Question 1

Assume a grid world, which is given as a NxN matrix of integers. Each cell can be either occupied (1) or empty (0).

Problem: Is there a continuous way starting from cell [1,1] to [N,N], by moving only left, right, up and down. (No diagonal movements). For example:

In case 1, an algorithm solving this problem should return true, in case 2 it is false.

- Determine the lower bound for the worst case complexity of this problem.
- Write an order-optimal algorithm solving this problem, and show that it is order-optimal.
- Convert your algorithm to a probabilistic algorithm, and state if its best and worst case complexities change.

Submission

Bring hard copies of your answers to the final exam.