Assignment 2 - Domain Analysis with Class Diagrams and Requirements Analysis with Use Case Diagrams

Student Food Ordering Application **Deadline: Friday April 19th 23:59**

Introduction

In this assignment you will perform a domain analysis with the help of a UML class diagram and a requirements analysis with the help of Use Cases Descriptions and Use Case Diagrams.

A cases description is used to get started. You will need the input from the internet and the TAs to fulfil your assignment.

You will work in pairs and use a pair modeling approach.

Tools: visual paradigm (https://www.visual-paradigm.com/download/community.jsp)

Remark: The book (OBJECT ORIENTED SYSTEM ANALYSIS & DESIGN USING UML, Bennet et al.) presents the use case diagram before class diagrams. This order is not fixed. The order can be twisted or the both can be developed in parallel. One argument is that we want to base our system on objects and classes (OO paradigm) and not on functions (functional, imperative paradigm). Starting with Use Cases could lead you to a more functional approach [1].

Case Description

Online food ordering has grown enormously the past decade. People can order a variety of food products online. This may vary from ingredients to complete meals. Also drinks can be ordered online.

More and more students order their meals online. For them the price is very important and they always search for good deals (such as: 2 for the price of 1). The price is not the only priority. Because of the spontaneous nature of students delivery should be fast and be offered at any location (for example a park).

The application can look for (recommended) food companies in the neighbourhood, based on the postal code or gps location.

Of course, health is very important and the food ordering application should be connected to multiple types of food companies. Also the ones that offer healthy products.

The food ordering system should allow electronic payment, such as bank cards, credit cards, mobile phone and bitcoins (or other cryptocurrencies). And, a split the bill option should be available when having friends over.

As students are always time aware they want to follow every second of their order, from the moment of order up to delivery.

After the delivery an email will be sent with a link to ask for judgment of the delivery and services.

Although criticized at the moment, it is possible to share your experience on social media platforms.

Your role

In this assignment consider you and your partner as a small software company. You will develop the food ordering application.

Assignment

You are at the start of the development of the food ordering application. You have chosen to use an OO approach for developing extendable, expandable, changeable and maintainable software.

Perform a domain analysis on the case described above.
Build a domain model of the case with the use of a class diagram.
Make Use Case Descriptions and a Use Case Diagram.

Discuss with the TAs for extra domain info. After reading this assignment, first think of questions you could ask. You consider the TA or teacher to be a client.

Recommended steps:
1. Use noun identification for identifying candidate classes and CRC cards for identifying the responsibilities of the classes
2. Build a UML Class Diagram for the problem domain (no software related elements)
3. Identify Use Cases and write use case descriptions
4. Build a UML Use Case Diagram
5. Use noun identification (and optionally, again CRC cards) for updating the class diagram of the problem domain.

Deliverables

You should hand-in a report that consists of:

- A domain model, explained with text, expressed with a UML class diagram that includes
  - Domain classes
  - Attributes and/or operations (only when they are not software related)
  - Relationships (use the richness of UML : names, (directed) associations, aggregation, compositions, inheritance)
  - Multiplicities
- A Use case diagram, explained with text
- Use Case Descriptions, explained with text
  - template: http://higheredbcs.wiley.com/legacy/college/dennis/1118804678/template/ch04.zip
- Description of the process (candidate list, CRC cards)

In general:
- Your report should be neat and well structured.
- The UML diagrams should be consistent in style [4]

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References

1. Warmer, Jos, and Anneke Kleppe. *Praktisch UML*. Pearson Education, 2011.
2. Visual Paradigm, community edition, https://www.visual-paradigm.com/download/community.jsp
3. Bennett, Simon, Farmer, Ray, Mcrobb, Steve, *Object-Oriented Systems Analysis and Design Using UML*. 4th edition, McGraw-Hill Higher Education, 2010
4. Ambler, Scott W. *The Elements of UML (TM) 2.0 Style*. Cambridge University Press, 2005.