

10. Exercise sheet *Compiler Construction 2011*

Due to Wed., 19th Januar 2011, *before* the exercise course begins.

Hand in your solutions in groups of three or four!

Exercise 10.1:

(1.5 points)

Which of the following procedure stacks could be results of the execution of a EPL-program? Why?

- (a) $p_1 = 15 : 4 : 9 : -3 : 5 : 5 : 6 : 3 : 2 : 1 : 5 : 4 : 12 : 3 : 4 : 4 : 3 : 25 : 0 : 0 : 0 : 0 : 12$
- (b) $p_2 = 15 : 4 : 9 : -3 : 5 : 10 : 4 : 3 : 2 : 1 : 5 : 4 : 12 : 3 : 4 : 4 : 3 : 25 : 0 : 0 : 0 : 0 : 12$
- (c) $p_3 = 15 : 4 : 9 : -3 : 5 : 14 : 4 : 3 : 2 : 1 : 5 : 4 : 12 : 3 : 4 : 4 : 3 : 25 : 0 : 0 : 0 : 0 : 12$

Exercise 10.2:

(1+3+2+3.5)

- a) Write a program in the example programming language computing the greatest common divisor of two positive numbers.
- b) Translate the program into intermediate code.
- c) Give a run of the program, i.e. the sequence of program states for input 4, 2.
- d) Show that it actually does compute the gcd using the formal semantics.