**Homework 3**

**Github:** <https://github.com/Dubs2310/CS5800-Homework-3.git>

**Bridge**

* MessageType

public interface MessageType {  
 public void sendMessage();  
}

* TextMessage

public class TextMessage implements MessageType {  
 @Override  
 public void sendMessage() {  
 System.*out*.print("Text sent");  
 }  
}

* ImageMessage

public class ImageMessage implements MessageType {  
 @Override  
 public void sendMessage() {  
 System.*out*.print("Image sent");  
 }  
}

* VideoMessage

public class VideoMessage implements MessageType {  
 @Override  
 public void sendMessage() {  
 System.*out*.print("Video sent");  
 }  
}

* MessagingApp

public interface MessagingApp {  
 public void sendMessage(MessageType messageType);  
}

* WhatsAppMessagingApp

public class WhatsAppMessagingApp implements MessagingApp {  
 @Override  
 public void sendMessage(MessageType messageType) {  
 messageType.sendMessage();  
 System.*out*.println(" from WhatsApp");  
 }  
}

* TelegramMessagingApp

public class TelegramMessagingApp implements MessagingApp {  
 @Override  
 public void sendMessage(MessageType messageType) {  
 messageType.sendMessage();  
 System.*out*.println(" from Telegram");  
 }  
}

* FacebookMessagingApp

public class FacebookMessagingApp implements MessagingApp {  
 @Override  
 public void sendMessage(MessageType messageType) {  
 messageType.sendMessage();  
 System.*out*.println(" from Facebook");  
 }  
}

* Main

public class Main {  
 public static void main(String[] args) {  
 MessageType text = new TextMessage();  
 MessageType image = new ImageMessage();  
 MessageType video = new VideoMessage();  
  
 MessagingApp whatsApp = new WhatsAppMessagingApp();  
 whatsApp.sendMessage(text);  
 whatsApp.sendMessage(image);  
 whatsApp.sendMessage(video);  
 System.*out*.println();  
  
 MessagingApp telegram = new TelegramMessagingApp();  
 telegram.sendMessage(text);  
 telegram.sendMessage(image);  
 telegram.sendMessage(video);  
 System.*out*.println();  
  
 MessagingApp facebook = new FacebookMessagingApp();  
 facebook.sendMessage(text);  
 facebook.sendMessage(image);  
 facebook.sendMessage(video);  
 }  
}

* Output

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**Decorator**

* FoodItem

public interface FoodItem {  
 public double getPrice();  
}

* MainFoodItem

public class MainFoodItem implements FoodItem {  
 private double price;  
 public MainFoodItem(double price) { this.price = price; }  
   
 @Override  
 public double getPrice() { return this.price; }  
}

* AddOn

public class AddOn implements FoodItem {  
 private FoodItem foodItem;  
 private double price;  
  
 public AddOn(FoodItem foodItem, double price) {  
 this.foodItem = foodItem;  
 this.price = price;  
 }  
  
 @Override  
 public double getPrice() { return foodItem.getPrice() + this.price; }  
}

* LoyaltyStatus

public class LoyaltyStatus {  
 private double discount;  
   
 public LoyaltyStatus(double discount) {  
 this.discount = discount;  
 }  
  
 public double applyDiscount(double price) {  
 return price \* (1 - discount);  
 }  
}

* Order

import java.util.ArrayList;  
  
public class Order {  
 private ArrayList<FoodItem> foodItems;  
 private LoyaltyStatus loyaltyStatus;  
  
 public Order(LoyaltyStatus loyaltyStatus) {  
 this.foodItems = new ArrayList<>();  
 this.loyaltyStatus = loyaltyStatus;  
 }  
  
 public void addItem(FoodItem foodItem) {  
 foodItems.add(foodItem);  
 }  
  
 public double getOrderTotal() {  
 double orderTotal = 0;  
 for (FoodItem foodItem : foodItems)  
 orderTotal += foodItem.getPrice();  
 return loyaltyStatus.applyDiscount(orderTotal);  
 }  
}

* Main

public class Main {  
 public static void main(String[] args) {  
 FoodItem burger = new MainFoodItem(10);  
 burger = new AddOn(burger, 3);  
 burger = new AddOn(burger, 5);  
  
 FoodItem fries = new MainFoodItem(6);  
 fries = new AddOn(fries, 2);  
  
 FoodItem drink = new MainFoodItem(3);  
 drink = new AddOn(drink, 1);  
 drink = new AddOn(drink, 0.5);  
  
 LoyaltyStatus loyaltyStatus = new LoyaltyStatus(0.25);  
 Order order = new Order(loyaltyStatus);  
  
 order.addItem(burger);  
 order.addItem(fries);  
 order.addItem(drink);  
  
 double orderTotal = order.getOrderTotal();  
 System.*out*.println("Your order total is: $" + orderTotal);  
 }  
}

* Output

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