**Question – 1**

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.

PL/SQL Code –

/\*Because the user is SYSTEM so cannot create triggers on objects owned by the SYS user.

It Rejects the Trigger

To resolve this, you should ensure that you are creating the trigger in a user schema rather than the SYS schema.

1. Connect to non-SYS user Schema: In this case I connect to \*DB\_USER\*

2. create the tables for the TRIGGER

3. create the TRIGGER \*/

-- Connect to the database as SYSDBA and grant necessary quota

CONNECT SYS/&&ORCL\_PASSWORD@&&DB\_HOST AS SYSDBA;

/\*1. in the &&ORCL\_PASSWORD paste your sys password as a String input

2. in the &&DB\_HOST paste the Database host \*/

-- Grant execute permission on DBMS\_LOCK to the user

GRANT EXECUTE ON DBMS\_LOCK TO &&DB\_USER

ALTER USER &&DB\_USER QUOTA UNLIMITED ON USERS;

CONNECT &&DB\_USER/&&DB\_PASSWORD@&&DB\_HOST

/\*3.in the &&DB\_PASSWORD paste the password of DB\_USER\*/

-- Create the Customer table (if not already created)

CREATE TABLE Customer (

CustomerID NUMBER PRIMARY KEY,

CustomerName VARCHAR2(100),

LastModified DATE

);

-- Create the trigger

CREATE OR REPLACE TRIGGER UpdateCustomerLastModified

BEFORE UPDATE ON Customer

FOR EACH ROW

BEGIN

:NEW.LastModified := SYSDATE;

END;

/

-- Insert multiple customer records

INSERT INTO Customer (CustomerID, CustomerName, LastModified)

VALUES (1, 'John Doe', TO\_DATE('2015-06-15', 'YYYY-MM-DD'));

INSERT INTO Customer (CustomerID, CustomerName, LastModified)

VALUES (2, 'Jane Smith', TO\_DATE('2018-07-25', 'YYYY-MM-DD'));

INSERT INTO Customer (CustomerID, CustomerName, LastModified)

VALUES (3, 'Alice Johnson', TO\_DATE('2015-10-15', 'YYYY-MM-DD'));

INSERT INTO Customer (CustomerID, CustomerName, LastModified)

VALUES (4, 'Bob Brown', TO\_DATE('2020-09-10', 'YYYY-MM-DD'));

-- Verify inserted records

SELECT \* FROM Customer;

-- Enable output for print statements

SET SERVEROUT ON;

-- Update customer records and print statements

BEGIN

UPDATE Customer

SET CustomerName = 'Johnathan Doe'

WHERE CustomerID = 1;

DBMS\_OUTPUT.PUT\_LINE('CustomerID 1 name changed to Johnathan Doe');

UPDATE Customer

SET CustomerName = 'Janet Smith'

WHERE CustomerID = 2;

DBMS\_OUTPUT.PUT\_LINE('CustomerID 2 name changed to Janet Smith');

END;

/

-- Verify the LastModified column before and after the updates

SELECT CustomerID, CustomerName, LastModified

FROM Customer;

-- Wait a few seconds to show the difference in LastModified timestamps

BEGIN

DBMS\_LOCK.SLEEP(2);

END;

/

-- Update another customer record to see a different timestamp

BEGIN

UPDATE Customer

SET CustomerName = 'Alicia Johnson'

WHERE CustomerID = 3;

DBMS\_OUTPUT.PUT\_LINE('CustomerID 3 name changed to Alicia Johnson');

END;

/

-- Verify the LastModified column after the last update

SELECT CustomerID, CustomerName, LastModified

FROM Customer;