Homework 1: due 4/6/04 (email answers to ajain@cc.ucsf.edu)

Implement BubbleSort and QuickSort for integers

- Instrument your code
  - Count number of assignments
  - Count number of conditionals

Test the time complexity of your algorithms as follows

- For sizes of 100, 200, 300, … 1000
- Generate 100 random arrays
- Sort them using your code

Using the count data generated, illustrate the following:

- BubbleSort is \(O(n^2)\) on average
- QuickSort is \(O(n \log(n))\) on average

What to turn in: a single PDF or Word or RTF file

- Readable listing of your code
- Input and output of both procedures on one example of size 100
- Graphical depiction of counts for assignments and conditionals for both functions
- Argument (graphical or textual) that the algorithms’ average case performance is as expected

You can use C, Python, Fortran, Lisp, Perl

Email enclosure to: ajain@cc.ucsf.edu