More Recursion

3-9-2012

Opening Discussion

- Uses of recursion:
  - Sudoku
  - Pyramid schemes
- IcP solutions.

Code

- Let's work on code from last time.

Recursive Sorts

- Some of the more efficient sorting algorithms are divide and conquer algorithms that are implemented with recursion.

- They divide on the way down, them may or may not do work on the way back up.

- Have O(n log n) average performance.

Merge Sort

- Break in half repeatedly on the way down. Recursively sort on each half.

- Merge sorted parts on the way back up.

- Can't happen in place because merge operation can't be done in one array.

Quicksort

- Can be done in place.

  - Pick a pivot.

  - Move all other elements either before or after the pivot as needed.

  - Recurse on the stuff before and after the pivot.

- Does all work on the way down, nothing on the way up.

- Inefficient List/Vector version is really short.

Minute Essay

- What topics would you most like to have video lectures for?

- Imagine you live in a world of abundance where you can have anything that has been created without needing money, but people need to work to create new ideas/designs/technology/science/knowledge. What would you do with your time?