Next steps - due to 4 March 2018 23:59

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Chapter 1

Introduction

This week’s practical work continues the build up for following weeks. In order to work efficiently with scientific infrastructures, such as Tartu University’s High Performance Computing (HPC) Center’s infrastructure, which are either required or good to have skills. Having those skills will simplify your work and you’ll probably have to acquire them sooner or later. For example, one should have basic system administration skills, such as working with command line interfaces, know how to install and manage software, how to transfer files, make use of version control systems, write/understand bash scripts.

In this practical homework, the focus is on two skills: building a small cluster and the linux command line.

Submission and grading of this homework

In order to get points for this homework you need to submit the following:

- Answer questions related to using linux
- Feedback on homework’s time consumption
Chapter 2

Building a mini cluster

2.1 Exercise 1

Build a mini cluster using upto 4 personal computer motherboards and a switch. Introductory documentation can be found at https://courses.cs.ut.ee/t/kids/Main/Raspcluster.

2.1.1 Single core Linpack

Run the Linpack benchmark on a single core. Record your results. Be sure to also indicate what CPU you are using.

ANSWER
COMMENT
GRADE

2.1.2 Parallel Linpack

Run the Linpack benchmark on your cluster. Estimate the power efficiency for the Linpack benchmark. Compare this to the efficiency of computers in the Top500 in terms of flops per watt.

ANSWER
COMMENT
GRADE
Chapter 3

Exercise 2 - LaTeX

In your first exercise, you learned about HTML which is a markup language that separates the formatting of a webpage from the content. It can be helpful to also separate content from formatting for regular documents. LaTeX is a markup language for writing documents, in particular mathematical and scientific papers are often typeset in LaTeX. You should submit this homework as a LaTeX writeup. To do so, get an account at https://sharelatex.mt.ut.ee and share your writeup with us.

ANSWER
COMMENT
GRADE
Chapter 4

Exercise 3 - Command line Linux

Using supercomputers and other remote resources typically requires some skills that are usually acquired through practice, rather than in formal courses. Thus far, you have logged in to a remote computer and transferred files to and from a remote computer. In this section, we will introduce some more Linux commands.

**Homework question 1**
What is the bash shell, and how can a bash shell script aid you in (re-)producing a sequence of Linux commands?

**ANSWER**

**COMMENT**

**GRADE**

**Homework question 2**
What do the following commands do when logged in to a Linux terminal. If you do not use a Linux/Mac OS X computer, you can download Putty from and log in to math.ut.ee to get a Linux command line. For many of these commands typing man and then the command, for example man ls, should give helpful information.

- `ls`
  - ANSWER
  - COMMENT

- `man`
  - ANSWER
  - COMMENT

- `cd`
  - ANSWER
  - COMMENT

- `mv`
  - ANSWER
  - COMMENT

- `cp`
  - ANSWER
  - COMMENT
• cp -r
  ANSWER
  COMMENT

• who
  ANSWER
  COMMENT

• whoami
  ANSWER
  COMMENT

• top
  ANSWER
  COMMENT

• cd ..
  ANSWER
  COMMENT

• echo
  ANSWER
  COMMENT

• echo $PWD
  ANSWER
  COMMENT

• exit
  ANSWER
  COMMENT

• wget
  ANSWER
  COMMENT

• more
  ANSWER
  COMMENT

• less
  ANSWER
  COMMENT

• vi
  ANSWER
  COMMENT

• emacs
  ANSWER
• nano
  ANSWER
  COMMENT

• tar
  ANSWER
  COMMENT

• zip
  ANSWER
  COMMENT

• unzip
  ANSWER
  COMMENT

• gunzip
  ANSWER
  COMMENT

GRADE
Chapter 5

Exercise 3 - Feedback

In order to improve this course for the future we ask you to give feedback on how long completing those tasks took. It would be great if you could give time estimates separately for all tasks above.