

Homework 6

Problem 1.

- a: All patients on drug x must have disease y, though not every patient with disease y are treated with drug x.
- b. Disease y only occurs in women.
- c. If a patient is male, he can't be on drug x.

Use proposition logic and Boolean algebra law to prove that statements a and b imply c.

Problem 2.

Represent the following statement using predicate logic: A point x on a flow cytometry histogram is considered to be a peak point, if and only if there is a point y on the same histogram immediately before x and the value of y is smaller than that of x, and there is a point z on the same histogram immediately after x and the value of z is smaller than that of x. Please clearly define all predicates that you use.

(Hint: Make sure that you are comparing y and z to the same x and make use of the quantifiers.)

Problem 3.

Please implement 2 versions of a java program (one bases on the WFF, another bases on the flow chart, in HW5 problem 4) to evaluate if a patient has high risk of lung cancer. Your program can gather necessary patient data from a file or pop up dialog box. Compare and contrast the use of the 2 different representations of the same knowledge in the context of your coding.

Problem 4.

This problem is due in 2 weeks. You are REQUIRED to work on this problem with your group as modeling is often a group effort in real life. Each group should turn in only one solution with all group members' names.

Please design an object-oriented data model to represent an outpatient visit for an electronic medical record system. You should consider the events that enable an encounter, activities during the encounter itself, as well as events triggered by an encounter. You should also think about different participants.

The document of your model should at least specify the following:

1. Name and type of Classes
2. Name and type of attributes of the classes
3. Description of 1. 2. (In natural language)
4. Examples of instances

Please include design rationale and open issues (if any) in your document. This is an open ended problem; however, a set (5 -10) of well thought out classes with well defined attributes (5 - 10 per class) will be sufficient for the assignment.