Autoren: Marius Birk
Pieter Vogt
Tutor: Florian Brandt

Abgabe: 26.05.2020, 12:00 Uhr

Smileys:

A1	A2	A3	$\sum$

Objektorientierte Modellierung und Programmierung

Abgabe Uebungsblatt Nr.05

(Alle allgemeinen Definitionen aus der Vorlesung haben in diesem Dokument bestand, es sei den sie erhalten eine explizit andere Definition.)

Aufgabe 1

```
%%hier dein code
```

Aufgabe 2

Bill.java

```java
import java.util.ArrayList;

public class Bill {

   //fields

   String name;
   double billPrice = 0;
   ArrayList<BillItem> items = new ArrayList<>();

   //methods

   public void add(CarPart part) {
      items.add(new BillItem(part));
   }

   //getter - setter

   public double getTotalPrice() {
      return billPrice;
   }

   public String toString() {
      StringBuffer tempString = new StringBuffer("Receipt for Bill: ");
      double receipTotal = 0;
      tempString.append(this.name);
      tempString.append("\n");
      for (int i = 0; i < items.size(); i++) {
         tempString.append(items.get(i).item.getName());//add ItemName
         tempString.append("\t");
         tempString.append(items.get(i).item.getPrice());// add ItemPrice
         tempString.append("\n");
         receipTotal = receipTotal + items.get(i).item.getPrice();
      }
      tempString.append("\n");
      Math.nextUp(receipTotal);//doesn't work for some reason.
      tempString.append("In Total this receipt is: " + receipTotal);
      String output = tempString.toString();
      return output;
   }

   //constructors

   public Bill(String name) {
      this.name = name;
   }

   //nested classes

   private class BillItem {

      //fields

      CarPart item;

      //methods

      //getter - setter

      public CarPart getItem() {
         return item;
      }

      public void setItem(CarPart item) {
         this.item = item;
      }

      public BillItem(CarPart item) {
         this.item = item;
      }
   }
```

```

}
```

Car.java

```java
import java.util.ArrayList;

public class Car {
   ArrayList<CarPart> parts = new ArrayList<>();
}
```

CarComponent.java

```java
public interface CarComponent {
   public String getName();
}
```

CarPart.java

```java
public class CarPart implements CarComponent {
   String name;
   double price;

   @Override
   public String getName() {
      return null;
   }

   public double getPrice() {
      return price;
   }

   public static class Seat extends CarPart {
      String name = new String("Seat");
      double price = 2000.0;

      @Override
      public String getName() {
         return name;
      }

      public double getPrice() {
         return price;
      }
   }

   public static class Wheel extends CarPart {
      String name = new String("Wheel");

      double price = 1000.0;

      @Override
      public String getName() {
         return name;
      }

      public double getPrice() {
         return price;
      }
   }

   public static class Motor extends CarPart {
      String name = new String("Motor");

      double price = 100000;

      @Override
      public String getName() {
         return name;
      }

      public double getPrice() {
         return price;
      }
   }
}
```

Main.java

```java
public class Main {
   public static void main(String[] args) {
      Bill bill = new Bill("Rolls Royce");
      bill.add(new CarPart.Motor());
      bill.add(new CarPart.Seat());
      bill.add(new CarPart.Wheel());
      bill.add(new CarPart.Wheel());
      bill.add(new CarPart.Wheel());
      bill.add(new CarPart.Wheel());
      System.out.println(bill.toString());
   }
}
```

Aufgabe 3

```
%%hier dein code
```