

# Informatik für Mathematiker und Physiker HS15

## Exercise Sheet 1

Submission deadline: 15:15 - Tuesday 22th September, 2015

Course URL: <http://lec.inf.ethz.ch/ifmp/2015/>

This exercise sheet guides you through the process of setting up your *VirtualBox*, a virtual Linux machine with a preset environment and pre-installed libraries that you will need for this course. Follow the steps below and if you encounter any problems contact your teaching assistant (by email or in an exercise class).

Note that you can simply click on all the hyperlinks in this document, and you will get directly to the right place!

### Assignment 1 - VirtualBox Setup

Follow the instructions on the course webpage to install the VirtualBox and setup the Linux environment on your computer.

**Note:** The above instructions are mainly for Windows and OS X users. If you are a Linux user (or if you are solving the exercises on a Linux computer in the public computer rooms) follow the instructions for Linux users on the course webpage.

### Assignment 2 - Testing the Installation

Start your Linux in the VirtualBox and navigate to the `progs/lecture` directory (on your Desktop). There you find the source codes for all the programs used in the script.

- a) Open the file `power8.cpp` in emacs and compile it (press `[F9]`<sup>1</sup>). Run the program `power8` in the terminal!
- b) The `.cpp` files can be edited with any text editor. If you right-click on the file `power8.cpp` you find a list of installed editors under the item "Open with...". Open `power8.cpp` again for example with Kate and compile and run it. You have to compile your program using `make` in the terminal. Try to find the editor that suits you most.

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<sup>1</sup>If you are using the VirtualBox on OS X you might have to press `[fn] + [F9]`.

**Note:** You find instructions to compile and run the program on the course webpage. If you are not familiar with UNIX commands, we advise you to read carefully the summary with important UNIX commands (Section 2) on the course webpage.

## Assignment 3 - Skript-Aufgabe 8 (4 Points)

Write a program `power20.cpp` that reads an integer  $a$  from the standard input and outputs  $a^{20}$  using at most 5 multiplications.

After you finished your program, submit it to the judge by clicking on the link provided at the bottom of the following Judge-Examples box. The enrolment key is `cplusplus`. On the website you can also find a short explanation.

**Note:** Please note, that your teaching assistant will accept only those programs that compile without any warnings. The IFMP-Judge will also tell you if there is a compiler error.

Judge Examples	(Explanation: <a href="http://lec.inf.ethz.ch/ifmp/2015/judge_boxes.html">http://lec.inf.ethz.ch/ifmp/2015/judge_boxes.html</a> )
Compute $a^{20}$ for $a = ?$ -1 <sup>20</sup> = 1	-1
Compute $a^{20}$ for $a = ?$ 1 <sup>20</sup> = 1	1
Compute $a^{20}$ for $a = ?$ 2 <sup>20</sup> = 1048576	2
<b>Submission:</b> <a href="https://challenge.inf.ethz.ch/team/websubmit.php?cid=5&amp;problem=MP15011">https://challenge.inf.ethz.ch/team/websubmit.php?cid=5&amp;problem=MP15011</a>	

Now the `ifmp::integer` should work correctly on the IFMP-Judge.