Implement and apply Strategy Design pattern for simple Shopping Cart where three payment strategies are used such as Credit Card, PayPal, BitCoin. Create an interface for strategy pattern and give concrete implementation for payment.

Code:-

**package** payment;

**public** **interface** PaymentType {

**public** **void** pay(**int** amount);

}

**package** payment;

**public** **class** CreditCard **implements** PaymentType{

**private** String nameOfHolder;

**private** String cardNo;

**private** String CVV;

**private** String dateOfExpiry;

**public** CreditCard(String name, String cn, String cvv, String expiryDate) {

**this**.nameOfHolder = name;

**this**.cardNo = cn;

**this**.CVV = cvv;

**this**.dateOfExpiry = expiryDate;

}

@Override

**public** **void** pay(**int** amount) {

System.***out***.println(amount + " has been credited from your Credit card. Thank You :) ");

}

}

**package** payment;

**public** **class** PayPal **implements** PaymentType {

**private** String emailID;

**private** String password;

**public** PayPal(String mail, String pass) {

**this**.emailID = mail;

**this**.password = pass;

}

@Override

**public** **void** pay(**int** amount) {

System.***out***.println(amount + " is paid with PayPal. Thank You :) ");

}

}

**package** payment;

**public** **class** Bitcoin **implements** PaymentType {

**private** String bitcoinCardNo;

**private** String cardHolderName;

**private** String dateOfExpiry;

**public** Bitcoin(String number, String name, String expiryDate) {

**this**.bitcoinCardNo = number;

**this**.cardHolderName = name;

**this**.dateOfExpiry = expiryDate;

}

@Override

**public** **void** pay(**int** amount) {

System.***out***.println(amount + "is paid by bitcoin card.. Thank You :) ");

}

}

**package** payment;

**public** **class** Item {

**private** String upcCode;

**private** **int** price;

**public** Item(String code, **int** price) {

**this**.upcCode = code;

**this**.price = price;

}

**public** String getUpcCode() {

**return** upcCode;

}

**public** **int** getPrice() {

**return** price;

}

}

**package** payment;

**import** java.util.\*;

**import** java.text.\*;

**public** **class** Cart {

//List of the items

List<Item> items;

**public** Cart(){

**this**.items=**new** ArrayList<Item>();

}

**public** **void** addItem(Item item){

**this**.items.add(item);

}

**public** **void** removeItem(Item item){

**this**.items.remove(item);

}

**public** **int** calculateTotal(){

**int** sum = 0;

**for**(Item item : items){

sum += item.getPrice();

}

System.***out***.println("\nTotal Amount to pay : " + sum);

**return** sum;

}

**public** **void** pay(PaymentType paymentMethod){

**int** amount = calculateTotal();

paymentMethod.pay(amount);

}

**public** **void** showCart(Cart cart) {

// **TODO** Auto-generated method stub

System.***out***.println("\n -------- Bill -------");

**int** serialNo = 1;

**int** sum = 0;

**for**(Item item : items){

System.***out***.println("Item No : " + serialNo);

System.***out***.println("Item UpCode No : " + item.getUpcCode() );

System.***out***.println("Item Price : " + item.getPrice() + "\n");

serialNo++;

}

}

}

**package** payment;

**import** java.util.Scanner;

**public** **class** PaymentGateway {

**public** **static** **void** main(String[] args) {

Scanner sc = **new** Scanner (System.***in***);

Cart cart = **new** Cart();

Item item1 = **new** Item("1234",100);

Item item2 = **new** Item("5678",405);

cart.addItem(item1);

cart.addItem(item2);

cart.showCart(cart);

**int** ch;

System.***out***.print("\nChoose Payment Option\n1. PayPal\n2. Credit Card\n3. Bitcoin\nPress 0 to cancel Transaction.");

System.***out***.print("\nEnter your choice : ");

ch = sc.nextInt();

**switch**(ch) {

**case** 0 :

System.***out***.print("\nTranscation Cancelled");

**break**;

**case** 1 :

String mailId, name;

System.***out***.print("\nPayPal : ");

System.***out***.println("Enter your emailId : ");

mailId = sc.nextLine();

System.***out***.println("Enter your Name : ");

name = sc.nextLine();

cart.pay(**new** PayPal(mailId, name));

**break**;

**case** 2 :

System.***out***.print("\nCredit Card : ");

System.***out***.print("\nEnter card Holder Name : ");

String cardHolderName = sc.nextLine();

System.***out***.println("Enter card Number: ");

String cardNo = sc.nextLine();

System.***out***.println("Enter CVV: ");

String cvv = sc.nextLine();

System.***out***.println("Enter Expiry Date: ");

String expiryDate = sc.nextLine();

cart.pay(**new** CreditCard(cardHolderName, cardNo, cvv, expiryDate));

**break**;

**case** 3 :

System.***out***.print("\nBitcoin : ");

System.***out***.print("\nEnter Bitcoin card Number: ");

String bitcoinCardNo = sc.nextLine();

System.***out***.println("Enter Bitcoin card Holder Name : ");

String bitcoinCardHolderName = sc.nextLine();

System.***out***.println("nEnter Expiry Date: ");

String expiryDate1 = sc.nextLine();

cart.pay(**new** Bitcoin(bitcoinCardNo, bitcoinCardHolderName, expiryDate1));

**break**;

**default** : System.***out***.print("\nInvalid choice \nTranscation Cancelled");

**break**;

}

}

}