Register allocation is typically performed in "post-SSA form" programs, that is, in programs after phi-functions have been replaced with actual assembly instructions. However, we could do register allocation before that.

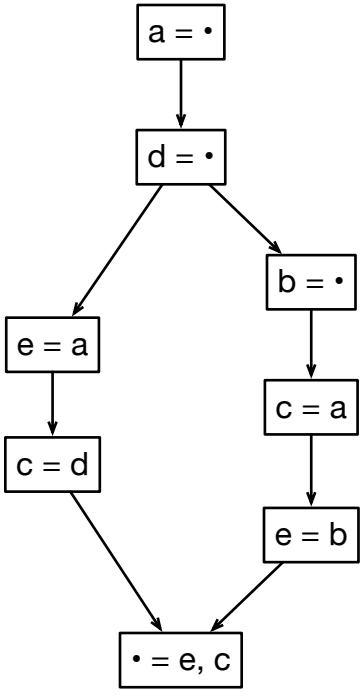

Figure 1: program in standard 3-address code representation, with one basic block per instruction.

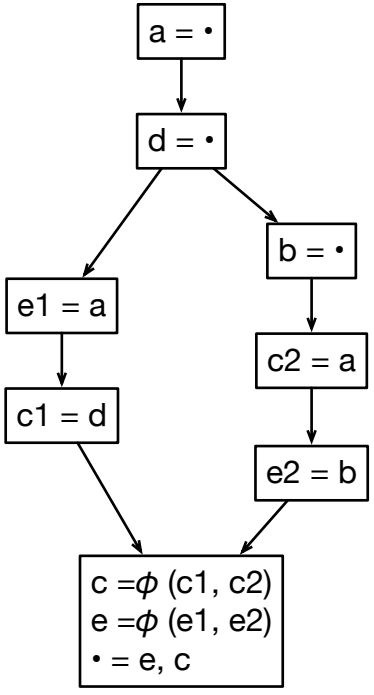

Figure 2: version of the program in Figure 1 in the static-single assignment form.

1. How many registers would be necessary to compile the program in Figure 1?

2. How many registers would be necessary to compile the program in Figure 2?

3. How the program in Figure 2 would look like in assembly, after register allocation? In other words, how would you represent the phi-functions?

To know more: Fernando Magno Quintão Pereira, Jens Palsberg: *Register Allocation Via Coloring of Chordal Graphs*. APLAS 2005: 315-329