

Compact Course Python

Exercise 1

No. 1 and 2 are just to make sure that everybody has a functional development environment. No 3 and 4 are meant to be solved in natural language - it's just about the algorithm, not the implementation.

1 Development Environment

Get familiar with the Python installation at the CIP pool. You can start the interpreter from the command line by typing `python3`. (exit later with `exit()`):

```
regneri@login2:~$ python3
Python 3.0.1+ (r301:69556, Apr 15 2009, 15:59:22)
[GCC 4.3.3] on linux2
Type "help", "copyright", "credits" or "license" for more information.
```

Play with the interpreter as a calculator (try typing expressions like `5 + 2`).

Appropriate editors for python files are e.g. Emacs or Kate. You can check out other (complete) development environments. A very simple one is the Eric Python IDE (see link on homepage).

Eclipse (<http://www.eclipse.org/>) is, combined with Pydev (<http://pydev.org/>), a very comfortable, but rather complicated IDE.

In order to install Python on a Windows PC, you need the appropriate Python distribution (see <http://www.python.org/download/>).

2 Hello World

Execute the "Hello Duckling" code from the slides in the interpreter. Then save the code as a Python file (e.g. `hello.py`) and execute the program.

3 Two greatest numbers

In the lecture we have seen an algorithm that picks the maximum number from a list. How would you write an algorithm that picks the two greatest numbers? (Think about special cases for the input, too.)

4 Sorting lists

Try to figure out an algorithm that sorts a list of numbers (in descending order). The algorithm get a list as input (like $[3,1,2,4]$), and shall output another list ($[4,3,2,1]$ in the example). Valid operations are:

- Creation of an empty list
- Access the n th element of a list the third element of $[3,1,2,4]$ is 2)
- Deletion of arbitrary list elements (after the deletion of the third element of $[3,1,2,4]$, we have $[3,1,4]$).
- Adding elements to the list (at the end)
- Check the length of the list ($[3,1,2,4]$ has length 4)
- Everything mentioned in the lecture

Possibly you don't need all of the operations for a solution.
