

AI (Fall 2018) – Assignment 1
Search and game tree search

Due: 11:59pm, Thursday, Oct. 11, 2018

1. Consider travel in Romania from Arad to Bucharest. Trace the operation of uniform-cost search with cycle-checking: draw the search tree.
2. Consider the blocks world planning problem discussed in class.

Let the initial state be

a
b
c

, and the goal state be

b
a
c

.

Let $h_1(n)$ be the number of blocks not in its goal position, and let $h_2(n)$ be the number of blocks x not in its goal position such that some block y below x is also below x in the goal state. Use the heuristic function $h(n) = h_1(n) + h_2(n)$.

- (a) Is h admissible? Is h monotone? Explain.
 - (b) Trace the operation of A^* with cycle checking: Draw the search tree; for each node, mark its g and h values.
3. Perform alpha beta pruning on the following game tree and compute the utility value of the root.

