

Introduction to Parallel Computing — Matthias K. Gobbert  
Wintersemester 2011/2012 — Universität Kassel  
Homework 1 — due on Wednesday, December 07, 2011

How to submit: Send your submission as one single PDF file attachment to `gobbert@umbc.edu`. See the syllabus for more details.

Some general notes: Start a new problem on a new page. Order your problems correctly. All material for one problem should be together, in the order of specified parts.

1. [8 points.]

- (a) I would like to set up a mailing list for this class. In order to set up this list, please send me e-mail from the account of your choice. *Do this as soon as possible, since I will send an announcement on the final decision regarding class times and rooms to this list!*
- (b) Read the syllabus of this course. When I talk about syllabus here, I am referring to both course webpages that currently exist, namely <http://www.math.umbc.edu/~gobbert/teaching/math627.20119> at UMBC, as pointed to by the Vorlesungsverzeichnis, and <http://www.mathematik.uni-kassel.de/~gobbert/teaching/math627.20119>, the more detailed page at the Uni Kassel. You should also look through the subpages and other pages linked from there. Basically, please make yourself familiar with the information provided about the course. Is everything clear or do you have any questions? What did you find that is noteworthy? Do you have suggestions for changes?
- (c) My homepage <http://www.math.umbc.edu/~gobbert> includes a lot of information posted there for your benefit and to address many frequently asked questions. Therefore, look around my homepage. Report on what you find and any problems you encounter. What this part basically recommend you to do is to learn more about the person teaching your class. This is a sensible thing to do, so you know where I am coming from and what my frame of reference might be. Do you have any suggestions?  
Specifically, locate also the information *UNIX AT UMBC: Using Unix @ UMBC* as discussed in the Unix/Linux area of my homepage; read it, if you are not familiar with the information already. You are welcome to user other sources for an introduction to Linux, but looking at the specific one above establishes what is considered common knowledge. This material does not only apply to UMBC, but most of it is widely useful on Unix/Linux systems, such as the Linux cluster in the IT Servicezentrum of the Uni Kassel. Log in to that system by connecting to `username@hrz-cs400.hrz.uni-kassel.de`, where `username` is the user name of your UniAccount. Report how this goes and what problems you might run into.
- (d) Read the material on the webpage of the IT Servicezentrum at the Uni Kassel at <http://cms.uni-kassel.de/unicms/index.php?id=12204>. It is understood that much of this information is hard to understand at the moment, but you must know what is available there. The lectures and labs over the next few weeks should help

determine, which of this information is applicable to us and what it means. Report which parts you read. Where did you locate information about submitting jobs to a so-called batch queue? Did you find example job submission scripts? Which particular one should be most applicable to us?

2. [8 points.]

- (a) Please explain what background in mathematics and in programming you have. Do you have any courses on numerical methods? Give more detail than just course numbers, rather discuss the content of the classes briefly, as you remember it now.
- (b) What courses on programming do you have, if any? What software have you used and how much? This might include software such as Matlab or programming languages like C or Java. But also include productivity software (L<sup>A</sup>T<sub>E</sub>X, Word, plotting software, etc.) and information about operating systems (Windows, Linux, etc.).
- (c) To ask specifically, how much do know you about (i) Linux, (ii) editor(s) in Linux, (iii) C, (iv) Makefiles, (v) compilers; if you do not know what I am asking, you likely do not know and should say so clearly. Remember that I will use this information to tailor the level of presentation, so you should be honest in assessing your own abilities.
- (d) How do you plan to access the cluster in the IT Servicezentrum of the Uni Kassel? For instance, do you plan on using your own laptop (which operating system, what network connection, etc.)? Or do you plan on using a university computer (which operating system, which location, etc.)?

This information will help me teach you better since your responses give me more information about your background and about your goals.

3. [4 points.]

- (a) Familiarize yourself with the textbook. The purpose of this part is to determine what is available where in the book. I recommend the following simple, but effective strategy: Start flipping at the beginning of the book and note what types of things appear (such as Table of Contents, Preface, etc.) until you reach the first regular chapter. Then flip from the very back of the book and note what appears (such as Index, appendices, etc.) until you reach the last regular chapter. Report what you find.
- (b) Locate the homepage of the textbook at <http://nexus.cs.usfca.edu/mpi> (notice correction against the Preface of the textbook). Obtain the errata for yourself. Determine which printing of the textbook you are looking at; this will be useful to know when considering the list of errata. Obtain the source code for all examples in the textbook for future use.
- (c) Read the Preface and Chapter 1.