Exercise 3.1 (A* Search)

Assume that you have a puzzle consisting of 5 cells. The first two cells contain black tiles, the next two white ones, and the last cell is empty.

A tile can be moved in a neighbored empty cell (costing 1 unit) or a tile can 'jump' over at most two cells into an empty cell (costing the # of cells jumped over). The goal of the game is to have both black tiles to the right of the white tiles, the empty cell may have an arbitrary position.

(a) Solve the puzzle with an A* algorithm and the following heuristic function $h_1$: A black tile on the first cell costs 1 unit, on the second cell 0.5 unit (the initial configuration costs 1.5 units). Show that $h_1$ is admissible, i.e., $h_1 \leq h^*$.

(b) Define a better informed heuristic function $h_2$ with $h_1 \leq h_2 \leq h^*$.

(c) Solve the problem by using your heuristic function $h_2$. 

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Dr. J. Rintanen, M. Ragni

University of Freiburg

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Department of Computer Science

Exercise Sheet 3

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