**Exercise 4: Implementing the Adapter Pattern**

**Scenario:**

You are developing a payment processing system that needs to integrate with multiple third-party payment gateways with different interfaces. Use the Adapter Pattern to achieve this.

1. Create a new Java Project:

* Create a new Java Project named AdapterPatternExample.
* A Java project named AdapterPatternExample is created in eclipse IDE.

2. Define Target Interface:

* Create an interface **PaymentProcessor** with methods like **processPayment()**.

public interface PaymentProcessor {

void processPayment(double amount);

}

* Defines methods for processing payment.

3. Implement Adapter Classes:

* Create classes for different payment gateways with their own methods.

public class PayPal {

public void makePayment(double amount) {

System.out.println("Processing payment of $" + amount + " through PayPal.");

}

}

public class Stripe {

public void makePayment(double amount) {

System.out.println("Processing payment of $" + amount + " through Stripe.");

}

}

* Create classes for different payment gateways, each with their own methods.

4. Implement the Adapter Class:

* Create an adapter class for each payment gateway that implements PaymentProcessor and translates the calls to the gateway-specific methods

public class PayPalAdapter implements PaymentProcessor {

private PayPal payPal;

public PayPalAdapter(PayPal payPal) {

this.payPal = payPal;

}

@Override

public void processPayment(double amount) {

payPal.makePayment(amount);

}

}

public class StripeAdapter implements PaymentProcessor {

private Stripe stripe;

public StripeAdapter(Stripe stripe) {

this.stripe = stripe;

}

@Override

public void processPayment(double amount) {

stripe.makePayment(amount);

}

}

* Adapter classes for each payment gateway that implement PaymentProcessor.

5. Test the Adapter Implementation:

* Create a test class to demonstrate the use of different payment gateways through the adapter.

import java.util.Scanner;

public class Test {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Choose a payment method:");

System.out.println("1. PayPal");

System.out.println("2. Stripe");

System.out.print("Enter choice: ");

int choice = scanner.nextInt();

System.out.print("Enter the payment amount: ");

double amount = scanner.nextDouble();

PaymentProcessor paymentProcessor;

switch (choice) {

case 1:

PayPal payPal = new PayPal();

paymentProcessor = new PayPalAdapter(payPal);

break;

case 2:

Stripe stripe = new Stripe();

paymentProcessor = new StripeAdapter(stripe);

break;

default:

System.out.println("Invalid choice. Defaulting to PayPal.");

payPal = new PayPal();

paymentProcessor = new PayPalAdapter(payPal);

break;

}

paymentProcessor.processPayment(amount);

scanner.close();

}

}

* Compile and run the AdapterPatternTest class.
* The output indicates that payments are processed through PayPal and Stripe.
* Output



