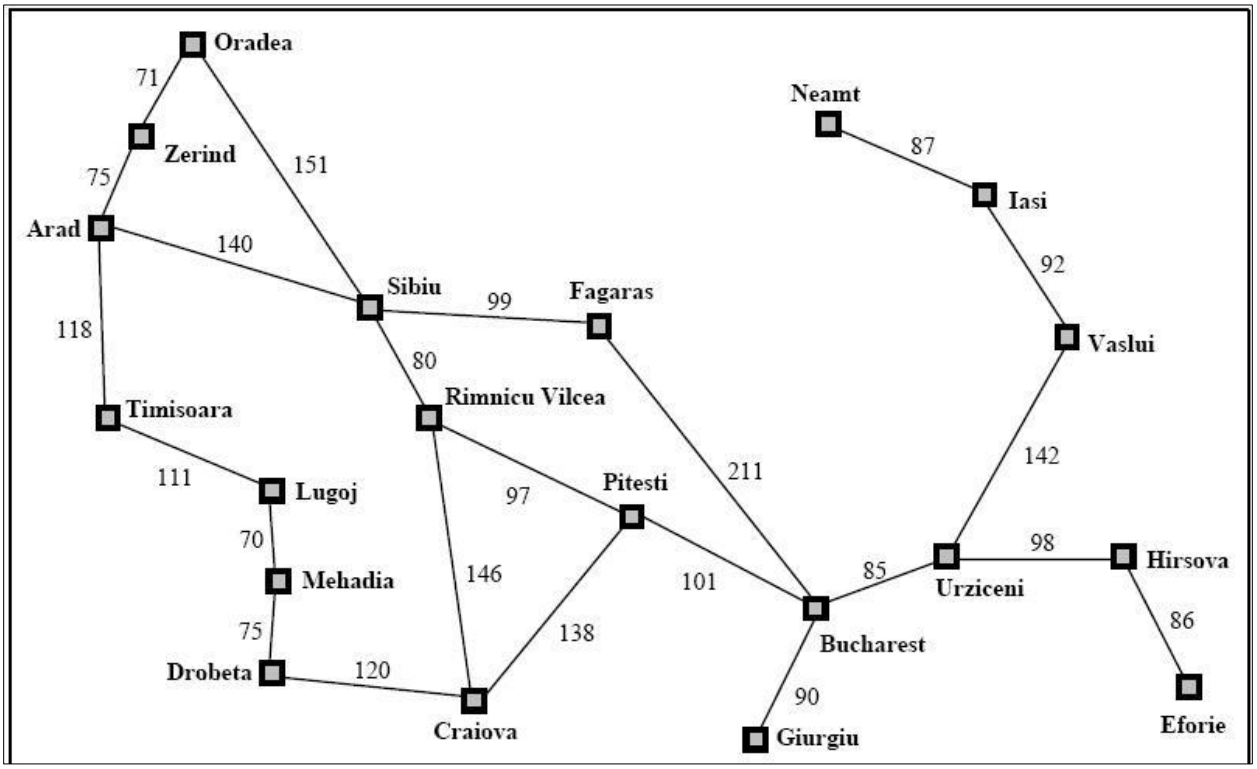
Artificial Intelligence (CPCS-431)

Exercises on Heuristic Search



Arad	366	**Mehadia**	241
Bucharest	0	**Neamt**	234
Craiova	160	**Oradea**	380
Drobeta	242	**Pitesti**	100
Eforie	161	**Rimnicu Vilcea**	193
Fagaras	176	**Sibiu**	253
Giurgiu	77	**Timisoara**	329
Hirsova	151	**Urziceni**	80
Iasi	226	**Vaslui**	199
Lugoj	244	**Zerind**	374

Values of h_{SLD}—straight-line distances to Bucharest.

Greedy best-first and A* search algorithms

(1) Trace the operation of the Greedy best-first and A* search algorithms applied to the problem of getting to ***Bucharest*** from ***Oradea***, using the above map. Use the straight-line-distance heuristic values given in the figure.

Greedy best-first **algorithm**

Step	Expand (Pop)	City	h_{SLD}
0	…	Oradea	380
1			
2			
3			

…

A* **search algorithm**

Step	Expand (Pop)	City	g	h	F
0	…	Oradea	0	380	380
1					
2					
3					

…

(2) Which algorithm gives better results?

Admissible vs. consistent Heuristic

(3) Is the A* heuristic given in the problem above admissible? Explain.

(4) Is the A* heuristic given in the problem above consistent? Explain.