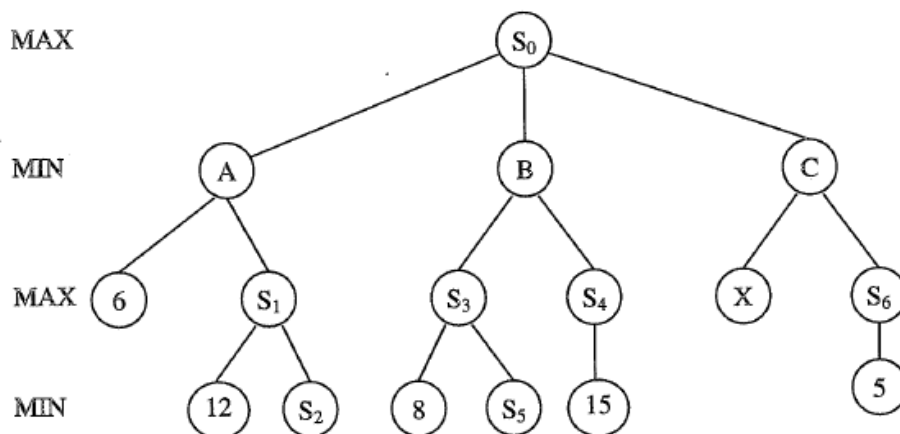Homework #2

1. (25 points) A* Search

1.1. (15 points) Run A* search algorithm on the Romanian Map route-finding problem to find the shortest path between Timisoara and Bucharest. Use as the heuristic function the strait distance. What route was discovered by the A* algorithm? How many nodes did it expand? What is the cost of this solution?

1.2. (10 points) Same problem as in 1.1 with a new evaluation function $f = (1-w)g + wh$ where $w = 0.25$ and $w = 0.75$.

1.3. (10 extra points) Implement a new under-estimating heuristic function h' (of your choice) and use it for the problem described in 1.1.

2. (25 points) Alpha-Beta Search

2.1. What is the maximum value of X in the following game tree such that the sub-tree rooted in nodes A and C can be pruned by the alpha-beta pruning process? Explain your answer.

You should submit your homework on WebCT before the deadline. You are encouraged to develop your programs using the Java resources posted at http://aima.cs.berkeley.edu/code.html. Submit a README file that explains how your code is working and how it should be executed. In addition to your answers to the homework problems and your observations, your submission should also include the source code and a trace of your execution.

Due Date: ' **Friday, the 4th of October, before the class**