**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.

**Answer:**

DELIMITER //

CREATE TRIGGER UpdateCustomerLastModified

BEFORE UPDATE ON Customers

FOR EACH ROW

BEGIN

SET NEW.LastModified = CURRENT\_DATE();

END //

DELIMITER ;

**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.

**Answer:**

DELIMITER //

CREATE TABLE AuditLog (

AuditID INT AUTO\_INCREMENT PRIMARY KEY,

TransactionID INT,

LogDate DATE,

FOREIGN KEY (TransactionID) REFERENCES Transactions(TransactionID)

);

CREATE TRIGGER LogTransaction

AFTER INSERT ON Transactions

FOR EACH ROW

BEGIN

INSERT INTO AuditLog (TransactionID, LogDate) VALUES (NEW.TransactionID, CURRENT\_DATE());

END //

DELIMITER ;

**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.

**Answer:**

DELIMITER //

CREATE TRIGGER CheckTransactionRules

BEFORE INSERT ON Transactions

FOR EACH ROW

BEGIN

IF NEW.TransactionType = 'Withdrawal' AND

(SELECT Balance FROM Accounts WHERE AccountID = NEW.AccountID) < NEW.Amount THEN

SIGNAL SQLSTATE '45000' SET MESSAGE\_TEXT = 'Insufficient balance for withdrawal';

END IF;

IF NEW.TransactionType = 'Deposit' AND NEW.Amount <= 0 THEN

SIGNAL SQLSTATE '45000' SET MESSAGE\_TEXT = 'Deposit amount must be positive';

END IF;

END //

DELIMITER ;