Online Motion Planning
Problem Set 1
Universität Bonn, Institut für Informatik I

To be solved until the 25th of October

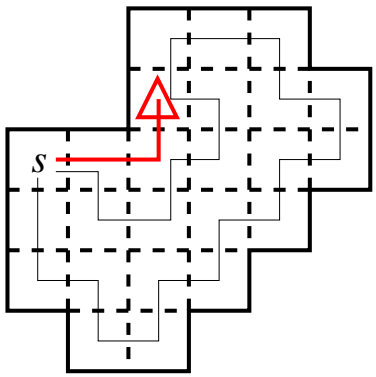
Problem 1:

We showed that one cannot achieve a better factor than 2 for the online edge exploration of a graph if the agent needs to return to the start.

Show that this lower bound still holds if the agent need not return.

Problem 2:

Consider the situation below. The agent already made 3 moves. Prove that every completion of his exploration tour must visit at least 4 cells twice. (The optimal route visits every cell only once.)



Problem 3:

Prove that the shortest path between two cells s and t in the first layer of a grid polygon P uses at most $\frac{1}{2}E-2$ cells (where E denotes the number of boundary edges of P).