

## On-Line Algorithms – F19 – Lecture 14

### Lecture, April 9

We finished Section 10.4.

### Lecture, April 23

We will cover through section 12.2.1 in Chapter 12 in the textbook. Then we will begin on the article “Online Bin Packing with Advice”, Joan Boyar, Shahin Kamali, Kim S. Larsen, Alejandro López-Ortiz. *Algorithmica*, 74(1): 507-527, 2016. The publication is available through the course’s homepage.

### Lecture, April 30

We will continue with the article on bin packing with advice.

### Problems for April 29

1. I will probably lecture if we run out of problems. These problems were listed on a previous lecture note.
2. Suppose that GREEDY is allowed  $n$  identical machines, while OPT is only allowed to use  $m < n$  machines. Give a sequence showing that the ratio of GREEDY’s performance to OPT’s can be at least  $1 + \frac{m-1}{n}$  for the makespan problem. Then show that GREEDY can always achieve this ratio against such a bounded OPT.
3. Define POST-GREEDY with release dates as the algorithm which assigns a new job (given at its release date) to the first processor which becomes free. (Jobs have processing times which may be unknown, and only one job may be running on a processor at a time. There are  $m$  processors.) Show that POST-GREEDY is  $(2 - \frac{1}{m})$ -competitive.