

17-654/17-754: Analysis of Software Artifacts
Class Participation Sheet
For Lecture 18, Dataflow Analysis

Name: _____ Email ID: _____

Question 1. Fill in the table to show how what information zero analysis will compute for the function given.

Program Statement	Analysis Info after that statement
0: <i><beginning of program></i>	
1: $x := 0$	
2: $y := 1$	
3: $\text{if } (z == 0)$	
4: $x := x + y$	
5: $\text{else } y := y - 1$	
6: $w := y$	

Question 2. Consider the following two tuple lattice values: $[x \mapsto Z, y \mapsto MZ]$ and $[x \mapsto MZ, y \mapsto NZ]$.

(A) How do the two compare in the lattice ordering for zero analysis?

(B) What is the join of these two tuple lattice values?

Question 3. Draw a CFG for the analysis given in CYU question 1. A picture or scan of a hand-drawn graph is fine, as is an electronic drawing.

Answer:

begin



Question 4. Explain in detail how the dataflow lattice value for after the statement $w := y$ is computed, using the CFG above as your point of reference.

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Question 5. Show how the worklist algorithm given in class operates on the program given in question 1, by filling in the table below.

Position	Worklist	x	y	w
0				

Optional: Ask a question, make a suggestion, or provide feedback to the instructor/TAs