

# Programmierpraktikum

Exercise Sheet #6

WS, 2012/2013

## Constructors

Write a class which at instantiation generates an array with 3 names, taken from the arguments on which it is called (use a *constructor*). The class should have a member function that prints one of this names, randomly.

Write a program that uses this class to print a name randomly from a given input.

## Abstract Classes

Define an abstract class “LinAlg”. This class should have a few functions that:

- Calculate the norm of an array
- Calculate the inner product of two arrays

The methods should be of which kind?

*Hint:* Save your time reusing code from the exercises a few weeks ago.

## Inheritance

Write a class which inherits from the class “LinAlg” of previous exercise. Then add the “printVectors” function, which prints the inputs and output in the following way: for example  $[1, 2, 3] \times [2, 3, 4] = 20$ .

Write a program that uses the functions for the same arrays as for the previous exercise, but prints the results via the new function.

## Static variables

Define a class with two public variables, one of which is static. Assign initial values to them through a constructor. Then, write a program that makes three instantiations of the class. For each new object, print the value of the two variables in all instantiated objects (so far), then change their value, and then print the value of both variables for each of the instantiated objects. What difference do you observe in the behavior of both variables?