Static Program Analysis
SS 2011
Exercise Sheet 2

Please hand in the solutions to the theoretical exercises until the beginning of the next lecture, Wed. 2011-05-04, 10:00. Please write the number of your tutorial group and/or the date/time slot on the first sheet of your solution.

Exercise 2.1: Available vs. Non-Available Expressions (Points: 6)

On the previous exercise sheet you discovered that $A[u]$, the set of available expressions on a program point $u$, and $N[u]$, the set of non-available expressions, are complements. In this exercise you are to prove this. I.e. show by induction over the length of paths $\pi : start \rightarrow^* u$ that

$$[[\pi]]_{N}^\ast Expr = Expr \setminus [[\pi]]_{A}^\ast \emptyset$$

where $N$ denotes the non-available expressions analysis and $A$ the analysis to determine available expressions.

Exercise 2.2: PAG/WWW (Points: 7+7)

Use PAG/WWW (available at http://pag.cs.uni-sb.de/) to implement the following program analyses.

- Non-Available Expressions
- Available Assignments

Provide a meaningful example program for each of these analyses to show that your implementation works correctly. You can submit your solutions to this exercise (analysis definition and example program) via e-mail to jherter@cs.uni-saarland.de.