



# Principles of Distributed Computing

## Exercise 4

### 1 Bad Queues in a Mesh

In Section 4.2, Remark 2 states that the greedy algorithm on a mesh might need queues in the order of  $m$  (on an  $m \times m$  mesh). Can you find an instance where the queue size gets really big (in the sense of as close to  $m$  as possible)?

### 2 Good Queues in a Mesh

Prove that the time complexity for random destination routing is in  $O(m)$ , see Remark 1 of Theorem 4.10. To that end, show that the probability that a single column contains  $2em$  destination packets is “really small” and finish the proof.