- In week 47 we will start with "Graph Algorithms".
- Exercises for Chapter 8 from the course book that you should prepare for the tutorials: 8.4, 8.6, 8.11, 8.12, 8.23, 8.24, and 8.26. This exercises (and some of earlier Weekly Notes) will be discussed in week 47.
- Next week we will start with Chapter 11.

Some suggestion for the mandatory assignment 4. Please see this project as a possibility to combine your own research or study interests with Parallel Computing. The projects below are just some suggestions. Feel free to come up with your own ideas. Also use the course book to look for ideas.

- *Parallel Particle Simulation using far field forces*
  - Starting with: Ananth Grama, Vipin Kumar, Ahmed H. Sameh: Scalable Parallel Formulations of the Barnes-Hut Method for n-Body Simulations. Parallel Computing 24(5-6): 797-822 (1998)
  - Follow-up of mandatory assignment 2, possible by using a parallelization of Barnes-Hut algorithm, quad-trees should be known)
  - May not be accessible for analytical approaches
  - Maybe significant implementation requirements, 3 persons recommended (maybe 4 possible)
- *3SUM and r-SUM problem*
  - `http://en.wikipedia.org/wiki/3SUM`
  - Very easy problem. Isoefficiency analysis would be mandatory!
  - `http://www.cs.mcgill.ca/~jking/papers/3sumhard.pdf`
  - `http://cs.smith.edu/~orourke/TOPP/P11.html`
  - Isoefficiency analysis that depends on (n,p, and r)
  - max. 2 people
- *Stochastirator*
  - In Blackboard there is a subfolder "stochastirator". It contains the paper "Efficient Exact Stochastic Simulation of Chemical Systems with Many Species and Many Channels" by Michael A. Gibson and Jehoshua Bruck (J. Phys. Chem. A, 2000). The idea is to parallelize the sequential software "stochastirator" (also in Blackboard). A straightforward way to do this would be to introduce "space" in the simulation.

  - Note that the parallelization of the exact method itself seems quite complicated to me, as a "priority queue" (the central data-structure used in the "stochastirator") is difficult to handle in parallel.
  - at least 2 students are necessary here

- *Dynamic Programming (DP)*
  - One example for parallelization of a DP problem is "Sequence Alignment" (but many other problems exist).
  - Start with reading DM813 Mandatory Assignment 1: Dynamic Programming and Sequence Alignment `http://www.imada.sdu.dk/~daniel/DM813/Assignments/mand1/`
  - Global / Local sequence alignment
  - Necessary: Reading Chapter 12 ("Dynamic Programming"), and using those methods