

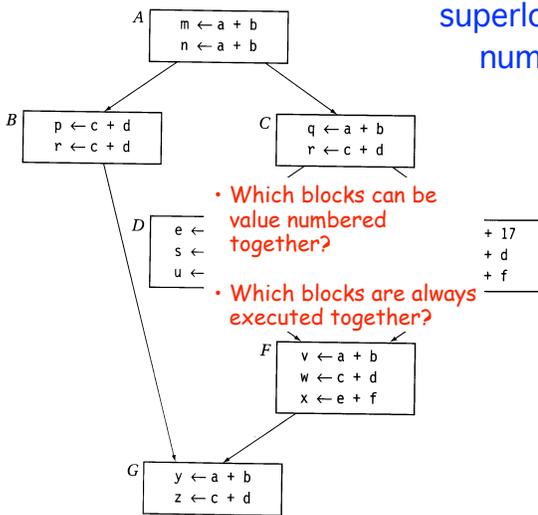
Superlocal Value Numbering
(EAC, 8.5 in 1st ed. or 8.3/8.5.1/9.3.2 in 2nd)

Chen Ding

Course page: <http://www.cs.rochester.edu/drupal/u/cding/csc-255455-advanced-programming-systems-spring-2014>

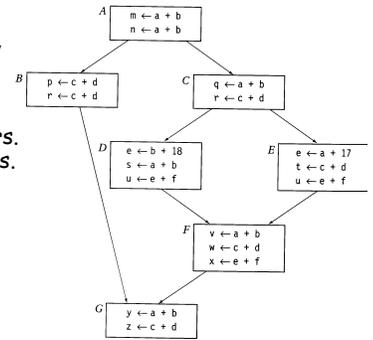
More material see Preston Briggs et al, "Value Numbering", Software -- Practice and Experience, 1990.

Superlocal Value Numbering



Superlocal Value Numbering

- Extended basic blocks
 - An EBB is a series of BBs, each is the sole predecessor of the next one. The first one may have multiple predecessors.
 - EVN uses max length EBBs.
- Dominator
 - x dominates y iff every path from the root to y includes x
 - strict dominator, $x \neq y$
 - immediate dominator
 - the closest strict dominator



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Review Questions

- Can you define the following concepts?
 - EBB, dominator, strict/immediate dominator
- Preparation for dataflow analysis
 - Is there a redundant instruction in the example but cannot be removed by value numbering?
 - What flow property makes it redundant?
 - Consider the problem of finding dominators in CFG
 - what flow property is required?
 - Meet-over-all path problems
 - MOP