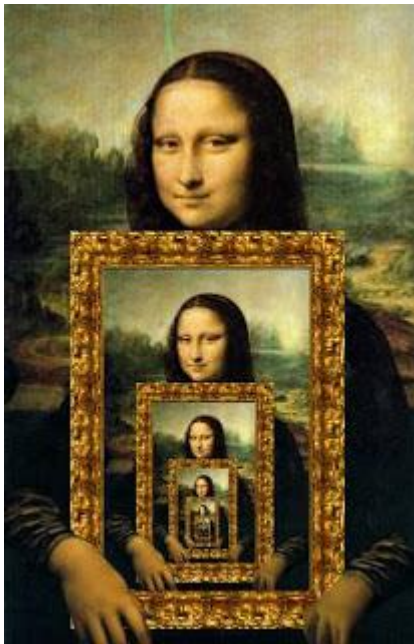


CompSci 101

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
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- 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