

Exercise Set 3

Basic Python Programming

University of Oslo - IN3110/IN4110

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Note: These exercises are not mandatory. You don't have to put your work into your Github repository.

Exercise 1: RPN calculator

Make an interactive calculator which takes input in Reverse Polish Notation. This means that the calculator should have an internal stack on which numbers are pushed (added) and popped (removed). When a number is input to the calculator, it is pushed to the end of the stack, and when an arithmetic operation (+, *, /) is input, it should pop the last two numbers of the stack, compute their sum/product/quotient, and push that to the end of the stack.

Further, add options for multiple space-separated inputs on one line, to be parsed left to right. Also add a print-input `p` which prints the last number of the stack without popping it, and `v`, `sin`, `cos` for square root, sine and cosine functions. Finally, add the option for your script to be called with a string as command line input, in which case it should treat the string as a space-separated list of inputs.

To get comfortable writing classes, try to implement the calculator as a class. For the stack, you can use a python list, which support both pushing (`list.append`) and popping (`list.pop`).

Example usage:

```
$ python rpn.py
> 1
> 2
> +
> p
3
> 5 2
> * + p
13

$ python rpn.py 3 3 * 9 * 5 +
86
```

Exercise 2: File finder

Make script which takes as argument a string and a directory. The script should search the directory recursively (meaning include all subdirectories, and subsubdirectories etc.) for files whose name contains the string, and print all those files to stdout.

Example usage:

```
$ python find.py .tex $HOME
/home/username/work/IN3110/assignments/assignment_1.tex
/home/username/work/IN3110/assignments/assignment_2.tex
/home/username/work/IN3110/assignments/assignment_3.tex
/home/username/work/IN3110/assignments/assignment_4.tex
```