Software Modelling, fall 2009, exercise 3

1. In 2nd week's exercises of the *Advanced programming course* you programmed an application that printed information about students. Model the application with UML class diagram.

   You'll find the exercise description here:
   http://www.cs.helsinki.fi/u/wikla/Ohjelmointi/Java/syksy09/Exercises/2/

2. Monopoly, see eg. http://en.wikipedia.org/wiki/Monopoly_(game) is one of the most famous board games.

   In this exercise we will do a initial class diagram that models Monopoly. In the real game there are houses, hotels, money, etc.... Now we will only do a simplified model. In later exercises we might make it more accurate.

   Rough description of the game:

   Monopoly is played with two dice. There are at least 2 and at most 8 players. Game is played on game board that consists of 40 squares. Each square knows what is the square next to it. Each player has a piece. The piece tells where the player is, so a piece is located in exactly one square at the time.

   You can assume that the system has classes *GameBoard, Square, Dice, Player* and *Piece*. I addition to these there is a class *MonopolyGame* that represents the game itself.

3. A course may have some other courses as prerequisites. Course has a name and the credit amount.

   By course implementation we mean the specific time a course is lectured, eg. for course Advanced Programming there exists many course implementations, fall 2008, spring 2009, fall 2009 and so on. Course implementation consists of one or two exams and a number of exercise groups. Every course implementation is lectured by a member of staff. Also every exercise group is instructed by a member of staff. A member of staff can instruct several groups or lecture several course implementations.

   Model the situation as class diagram. You may assume that the classes are *Course, CourseImplementaiton, MemberOfStaff, Exam* and *ExerciseGroup*.

4. Draw an object diagram that corresponds the class diagram of previous question. Assume that there are course objects for Software modelling and Advanced programming. Model the course implementations of this fall.

5. A web shop sells various kinds of items. From each item we know the prize and how many of those exists in the stock. Each item has an textual description.

   The customer collects various items to the shopping cart. Customer can buy multiple copies of the same item. Let us call the combination of item and the number of wanted

items a purchase. So, user has purchases in the shopping cart. Purchase denotes the item and how many of those is bought. A purchase can be eg. 5 cd-rom:s

The shop keeps track of all the customers. For each customer the name, delivery address and customer number are known.

Model the web shop as class diagram. You may assume that the classes are *Shop, Item, Customer, Shopping cart, Purchase*.

You do not need to consider the methods of classes now.