CSCI 262 Lecture 6 – Stacks & Queues

Outline

• Two new data structures!
  ◦ Stacks – all operations with “top” element
  ◦ Queues – add to back, remove from front
• Applications of stacks & queues, including graph search

Readings

For today: Chapter 14.4 – 14.6 in your textbook
For next time: Chapter 12.1 – 12.3, 14.3 in your textbook

Self Check

1. Stacks are ______________________________ (LIFO) data structures.
2. Queues are ______________________________ (FIFO) data structures.
3. The three principle stack operations are named: __________, __________, and __________.
4. The operations on a queue to add to the back and remove from the front are called __________
   and __________ (although the C++ STL calls them __________ and __________).

For Further Practice

Your textbook has a number of great exercises to help sharpen your understanding and intuitions about stacks
and queues. Some recommended ones:

• The “Self Check” section at the end of chapter 14.4
• Read section 14.6.2 on reverse Polish notation, and then use a stack (just on paper) to evaluate the
  following – but note that one expression is invalid – the stack will tell you which one!
  ◦ 7 1 + 3 ×
  ◦ 4 12 + 7 × 16 8 ÷
  ◦ 4 8 6 − 2 1 1 + ÷ × ×
  ◦ 1 2 3 4 5 6 + − + − +
• Review Exercises R14.29 and R14.30 (if you get stuck, the internet has answers)
• Try practice exercise E14.20. Here’s a simple HTML to try it on: