

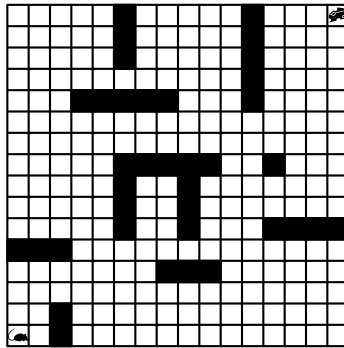
Problem Solving and Search in AI Tutorial 1 (on November 7th)

Sarah Gaggl, Lukas Schweizer

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Exercise 2.1:

Show how to use and implement the A*-Algorithm, to find the shortest path in the maze, starting from the mouse and ending in the cell with cheese.



Exercise 2.2

Consider the *Bridge-Crossing Problem*, where 4 persons are on one side of a bridge and all of them need to end up on the other side. It is night and they have only one flashlight. Though, the bridge is build to only withstand 2 persons. Also, the flashlight needs to be brought back to the remaining persons on the other side. Each person walks with a different speed and when they go together they must walk at the speed of the slowest. The goal is to find the minimal time for all persons to cross the bridge.

Person	Crossing Time
A	1 Min.
B	2 Min.
C	5 Min.
D	10 Min.

- a) Find a suitable representation (data structure) of the problem, in order to apply a search algorithm to solve the problem.

- b) Implement an (search-) algorithm to solve the problem.
- c) Is there a general procedure which finds an optimal solution for an arbitrary number of people and crossing times?