Software-Modellierung und Verifikation
Informatik 2
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13. Exercise sheet *Semantics and Verification of Software SoSe2010*

Due to Monday, 26th July 2010, *before* the exercise course begins. This exercise is optional!

Exercise 13.1:

(a) Perform a live variable analysis on the following program using the worklist algorithm.

$y := 1;$
while $x > 0$ **do** $x := x - 1;$
$y := 2;$

(b) Perform an available expression analysis on the following program using the meet over all paths (MOP) solution.

$x := x + 1;$
$y := 1;$
if $x * y > z$ **then**
    $x := x + 1;$
    $y := 1;$
else
    $y := y + 1;$
$z := x + y;$

(c) Perform a constant propagation analysis on the following program using the fixpoint iteration which was presented in Lecture 20 (do not use the worklist algorithm!).

$z := 1;$
$x := 1;$
$y := 2;$
while $z > 0$ **do**
    $x := x + 2;$
    while $y < 10$ **do**
        $z := z - y;$
    $x := x + y;$