CENG 211

PROGRAMMING FUNDAMENTALS

HOMEWORK-3

Due Date: 27 November 2016, 23:55

You are required to write a Java program for simulating cargo company.

***** Each cargo has the following properties:

- unique id,
- weight,
- price,
- Order date,
- Customer that sends the cargo,
- Customer that receives the cargo,
- Customer that pays for the cargo.

***** Each sender customer should have following properties:

- national id,
- name,
- phone number,
- address,
- cargoes.

***** Each receiver customer should have following properties:

- national id,
- name,
- phone number,
- address,

- cargo.

***** Each vehicle should have following properties:

- a unique id,
- Date that vehicle departures,
- Transportation type,

  → Transportation types:{ RAIL, AIR, ROAD }
- cargoes that are carried,
- the upper limit of the total cargo weight of the vehicle.

***** A company should keep following information:

- cargoes,
- vehicles,
- sender customers.

***** You should design graphical user interface (GUI) by using SWING programming. In this GUI, following operations should be available in the given sequence:

1. As a first, enter the weight of the cargo, current date and the desired transportation type. According to these information, you should check whether any available vehicle exists or not (The current date should be earlier than the departure date of the vehicle and with the given cargo, the weight limit of the vehicle should not be exceeded). If not you should take transportation type information again.

   → You should check availability of vehicles in Company.

2. If the appropriate vehicle exists, then calculate the price of the cargo. If customer accepts the price, then you should ask remaining information (Sender customer, Receiver customer, and a choice for paying the price (paid by Sender or Receiver)).

   → You should calculate the price in Company. Price should be calculated as following:

   → For air transportation: price = weight * 5.0$

   → For road transportation: price = weight * 3.5$

   → For rail transportation: price = weight * 2.0$

3. If sender customer is previously recorded on the company, then only take the information of the Receiver customer and a choice for paying the price. Finally, you should create a cargo order.

   → You should bind new cargo to the necessary classes.

***** You should have following file operations:

1. You should read vehicles from the "**vehicles.dat**" file. (**File format:** Vehicle Id, DD/MM/YYYY, Type, Weight)

2. You should write cargoes information at the end of the day to the file, named as **"CurrentDate_cargoesInfo.dat**". (**File format:** Cargo Id, Weight, Price, Date, Sender Customer id, Receiver Customer id, Customer (who paid for cargo) id). The last line of this file should consist of the total price of all cargoes ordered in that day.

IMPORTANT NOTES:

- You should use one of the **Swing layout**s for your GUI.
- You should have at least three different packages. One is for the **domain** classes, one is for the **presentation** classes, and the other one for the **file access** class (DataAccessLayer.java).
- For domain package, you should have at least following classes: Cargo.java, Vehicle.java, Customer.java, SenderCustomer.java, ReceiverCustomer.java, and Company.java.
- You should define **transportation type** as an **ENUM** class.
- You should use **INHERITANCE** approach for customer relations.
- Cargoes are sent from address of the sender to the address of the receiver.

SUBMISSION RULES:

- You should create your Java project as **ID1_ID2_HW3** and export as **ID1_ID2_HW3.zip**
- You should upload your zip file **ID1_ID2_HW3.zip** to the CMS.
- One of the group members is sufficient to upload homework to the CMS.
- You should add an author comment to the top of each class that you implement.