Due Date: 14.11.2018 23:59

Homework 2

CENG431 – Building Software Systems

In this homework you are expected to implement and design a "***Online Shopping System***" in Java. You should fulfill the concepts of:

- State Design Pattern
- Sequence Diagram

1. Suppose, an online store sells mix dried fruits to its customers. Customers have attributes which are ***id, name, address, savings, phone, email*** and ***password.*** Customer informations will be held in a file namely *customers.json*.
2. Orders have ***id, tracking number, customer id, customer name, weight, shipping address, date shipped, date delivered, product price, cargo price, total price*** and ***state*** attributes. Orders that are delivered to its customer successfully will be recorded into a file namely *orders.json*.
3. State diagram of the order is given below in Figure 1. The order will be set in each state incrementally and the next state is determined according to the following specifications:
    - **Saved:**
        - id, tracking number, customer id, customer name, shipping address and weight will be set. Id will be the next number of the latest recorded order's id. Tracking number will be a 6-figure number that is created randomly. Weight will be specified by customer.
    - **Placed:**
        - A delivery distance will be created randomly between 100-500. Cargo price will be calculated by taking 0.53 TL per km in delivery distance. Product price will be calcultaed by taking 55 TL per kg in weight.
    - **Charged:**
        - The total price of the order is set.
        - If the savings of customer smaller than the total price of the order, the next state will be Placed.
    - **Shipped:**
        - Planned and real shipping duration in days will be generated randomly between 1-10.
        - When realShippingDurationInDays – plannedShippingDurationInDays > 7, it means that Error: Not shipped.
        - When the error condition above does not hold, date shipped will be set.
    - **Delivered:**
        - Planned and real delivery duration in days will be generated randomly between 3-12.
        - When realDeliveryDurationInDays – plannedDeliveryDurationInDays > 8, it means that Error: Lost in shipping

- If the above error condition does not hold, date delivered of the order will be set.

4. Store has the following responsibilities:
    - Charge customer
    - Cancel payment
    - Ship order
    - Deliver order
5. Customer has the following responsibilities:
    - Save order
    - Submit order
    - Cancel order
    - Delete order
6. Implement a class namely Shopping, which shows the state change of order by making a customer place an order. The methods of the customer and the store will help determining the next state of the order.
7. Customers will register to the system by providing their informations. When they register, their information will be written to the corresponding customers file.
8. Customers will login to the system by providing their registered mail address and password.
9. Remember to update the savings of a customer when she/he is charged or cancels the order.
10. Draw a sequence diagram for an order to reach Cancelled state. Please use a tool such as draw.io, Lucidchart to draw the diagram properly and submit a **pdf file** in the project folder.

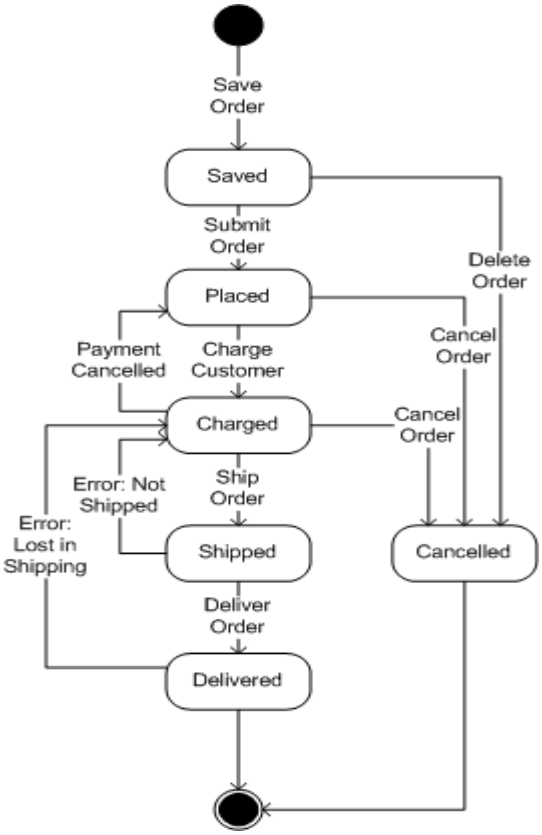

Figure 1 [1]

Assignment Rules

1. Cheating is not allowed. If any cheating has been detected, they will be graded with 0 and there will be no further discussion on this.
2. You are expected to submit your homework in groups. Therefore, only one of you will be sufficient to submit your homework.
3. Make sure you export your homework as Eclipse projects. You can use other IDEs as well, however, you must test if it supported by Eclipse.
4. If you are using an external library, make sure that ".jar" library is in your project after you exported it. Unfortunately, from our previous experiences we have encountered homework submissions that uses libraries from their "**Desktop**".
5. Please submit your homework through CMS.
6. Please export your Java Project as the given format with your assigned.
   Example:

   G02_CENG431_HW2.zip. (Your group IDs will be announced on CMS).

7. Please be informed that your submissions may be anonymously used in software testing and maintenance research studies. Your names and student IDs will be replaced with non-identifying strings. If you do not want your submissions to be used in research studies, please inform the instructor (Dr. Tuglular) via e-mail.

References

1. http://tynerblain.com/blog/2007/03/22/statecharts-and-business-rules/