

## 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

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

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

Email enclosure to: [ajain@cc.ucsf.edu](mailto:ajain@cc.ucsf.edu)