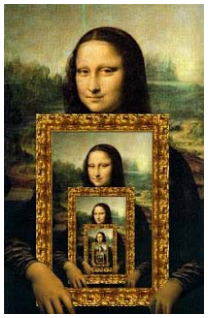
CompSci 101
Introduction to Computer Science



November 25, 2014

Prof. Rodger

Announcements

- No Reading or RQ for next time
- Assignment 8 out – due Dec 4
- Assignment 9 out – due Dec 5 (extra)
- APT 10 out and due – Dec 5
- Lab 11 next week

- Finish lecture notes from last time

Recursion

- Method calls a clone of itself
- Solves a problem by solving smaller subproblems
- "looping" by recursive calls
  - CAUTION – don't add a loop, it is implicit

Examples: recursionMisc.py

- Calculates and prints the sum of integers from a list that are even
- Print the numbers one per line
- Mystery recursion

Recursion (more)

- Watch out for infinite recursion
  - No way out, what happens?
  - Segmentation fault, out of memory
- Rules
  - Base case (way out) – no recursive call
  - Recursive call(s) – solve a smaller problem

Recursion vs Iteration
Which method do you use?

- Iteration
  - Easier to define
  - Faster – recursion takes some overhead
- Recursion
  - Easier to define
  - Shorter code

Types of Recursion

- Tail recursion
  - One recursive call at the end of a method
  - Easy to replace with a loop
- Reverse something
  - One recursive call “before”process
- Multiple Recursion
  - More than one recursive call