**MCQ on Data Structure**

What is Data Structure?

* **Data structures** are a specific way of organizing data in a specialized format on a computer so that the information can be organized, processed, stored, and retrieved quickly and effectively. They are a means of handling information, rendering the data for easy use.
* A **Queue** is defined as a linear data structure that is open at both ends and the operations are performed in First In First Out (FIFO) order.
* **Stack** is a linear data structure that follows a particular order in which the operations are performed. The order may be LIFO (Last In First Out)
* A **list** is an ordered data structure with elements separated by a comma and enclosed within square brackets.
* **Maps** (also known as Dictionaries) are data structures stores a collection of key-value pairs.

What are the types of Data Structure?

* **Linear data structures** include arrays, or finite groups of data, with memory locations that allow elements to be accessed through an index key and linked lists. Linked lists order elements within a list so they can be sporadically placed within memory.
* **Tree data structures** are hierarchical and present a root value with subsets of children that are represented as linked nodes. Tree data structures come in many varieties with several distinct characteristics, including binary trees, binary search trees, red-black trees, weight-balanced trees and binary heaps.
* **Hash tables** map keys to values, abstracted by additional behaviors through the use of high-level programming languages. Some variations of hash tables include separate chaining and linear probing.
* **Graph data structures** are implemented through graph theory principles, utilizing nodes and edges to weigh graphs and represent the directional flow of networks.

1. What is a data structure?
2. A programming language
3. A collection of algorithms
4. A way to store and organize data
5. A type of computer hardware
6. What are the disadvantages of arrays?
7. Index value of an array can be negative
8. Elements are sequentially accessed
9. Data structure like queue or stack cannot be implemented
10. There are chances of wastage of memory space if elements inserted in an array are lesser than the allocated size
11. Which data structure is used for implementing recursion?
12. Stack
13. Queue
14. List
15. Array
16. The data structure required to check whether an expression contains a balanced parenthesis is?
17. Queue
18. Stack
19. Tree
20. Array
21. Which of the following is not the application of stack?
22. Data Transfer between two asynchronous processes
23. Compiler Syntax Analyzer
24. Tracking of local variables at run time
25. A parenthesis balancing program
26. Which data structure is needed to convert infix notation to postfix notation?
27. Tree
28. Branch
29. Stack
30. Queue
31. What is the value of the postfix expression 6 3 2 4 + – \*?
32. 74
33. -18
34. 22
35. 40
36. What data structure would you mostly likely see in non recursive implementation of a recursive algorithm?
37. Stack
38. Linked List
39. Tree
40. Queue
41. Which of the following statement(s) about stack data structure is/are NOT correct?
42. Top of the Stack always contain the new node
43. Stack is the FIFO data structure
44. Null link is present in the last node at the bottom of the stack
45. Linked List are used for implementing Stacks
46. The data structure required for Breadth First Traversal on a graph is?
47. Array
48. Stack
49. Tree
50. Queue
51. The prefix form of A-B/ (C \* D ^ E) is?
52. -A/B\*C^DE
53. -A/BC\*^DE
54. -ABCD\*^DE
55. -/\*^ACBDE
56. Which of the following points is/are not true about Linked List data structure when it is compared with an array?
57. Random access is not allowed in a typical implementation of Linked Lists
58. Access of elements in linked list takes less time than compared to arrays
59. Arrays have better cache locality that can make them better in terms of performance
60. It is easy to insert and delete elements in Linked List
61. Which data structure is based on the Last In First Out (LIFO) principle?
62. Tree
63. Linked List
64. Stack
65. Queue
66. Which of the following application makes use of a circular linked list?
67. Recursive function calls
68. Undo operation in a text editor
69. Implement Hash Tables
70. Allocating CPU to resources
71. What is a bit array?
72. Data structure that compactly stores bits
73. Data structure for representing arrays of records
74. Array in which elements are not present in continuous locations
75. An array in which most of the elements have the same value
76. Which of the following tree data structures is not a balanced binary tree?
77. Splay tree
78. B-tree
79. AVL tree
80. Red-black tree
81. Which of the following is not the type of queue?
82. Priority queue
83. Circular queue
84. Single ended queue
85. Ordinary queue
86. Which of the following data structures can be used for parentheses matching?
87. n-ary tree
88. queue
89. priority queue
90. stack
91. Which algorithm is used in the top tree data structure?
92. Backtracking
93. Divide and Conquer
94. Branch
95. Greedy
96. What is the need for a circular queue?
97. easier computations
98. implement LIFO principle in queues
99. effective usage of memory
100. to delete elements based on priority