Exercise 5

-- Scenario 1  
CREATE OR REPLACE TRIGGER UpdateCustomerLastModified  
BEFORE UPDATE ON Customers  
FOR EACH ROW  
BEGIN  
 :NEW.LastModified := SYSDATE;  
END;  
/  
  
-- Scenario 2  
CREATE TABLE AuditLog (  
 LogID NUMBER GENERATED ALWAYS AS IDENTITY,  
 TransactionID NUMBER,  
 LogDate DATE DEFAULT SYSDATE  
);  
  
CREATE OR REPLACE TRIGGER LogTransaction  
AFTER INSERT ON Transactions  
FOR EACH ROW  
BEGIN  
 INSERT INTO AuditLog(TransactionID) VALUES (:NEW.TransactionID);  
END;  
/  
  
-- Scenario 3  
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' AND :NEW.Amount > v\_balance THEN  
 RAISE\_APPLICATION\_ERROR(-20001, 'Withdrawal exceeds balance');  
 ELSIF :NEW.TransactionType = 'Deposit' AND :NEW.Amount <= 0 THEN  
 RAISE\_APPLICATION\_ERROR(-20002, 'Deposit must be positive');  
 END IF;  
END;  
/

### Scenario 1: UpdateCustomerLastModified

**Before update:**  
Customers table row:

| **CustomerID** | **Name** | **LastModified** |
| --- | --- | --- |
| 101 | Alice | 2025-05-01 10:00:00 |

**SQL:**

UPDATE Customers SET Name = 'Alice Updated' WHERE CustomerID = 101;SELECT LastModified FROM Customers WHERE CustomerID = 101;

**Output:**

26-JUN-25 <current time>

### Scenario 2: LogTransaction

INSERT INTO Transactions(TransactionID, AccountID, TransactionType, Amount)VALUES (2001, 300, 'Deposit', 500);

**Query:**

SELECT TransactionID, LogDate FROM AuditLog WHERE TransactionID = 2001;

**Output:**

| **TransactionID** | **LogDate** |
| --- | --- |
| 2001 | 26-JUN-25 <current time> |

### Scenario 3: CheckTransactionRules

Assuming account 400 has balance = 1000:

**a) Valid withdrawal**

INSERT INTO Transactions(TransactionID, AccountID, TransactionType, Amount)VALUES (3001, 400, 'Withdrawal', 500);

**Output:** Insert succeeds, no error.

**b) Withdrawal exceeds balance**

INSERT INTO Transactions(TransactionID, AccountID, TransactionType, Amount)VALUES (3002, 400, 'Withdrawal', 1500);

**Output:**

ORA-20001: Withdrawal exceeds balance

**c) Invalid deposit**

INSERT INTO Transactions(TransactionID, AccountID, TransactionType, Amount)VALUES (3003, 400, 'Deposit', 0);

**Output:**

ORA-20002: Deposit must be positive

Sources

窗体顶端

窗体底端