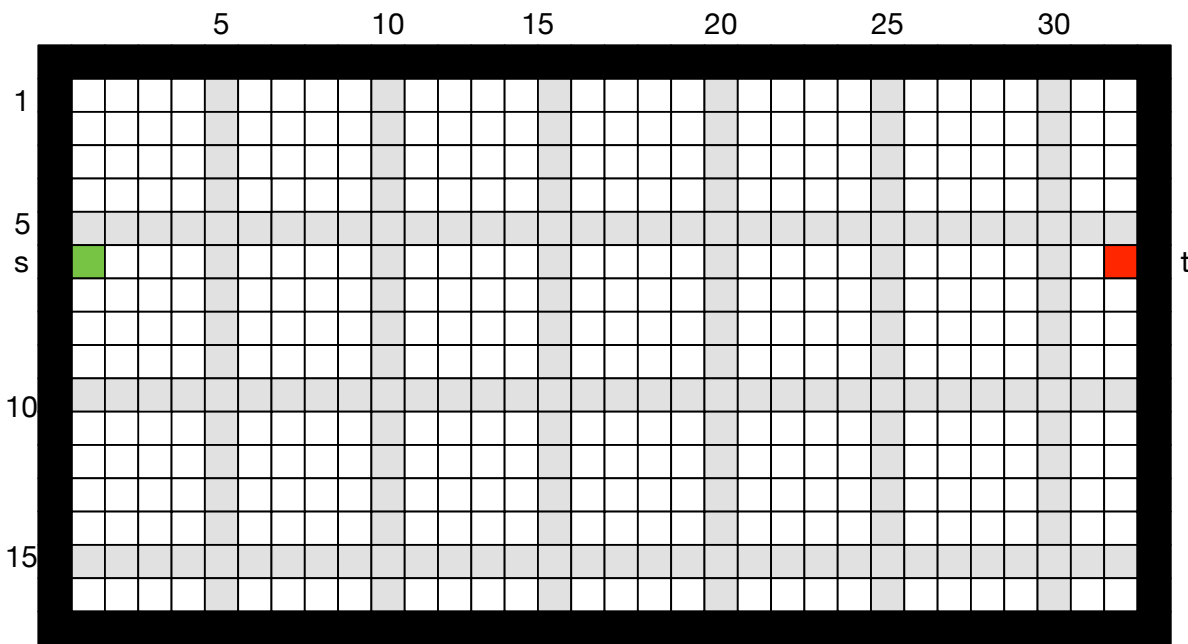


Exercise for the lecture
Wireless Sensor Networks
 Summer 2016
 Sheet 9

EXERCISE 10:

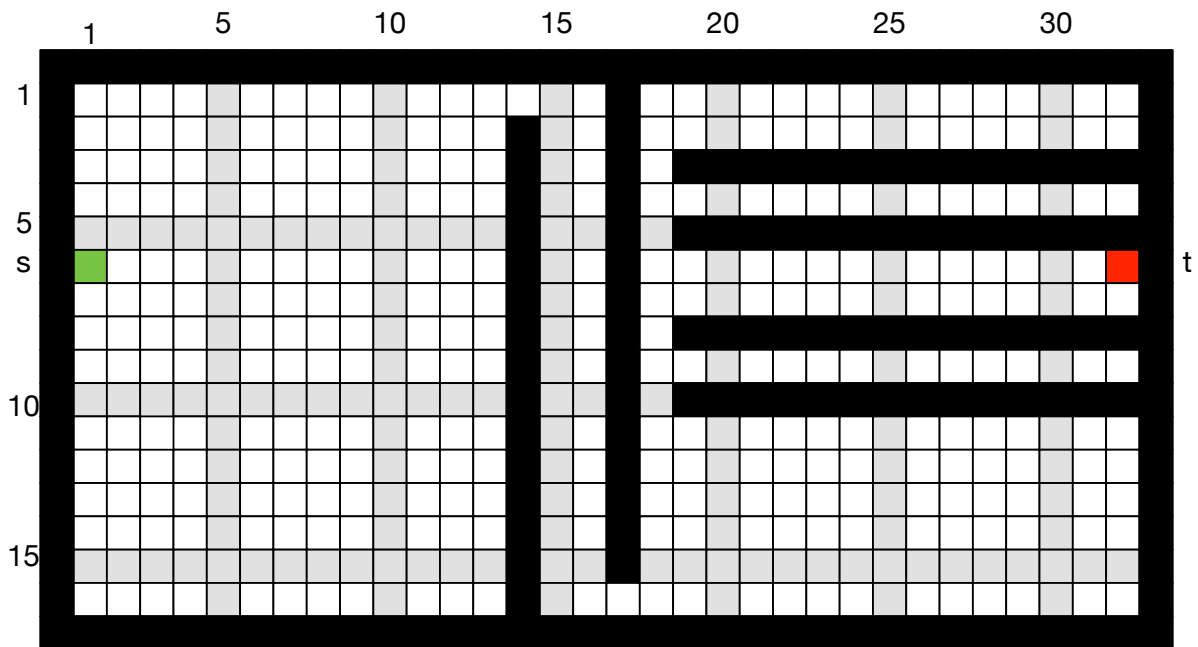
Grid-Routing: Consider the following 32×16 grid with start node s and target node t .



1. Compute the number of perimeter grid cells.
2. Fill out the following table.

Algorithm/ solution	time	traffic	competitive time ratio	competitive traffic ratio	comparative traffic ratio	combined comp. ratio
Shortest path						
Flooding algorithm						
Greedy, right hand rule						
Alternating algorithm						

3. Now consider the following grid



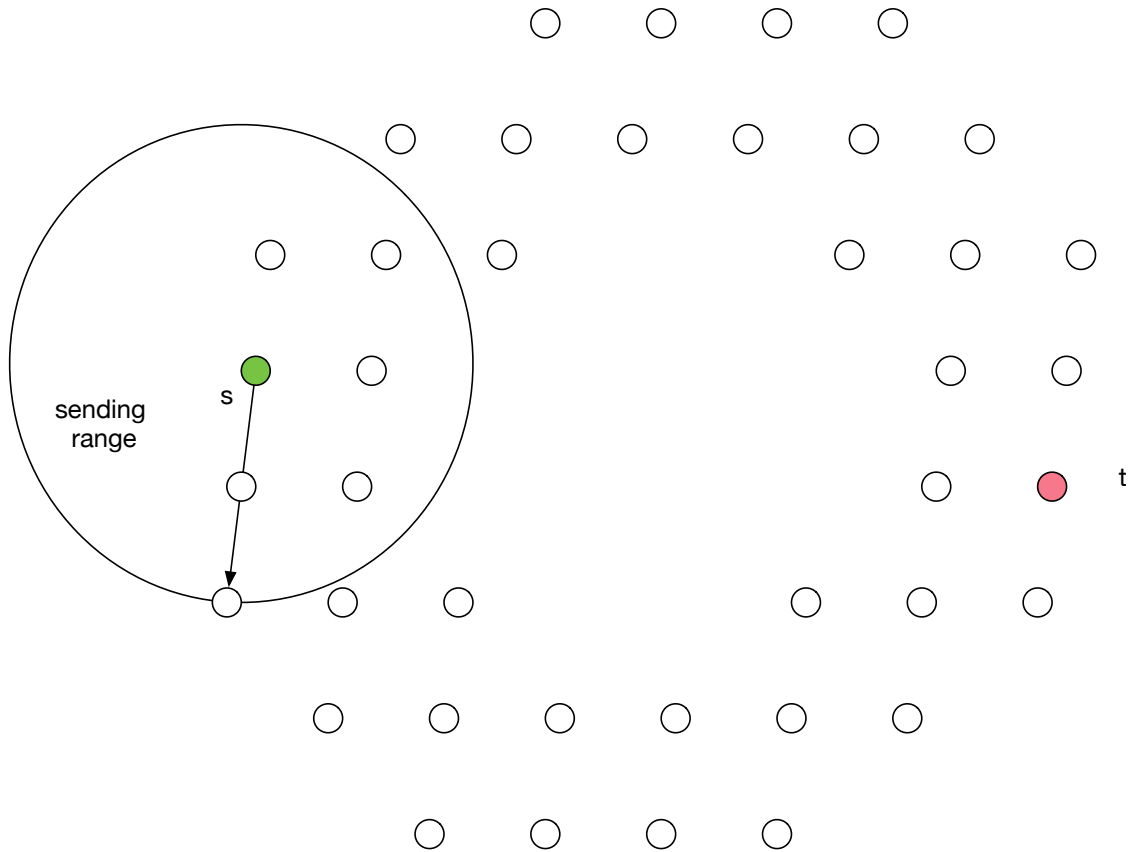
and compute the number of perimeter grid cells.

4. Fill out the following table:

Algorithm/ solution	time	traffic	competitive time ratio	competitive traffic ratio	comparative traffic ratio	combined comp. ratio
Shortest path						
Flooding algorithm						
Greedy, right hand rule						
Alternating algorithm						

EXERCISE 11:

1. Define a beaconless greedy rule by defining the delay function of the answering time depending on the position of the start node, the target node, the forwarder node, and the current node's position.
2. Apply your greedy beaconless algorithm (without recovery) to the following graph, which is a unit-disk graph given by the sending radius.



Mark which nodes serve as forwarders. Does your message arrive at the target?

3. Discuss whether your algorithm needs a protest-rule or a planarization? If yes, show a counter-example for your algorithm. If no, show that your algorithm always succeeds.