DATA STRUCTURE QUESTIONS:

By : Ravindra Acharya

Dt : 6th May 2009

1. What is a data structure?
2. What does abstract data type means?
3. Evaluate the following prefix _expression " ++ 26 + - 1324" (Similar types can be asked)
4. Convert the following infix _expression to post fix notation ((a+2)*(b+4)) -1 (Similar types can be asked)
5. How is it possible to insert different type of elements in stack?
6. Stack can be described as a pointer. Explain.
7. Write a Binary Search program
8. Write programs for Bubble Sort, Quick sort
9. Explain about the types of linked lists
10. How would you sort a linked list?
11. Write the programs for Linked List (Insertion and Deletion) operations
12. What data structure would you mostly likely see in a non recursive implementation of a recursive algorithm?
13. What do you mean by Base case, Recursive case, Binding Time, Run-Time Stack and Tail Recursion?
14. Explain quick sort and merge sort algorithms and derive the time-constraint relation for these.
15. Explain binary searching, Fibinocci search.
16. What is the maximum total number of nodes in a tree that has N levels? Note that the root is level (zero)
17. How many different binary trees and binary search trees can be made from three nodes that contain the key values 1, 2 & 3?
18. A list is ordered from smaller to largest when a sort is called. Which sort would take the longest time to execute?
19. A list is ordered from smaller to largest when a sort is called. Which sort would take the shortest time to execute?
20. When will you sort an array of pointers to list elements, rather than sorting the elements themselves?
21. The element being searched for is not found in an array of 100 elements. What is the average number of comparisons needed in a sequential search to determine that the element is not there, if the elements are completely unordered?
22. What is the average number of comparisons needed in a sequential search to determine the position of an element in an array of 100 elements, if the elements are ordered from largest to smallest?
23. Which sort show the best average behavior?
24. What is the average number of comparisons in a sequential search?

25. Which data structure is needed to convert infix notations to post fix notations?
26. What do you mean by:
* Syntax Error
* Logical Error
* Runtime Error
How can you correct these errors?
27. In which data structure, elements can be added or removed at either end, but not in the middle?
28. How will inorder, preorder and postorder traversals print the elements of a tree?
29. Parenthesis are never needed in prefix or postfix expressions. Why?
30. Which one is faster? A binary search of an orderd set of elements in an array or a sequential search of the elements.