**Exercise 5: Triggers**

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

CREATE OR REPLACE TRIGGER UpdateCustomerLastModified

BEFORE UPDATE ON Customers

FOR EACH ROW

BEGIN

:NEW.LastModified := SYSDATE;

END;

/

**Test Example:**

UPDATE Customers

SET Balance = Balance + 1000

WHERE CustomerID = 1;

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

CREATE TABLE AuditLog (

LogID NUMBER GENERATED ALWAYS AS IDENTITY PRIMARY KEY,

TransactionID NUMBER,

LogDate DATE,

Message VARCHAR2(200)

);

**TRIGGER:**

CREATE OR REPLACE TRIGGER LogTransaction

AFTER INSERT ON Transactions

FOR EACH ROW

BEGIN

INSERT INTO AuditLog (TransactionID, LogDate, Message)

VALUES (:NEW.TransactionID, SYSDATE, 'Transaction inserted with Amount: ' || :NEW.Amount);

END;

/

**INSERT:**

INSERT INTO Transactions (TransactionID, AccountID, TransactionDate, Amount, TransactionType)

VALUES (3, 1, SYSDATE, 100, 'Deposit');

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**Scenario 3: Enforce Business Rules on Deposits and Withdrawals**

CREATE OR REPLACE TRIGGER CheckTransactionRules

BEFORE INSERT ON Transactions

FOR EACH ROW

DECLARE

v\_balance NUMBER;

BEGIN

-- Check for Withdrawal exceeding balance

IF :NEW.TransactionType = 'Withdrawal' THEN

SELECT Balance INTO v\_balance FROM Accounts WHERE AccountID = :NEW.AccountID;

IF :NEW.Amount > v\_balance THEN

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

END IF;

END IF;

-- Check for Deposit being positive

IF :NEW.TransactionType = 'Deposit' THEN

IF :NEW.Amount <= 0 THEN

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

END IF;

END IF;

END;

/

INSERT INTO Transactions (TransactionID, AccountID, TransactionDate, Amount, TransactionType)

VALUES (5, 1, SYSDATE, -100, 'Deposit');

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