CS 140: Intro to Computer Science, Fall 2011
Homework 6

Due (in class or via email) by 1pm on Friday, Nov. 4, 2011

1. (5 points) Assume that we have an initially empty stack of integers. Fill in the following table, showing the output returned and the internal state of the stack after each call. (We've filled in the first 2 lines for you.)

Operation	Output	Contents of S
S.push(7)	-	(7)
S.push(10)	-	(7, 10)
S.push(4)		
S.pop()		
S.push(15)		
S.push(11)		
S.pop()		
S.pop()		
S.pop()		
S.push(3)		
S.push(6)		
S.pop()		

2. (5 points) Assume that we have an initially empty queue of integers. Fill in the following table, showing the output returned and the internal state of the queue after each call. (We've filled in the first 2 lines for you.)

Operation	Output	Contents of Q
Q.add(7)	-	(7)
Q.add(10)	-	(7, 10)
Q.add(4)		
Q.remove()		
Q.remove()		
Q.add(6)		
Q.add(11)		
Q.remove()		
Q.add(14)		
Q.remove()		
Q.remove()		
Q.add(3)		

3. (a) (7 points) Draw the binary seach tree that results from inserting the elements: 40, 10, 50, 52, 43, 86, 11, 25, 37, 74, 24, 64, 23

(b) (3 points) Now, in your tree from part (a), how many comparisons result when we search for the element 40? What about the element 25? What about 67?

4. Chapter 8, exercises 51, 52, 53, 55 (on pages 281-282)