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