

8. Exercise sheet *Compiler Construction 2008*

Due to Wed., 2 July 2008, *before* the exercise course begins.

Exercise 8.1:

Consider the following recursive program for computing the factorial of a positive number $n \in \mathbb{N}_{>0}$.

```
in/out n;  
var y;  
proc fac;  
  var x;  
  y := y + 1;  
  x := y;  
  if y + 1 < n then  
    fac();  
  
  n := n * x;  
  
fac();
```

- a) Translate the program into intermediate code.
- b) Give a run of the program, i.e. the sequence of program states, for input 3.

Exercise 8.2:

- a) Write a program in the example programming language computing the greatest common divisor of two positive numbers.
- b) Show that it actually does compute the gcd using the formal semantics.