

UNIVERSITY OF PATRAS
DEPT. OF COMPUTER ENGINEERING & INFORMATICS
ARTIFICIAL INTELLIGENCE
5th Assignment

1. Consider the following rule base:

R1: if A and B then C	R5: if C and \negD then I
R2: if C and D then E	R6: if E and I then \negH
R3: if A and I then \negH	R7: if E and H then \negG
R4: if A and \negD then E	R8: if E and \negH then G

(a) Draw the rule base network.

(b) Deduct G, if

- the initial content of working memory is $WM = \{A, B, \neg D, \neg H\}$
- forward chaining is used
- follow the “textual order” conflict resolution strategy: the first rule met that its conditions match the WM is fired
- the same rule is not fired more than once

Describe the deduction steps and illustrate deductions on the rule base net (drawn in (a)).

(c) The same as in (b), but use as the primary conflict resolution strategy “recency” and “textual order” as the secondary one. Is there any difference? Explain.

(d) The same as in (b), but use backward chaining instead of forward. Indicate the differences with (b).

2. Consider the following rule base consisting of five rules with certainty factors.

<p>R1 if shape is round then fruit is orange (0.3)</p>	<p>R4 if shape is round and color is yellow then fruit is apricot (0.6)</p>
<p>R2 If shape is round then fruit is apricot (0.2)</p>	<p>R5 if shape is round and color is yellow and size is small then fruit is apricot (0.8)</p>
<p>R3 if shape is round and surface is weasand then fruit is orange (0.8)</p>	

The following data in this order are given by the user (within parentheses the certainty of each data is given): “shape is round”, “color is yellow (0.6)”, “size is small (0.7)” και “surface is weasand (0.9)”. Describe the steps of deducing a conclusion. What is the final conclusion?