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Question Bank

Name of Subject – Data Structure Using C

 Q Aswer the following question

1. What is self referential structure ?

2. How to measure performance of an algorithm ?

3. What is polynomial ? How is it differ from structure ?

4. What are the different types of graph ?

5. What is balance factor ? How is it calculated ?

6. What are the applications of stack ?

7. What are Abstract Data types ?

8. List out different types of tree.

9. List out different types of data structures.

10. What is priority queue ?

11. What is Self Referencial Structure ?

12. What is spanning tree ?

13. What is sorting ? State the techniques of sorting.

14. What are the applications of queue ?

15. What is Adjacency Matrix ?

16. What is Space and Time Complexity ?

17. What are the advantages of linked list over an array ?

18. Difference between array and structure.

19. What is non-primitive data structure ?

20. What is Polynomial ? How is it represented ?

21. (a) What is Self Referential structure ?

22. (b) What is efficiency of linear search method ?

23. (c) What is difference between Binary Tree and Binary Search Tree ?

24. (d) What are the different types of data structures ?

25. (e) What are the applications of queue ?

26. (f) What is almost complete binary tree ?

27. (g) What is Double Ended Queue ?

28. (h) State the types of graph.

29. (i) What is the use of (&) address operator and Dereferencing (\*) operator ?

30. (j) What is Pointer ? What are the operations we can perform on the pointer ?

31. State the types of graph.

32. Define Data Structure.

33. How to measure performance of an Algorithm.

34. How to calculate count of Best, Worst and Average case ?

35. What is Ancestor of Node ?

36. What is ADT for an array ?

37. What is searching ?

38. What are the operations we can perform on queue ?

39. State the difference between Stack and Linked List.

40. What is Pointer to Pointer ?

41. Define the following terms :

42. Balance Factor

43. Leaf Node

44. Degree of Node

45. Cyclic Graph

46.Why do we need data structures?

47.What is linear search?

48.Where can stack data structure be used?

49.List out operations on linked list.

50.How do you find the height of a node in a tree?

51.Define abstract type (ADT).

52.List types of linked list.

53.Which data structure is used in Depth First Search?

54.Give two applications of queue.

55.Define strictly binary tree.

Q Solve the following question

1. Write a ‘C’ function to count leaf nodes in a binary tree.
2. Assuming int A[2] [3]={1, 2, 3, 4, 5, 6} is stored in a column major order

with first element of A is at address 1000 and each integer occupying 2

bytes. What would be the address of the element A[1] [2]?

1. Sort the following numbers using Bubble sort method.

108, 3, 97, 65, 71, 23, 57, 93, 100

1. Write a ‘C’ function for Binary search.
2. What is graph? Explain applications of graph.
3. Write a ‘C’ function to insert node at middle into singly linked list.
4. Write a ‘C’function to implement following operations on stack.

i) Push

ii) Pop

1. Construct the adjacency matrix and adjacency list for the following graph.



1. Write a ‘C’ function to search elements in Singly linked list
2. What is Tree? Explain any three types of tree
3. Difference between Tree and Graph.
4. Write a note on Asymptotic notations.
5. What is Queue? Explain types of Queue.
6. Construct BST for the following data.

 11, 7, 15, 25, 18, 5, 12, 20

1. Write ‘C’ function for Enqueue and dequeue operation.
2. Explain quick sort algorithm with example.
3. Convert following expressions.

 i) Convert Infix to Postfix

 1) (A + B)\* C + (D – E)/F + G

 2) A–B/C \* A/K–L

 ii) Exaluate postfix expressions.

 1) Postfix : 34 \* 25\* +

 2) Postfix : 23 \* 45 + \*

1. Define Graph traversal. Explain with its techniques.
2. What is linked list? Explain representation of linked list in memory.
3. Explain Algorithm analysis in detail with example
4. Discuss different asymptotic notations.
5. Write C function to delete last node from singly linked list.
6. What is sparse matrix and how it is represented?
7. Differentiate between stack and queue.

 25) Define Graph. Calculate in degree and out-degree for the following graph.



1. Write short note on priority queue.
2. Write an algorithm for insertion sort.
3. Define an array. Discuss memory represention of an array.
4. Write C function to reverse singly linked list.
5. What is queue? Discuss different queue operations.
6. Discuss different graph representations.

32) Convert the following expression into postfix using stack.

 ((A+B)\*(C–D))/E

33) What is binary search tree? Show stepwise creation of binary search tree

 for the data

 10, 20, 15, 5, 1, 7, 13

34) What is topological sort? Explain how to find topological ordering for

 graph using suitable example.

35) What is circular queue? Discuss operations on circular queue.

36) Write C function to search element using binary search method.

37) Define binary tree. Write C structure for binary tree. Find in-order, preorder,

 post-order for following tree.



38) Write an algorithm for evaluating postfix expression and implement it on

 following expression

 AB+CD – \* [A=5, B=4, C=6, D=2]

39) Show pass wise sorting of data using bubble sort and discuss its time

 complexity.

 25, 37, 12, 48, 57, 33

40) Write C function to insert and delete node in doubly linked list.

41) Write a function to sort given Singly Linked List.

42) Explain different types of Dynamic Memory Allocation Functions.

43) Explain Kruskal’s algorithm for minimal spanning tree.

44) Write an algorithm for evaluation of Postfix Expression.

45) Write a function to delete last node from Singly Linked List.

46) Sort the following data by using quick sort tecniques :

 50. 48, 29, 8, 59, 72, 88, 34, 47

47) What is Doubly Circular Linked List ? Explain its node structure.

48) Write a function to display Singly Linked List in reverse order.

49) Explain Binary search method with an example.

50) Explain Insertion sort technique with an example.

51)What is Graph ? Explain its representation techniques in detail.

52) Write a function to remove First Node singly linked list and

53) add it at the end of linked list.

54) Sort the following data by using selection sort techniques :

 45, 85, 96, 78, 34, 12, 49, 38, 18

55) Write a function for Dynamic Implementation of stack.

56) Write a function to create Doubly Linked List.

57) Write an algorithm to convert given infix expression to postfixexpression.

58) What is height-balanced tree ? Explain LL and RR rotationswith an example.

59) Explain use of setfill( ) and setiosflags( ) manipulators with the help of suitable example.

60) Write a note on exception handling.

61) Write a program to display the contents of a text file in the reverse order.

62) Write a program to swap two integers using function template.

63) Differentiate between BFS and DFS.

64) Write a function to display doubly linked list in reverse order.

65) Explain different types of recursive tree traversing techniques with an example.

66) Explain Quick sort technique with an example.

67) What is doubly circular linked list ? Explain its node structure.

68) What are the drawbacks of sequential storage ?

69) Write a function to sort given singly linked list.

70) Write a function to check whether given expression is parenthesis or not.

71) Explain different types of dynamic memory allocation functions.

72) Sort following data by using Merge sort techniques :

 73. 12, 5, 122, 9, 7, 54, 4, 23, 88, 60

73) Write a function to remove given node from singly linked list and add it at the given position in singly linked list.

74) Write a function to create and display circular singly linkedlist.

75) Write a function to add node at the beginning of circular singly linked list

76) Evaluate the following Postfix expression :

 4, 5, 4, 2, ^, +, \*, 2, 2, ^, 9, 3, 1, \*, -

77) Write a function to remove last node from doubly linked list.

78) Differentiate between doubly linked list and tree.

79) Explain Kruskal’s algorithm for minimum spanning tree withan example.

80) Construct Binary Search Tree for the following Data :

 July, Jan, Feb, Dec, Mar, Oct, Nov, Apr, Jun, Aug

81) Explain Binary search method with an example.

82) Explain Binary Search Method with an example.

83) Write a function to remove first node from singly linked list and display remaining list.

84) Explain DFS with an example.

85) Explain Heap Sort technique with an example.

86) Write an Algorithm to convert given infix expression to prefix expression.

87) What is Queue ? Explain its types in detail.

88) Explain different types of AVL rotations with an example.

89) Construct Binary search tree of following data :

 DEC, MAR, APRIL, JAN, JUN, AUG, SEPT, NOV

90) What is an algorithm ? Explain its characteristics.

91) Explain BFS with an example.

92) What is the difference between array and structure ?

93) Explain BFS traversing technique with an example.

94) Sort the following data by using bubble sorts techniques :

 56, 23, 98, 67, 3, 87, 45, 77, 99

95) Write a ‘C’ program for addition of two polynomials.

96) Write a function to merge given two singly linked lists.

97) Write a function to create and display circular singly linked list.

98) What is Graph ? Explain Adjacency list of graph.

99) Write a function to count the number of leaf and non-leaf

100) nodes in a tree (Recursive functions).

101) Write an algorithm for evaluation of prefix expression.

102)Write a function to remove last node of singly linked list and

103) add it at the beginning of linked list.

104) Sort the following data by using Insertion sort techniques :

 130. 87, 45, 12, 90, 67, 54, 34, 23, 60

105) What is circular queue ? Explain it with an example.

106) Write the recursive functions to traverse a tree by using

107) inorder(), preorder() and postorder() traversing techniques.

108) Write a function to delete first node from singly linked list.

109) Explain selection sort technique with an example.

110)Write a function to add node at given position in singly linkedlist.

111) Write a ‘C’ program for evaluation of polynomial.

112) Explain different types of asymptotic notations in detail.

113) Write a ‘C’ program for dynamic implementation of stack.

114) Write a function to traverse a graph using DFS technique.

115) Explain heap sort technique with an example.

116) Write a function to reverse a string using stack.

117) Write a function to create doubly circular linked list.

118) What is circular queue ? How is it differ from static queue ?

119) Explain different types of dynamic memory allocation functions.

120) Explain minimal spanning free with an example.