Static Program Analysis
SS 2011
Exercise Sheet 5

Please hand in the solutions to the theoretical exercises until the beginning of the next lecture, Wed. 2011-05-25, 10:00. Please write the number of your tutorial group and/or the date/time slot on the first sheet of your solution.

Exercise 5.1: Widening (Points: 2)
Compute the results of an accelerated round-robin iteration for Example 1.10.1 (see Figure 1.27, page 60) when widening is used at program point 3 (and only there).

Exercise 5.2: Narrowing (Points: 2)
Demonstrate with an example the following statement:

Accelerated narrowing is less precise than naïve narrowing.

Exercise 5.3: Fixed-Point Iteration (Points: 4)
Round-robin iteration, worklist algorithm and recursive iteration are three ways to compute the least solution of a system of inequalities. Give an example, i.e., a data-flow analysis together with a corresponding program, where the worklist algorithm outperforms round-robin iteration and recursive iteration outperforms the worklist algorithm.