**Exercise 5: Triggers**

**Scenario 1: Automatically update the last modified date when a customer's record is updated.**

* + **Question:** Write a trigger UpdateCustomerLastModified that updates the LastModified column of the Customers table to the current date whenever a customer's record is updated.

**Scenario 2: Maintain an audit log for all transactions.**

* + **Question:** Write a trigger LogTransaction that inserts a record into an AuditLog table whenever a transaction is inserted into the Transactions table**.**

**Scenario 3: Enforce business rules on deposits and withdrawals.**

* + **Question:** Write a trigger CheckTransactionRules that ensures withdrawals do not exceed the balance and deposits are positive before inserting a record into the Transactions table.

**Scenario 1: UpdateCustomerLastModified**

CREATE OR REPLACE TRIGGER UpdateCustomerLastModified

BEFORE UPDATE ON Customers

FOR EACH ROW

BEGIN

:NEW.LastModified := SYSDATE;

END;

**Scenario 2: LogTransaction**

CREATE TABLE AuditLog (

LogID NUMBER PRIMARY KEY,

TransactionID NUMBER,

AccountID NUMBER,

TransactionDate DATE,

Amount NUMBER,

TransactionType VARCHAR2(10),

LogDate DATE

);

CREATE OR REPLACE TRIGGER LogTransaction

AFTER INSERT ON Transactions

FOR EACH ROW

BEGIN

INSERT INTO AuditLog (LogID, TransactionID, AccountID, TransactionDate, Amount, TransactionType, LogDate)

VALUES (AuditLog\_seq.NEXTVAL, :NEW.TransactionID, :NEW.AccountID, :NEW.TransactionDate, :NEW.Amount, :NEW.TransactionType, SYSDATE);

END;

**Scenario 3: CheckTransactionRules**

CREATE OR REPLACE TRIGGER CheckTransactionRules

BEFORE INSERT ON Transactions

FOR EACH ROW

DECLARE

v\_Balance NUMBER;

BEGIN

SELECT Balance INTO v\_Balance

FROM Accounts

WHERE AccountID = :NEW.AccountID;

IF :NEW.TransactionType = 'Withdrawal' THEN

IF :NEW.Amount > v\_Balance THEN

RAISE\_APPLICATION\_ERROR(-20001, 'Withdrawal amount exceeds balance.');

END IF;

END IF;

IF :NEW.TransactionType = 'Deposit' THEN

IF :NEW.Amount <= 0 THEN

RAISE\_APPLICATION\_ERROR(-20002, 'Deposit amount must be positive.');

END IF;

END IF;

END;