EPITECH 2009/2010
Artificial Intelligence - Expert System project

Groups of 2 students.
Development in C or C++.

Goal : develop an expert system generator (“proposition” logic).

Your program shall implement a generic backward chaining.
Infering rules (reasoning) are given as an input file.
After reading the rules, the program shall ask the user to specify the initial facts.
Based on this knowledge (rules + initial facts), the program will ask to the user a fact to determine, will execute the backward chaining, and then will give the result.

“Knowledge”: facts

Facts will be represented by letters. The domain of values is: true, false, unknown.

“Know-how”: rules

At a minimum, the following capabilities should be supported:
- simple rules such as “if A and B and … then X”, which means that if A, B, … are known as true, then X is set to true as well;
- simple rules such as “if A or B or … then X” (if A is known as true, or if B is known as true, or …, then X is set to true);
- several rules with the same conclusion, e.g. “if A then X” and “if B then X”;
- rules with multiple conclusions such as “if A then X and Y”;
- use of negation in condition or/and conclusion parts, e.g. “if not A then B” and ‘if A then not B”;
- a mix of ‘and’ and ‘or’ in the condition part of rules;

A bonus will be given for the support of additional capabilities, such as:
- use of ‘or’ in the conclusion part, e.g. “if A then X or Y”;
- use of the ‘exclusive or’ in either or both of condition and conclusion parts of the rules;
- interactive chaining;
- …

Defense session

Know-how (rules) bases will be given to you prior to the defense session. You will have to edit the corresponding files according to the syntax recognized by your program.
During the defense session, you will be given the initial facts and the unknown fact to determine.
In addition to the truth value of the fact to be determined, your program will have to show the set of rules that are fired (in order of firing) and the set of all (non initial) facts for which a truth value has been determined.