1. Create a Java program using JDBC to insert a new product into the Products table and then implement a trigger in the database that updates the LastModified timestamp in the Product_Metadata table whenever a product is added or modified.

Answer:

```java
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;

public class ProductInsertion {
    private static final String URL = "jdbc:mysql://localhost:3306/your_database";
    private static final String USER = "your_username";
    private static final String PASSWORD = "your_password";


    private static Connection connection;
    private static PreparedStatement preparedStatement;

    public static void main(String[] args) {
        String productName = "New Product";
        double price = 10.99;
        int quantity = 100;

        try {

            connection = DriverManager.getConnection(URL, USER, PASSWORD);


            String sql = "INSERT INTO Products (ProductName, Price, Quantity) VALUES (?, ?, ?)";


            preparedStatement = connection.prepareStatement(sql);


            preparedStatement.setString(1, productName);
            preparedStatement.setDouble(2, price);
            preparedStatement.setInt(3, quantity);


            int rowsAffected = preparedStatement.executeUpdate();

            if (rowsAffected > 0) {
```

```java
                System.out.println("Product inserted successfully.");
            } else {
                System.out.println("Failed to insert product.");
            }
        } catch (SQLException e) {
            e.printStackTrace();
        } finally {

            try {
                if (preparedStatement != null) {
                    preparedStatement.close();
                }
                if (connection != null) {
                    connection.close();
                }
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
    }
}
```