CSC 18C Final Exam – Spring 2016 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chapters 1-3: Bags/Collections

1. **True / False**: All entries of a bag must have the same data type or a subtype of that data type.

1. Explain how to implement the *clear* method in a chain.
2. What happens when you access a reference that is null?

Chapters 5-6: Stacks

1. **True / False**: Infix expressions are easier to evaluate than postfix expressions.
2. Convert the following infix expression to a postfix expression:  
   (a + b) \* (c – d) / ((e – f) \* (g + h))

Chapters 7-9: Sorting/Recursion

1. **True / False**: Activation records for recursive methods are the same as activation records for non-recursive methods.

1. Java sorting implementations sort objects that implement the \_\_\_\_\_ interface.
   1. Comparable
   2. Sortable
   3. Hierarchical
   4. All of the above

Chapters 10-11: Queues

1. **True / False**: The item most recently added to a queue is at the back of the queue.

1. Which of the following real-world events could be simulated using a queue?
   1. bank line
   2. a shared network printer
   3. restaurant reservation list
   4. all of the above
2. What type of behavior defines a queue?
   1. first-in first-out
   2. first-in last-out
   3. last-in first-out
   4. none of the above
3. How does a queue organize it items?
   1. according to the order in which they were added
   2. by priority
   3. alphabetically
   4. randomly
   5. none of the above
4. Where does a queue add new items?
   1. at the back
   2. at the front
   3. in the middle
   4. randomly
   5. none of the above

Chapters 12-16: Lists

1. **True / False**: Retrieving a list entry using a linked implementation is faster than using an array representation.
2. Outline the basic steps to add a node to the end of a linked implementation of a list.

Chapters 23-27: Trees

1. **True / False**: In a tree, nodes are arranged in levels that indicate the nodes’ hierarchy.
2. List the steps of a preorder traversal of a binary tree.
3. List the steps of a postorder traversal of a binary tree.
4. List the steps of an inorder traversal of a binary tree.

Chapters 28-29: Graphs

1. Adjacent vertices are called
   1. neighbors
   2. siblings
   3. both a & b
   4. none of the above
2. Give the depth-first traversal of the following graph beginning at vertex A.  
    