

# Programming for Data Science

Winter term 2023/2024

Assignment 1  
Issued: 2023-10-17

## 1 Calculator

Write a python program that is called with three arguments: `./prog1.py <num1> <op> <num2>` where `num1` and `num2` are two numbers and `op` is a string from the set of `+, -, *, /, **` representing the associated arithmetic operator.

- Your program should print the operation and the results to the command line, e.g. for `./prog1.py 7 + 12` your program should generate the output `7 + 12 = 19`
- In case of a division by zero your program should print "Error, no division by zero!"

## 2 Symbol counter

Write a python program that is called with a variable number of arguments that prints

- all symbols appearing in some arguments together with their counts
- all arguments (i.e. *words*) appearing at least twice

## 3 Sieve of Eratosthenes

Write a python program that is called with some integer `n` and prints out all prime numbers in the range `[2,n]`. Implement the *Sieve of Eratosthenes* (see e.g. wikipedia) algorithm to obtain the prime numbers.

## Note

Please solve the exercises without using specialized modules that provide the exact functionality. Besides `sys`, no other modules should be necessary.