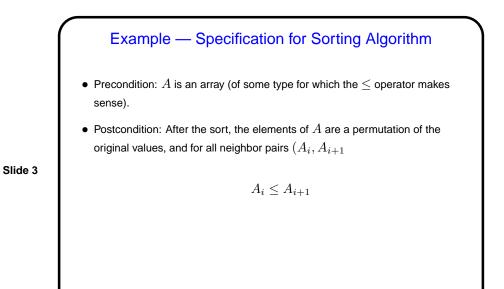


Slide 1

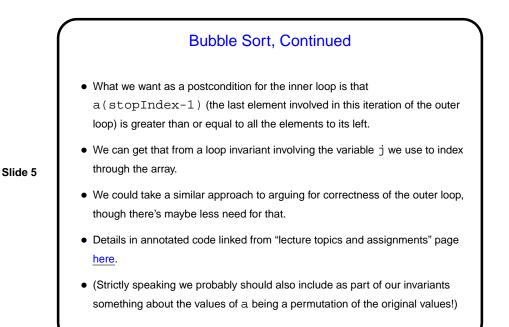
"Informal Formal Methods" Revisited

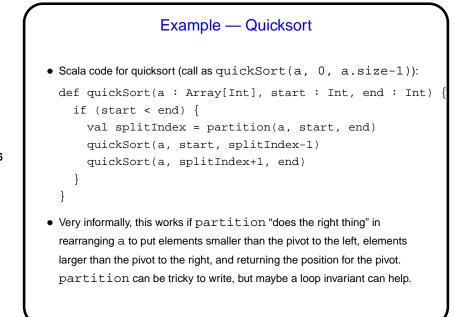
- The textbook discusses the very basics of one approach to proving program correctness. Can be helpful, but probably too much work to apply in detail to non-trivial programs.
- However, my claim is that the basic ideas can be applied in a less formal way, to good effect. Examples? try a couple of sorting algorithms.

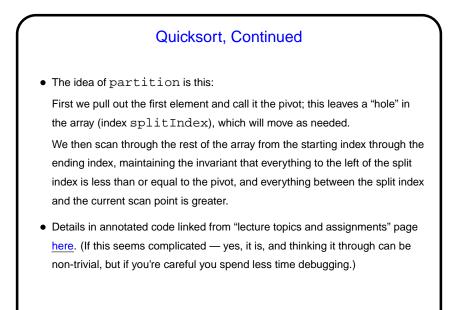


Bubble Sort
• Scala code for bubble sort (of Ints):
 def bubbleSort(a : Array[Int])
 for (stopIndex <- a.size to 2 by -1) {
 // make exchange pass over a(0 .. stopIndex-1)
 for (j <- 1 until stopIndex)
 if (a(j-1) > a(j)) {
 val temp = a(j-1) ; a(j-1) = a(j) ; a(j) = temp
 }
 }
 Very informally, this works because the first pass through the inner loop puts

 Very informally, this works because the first pass through the inner loop puts the largest value at the end, and the next pass puts the next-to-largest value next to the end, and so forth. Can we make a semi-formal argument for that?







Minute Essay • None – quiz. Slide 8