\_name || ', your loan with ID ' || v\_loan\_id || ' is due on ' || TO\_CHAR(v\_due\_date, 'DD-MON-YYYY') || '.');

END LOOP;

CLOSE c\_loans;

END;

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**Example Data Insertion Scripts**

-- Creating tables

CREATE TABLE customers (

customer\_id NUMBER PRIMARY KEY,

customer\_name VARCHAR2(100),

age NUMBER,

balance NUMBER,

loan\_interest\_rate NUMBER,

IsVIP CHAR(1)

);

CREATE TABLE loans (

loan\_id NUMBER PRIMARY KEY,

customer\_id NUMBER,

due\_date DATE,

FOREIGN KEY (customer\_id) REFERENCES customers(customer\_id)

);

-- Inserting example data

INSERT INTO customers (customer\_id, customer\_name, age, balance, loan\_interest\_rate, IsVIP) VALUES (1, 'John Doe', 65, 5000, 5, 'N');

INSERT INTO customers (customer\_id, customer\_name, age, balance, loan\_interest\_rate, IsVIP) VALUES (2, 'Jane Smith', 55, 15000, 6, 'N');

INSERT INTO customers (customer\_id, customer\_name, age, balance, loan\_interest\_rate, IsVIP) VALUES (3, 'Alice Johnson', 70, 20000, 4, 'N');

INSERT INTO loans (loan\_id, customer\_id, due\_date) VALUES (1, 1, SYSDATE + 10);

INSERT INTO loans (loan\_id, customer\_id, due\_date) VALUES (2, 2, SYSDATE + 20);

INSERT INTO loans (loan\_id, customer\_id, due\_date) VALUES (3, 3, SYSDATE + 5);

COMMIT;