INFORMATIK

Universität
des
Saarlandes
FR 6.2 Informatik

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Exercises for Online- and Approximation-Algorithms

5. Assignment Due 30. June 2005

Exercise 1 (*Greedy for k-server,* 4 *Points*)
A natural greedy algorithm for the k-server problem is the following: serve each request with the server that is nearest to the request. Show that this greedy strategy is not competitive. Hint: construct a request sequence for three points on a line and two servers.

Exercise 2 (*EXPO with unknown* m *and* M*,* 4 *Points*)
Show how to extend the EXPO algorithm such that it stays $O(\log \varphi)$-competitive even if just $\varphi = M/m$ is known but not m and M themselves.

Exercise 3 (*ROBIN HOOD,* 4 *Points*)
In case ROBIN HOOD has to put a new job on a rich machine then it selects a feasible one that became rich most recently. What might happen if ROBIN HOOD chose an arbitrary feasible rich machine instead?