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Communication in Parallel Systems

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Assignment 10

Problem 18 (4 points)**:**
Extend Theorem 10.4 to the case that the processors are allowed to access arbitrary (even the same) cells. Hint: we allow for the construction of the paths that if two paths for two processors requesting the same cell meet, then only one of them will be continued and the other one can be stopped at that point. Show that in this case the congestion can still be bounded by $O(R+\log n)$ with high probability.

Problem 19 (4 points)**:**
Prove that for the cut-and-paste strategy, any position in $[0,1)$ is only replaced $O(\log n)$ times from 1 to n storage devices.