Test 2 will be Thursday, April 4, in class. It will be closed-book and notes, except for one 8.5” x 11” sheet of paper containing any notes that you want. (Yes, you can use both the front and back of this piece of paper.) The test will cover Chapters 4 and 5. The following topics (and maybe more) will be covered:

**Chapter 4: Recursion**

- Recursive functions: base-case(s), recursive case(s), tracing recursion via run-time stack or recursion tree, “infinite recursion”
- Costs and benefits of recursion
- Recursive examples: countDown, OrderedList `__str__` method, fibonacci, factorial, binomial coefficient

**Chapter 5: Searching and Sorting**

- Sequential/Linear search: code and big-oh analysis
- Binary Search: code and big-oh analysis
- Python List implementation (`ListDict`) of dictionaries and big-oh analysis
- Hashing terminology: hash function, hash table, collision, load factor, chaining/closed-address/external chaining, open-address with some rehashing strategy: linear probing, quadratic probing, primary and secondary clustering
- Hashing implementation of dictionaries (`ChainingDict` and `OpenAddrHashDict`) and their big-oh analysis
- General idea of simple sorts
- Simple sorts: selection, bubble, insertion sorts and their big-oh analysis
- Advanced sorts and their big-oh analysis: heap sort, quick sort and merge sort