Following are the multiple choice questions (MCQs) or objective questions from Data Structures and Algorithms. The questions are set from the topics such as arrays, records, pointers, linked lists, stacks, queues, recursion, trees, sorting and searching. **Set - 1**

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1. Two main measures for the efficiency of an algorithm are a. Processor and memory
b. Complexity and capacity
c. Time and space
d. Data and space

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2. The time factor when determining the efficiency of algorithm is measured by
a. Counting microseconds
b. Counting the number of key operations
c. Counting the number of statements
d. Counting the kilobytes of algorithm

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3. The space factor when determining the efficiency of algorithm is measured by
a. Counting the maximum memory needed by the algorithm
b. Counting the minimum memory needed by the algorithm
c. Counting the average memory needed by the algorithm
d. Counting the maximum disk space needed by the algorithm

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4. Which of the following case does not exist in complexity theory
a. Best case
b. Worst case
c. Average case
d. Null case

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5. The Worst case occur in linear search algorithm when
a. Item is somewhere in the middle of the array
b. Item is not in the array at all
c. Item is the last element in the array
d. Item is the last element in the array or is not there at all

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6. The Average case occur in linear search algorithm
a. When Item is somewhere in the middle of the array

b. When Item is not in the array at all
c. When Item is the last element in the array
d. When Item is the last element in the array or is not there at all

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7. The complexity of the average case of an algorithm is
a. Much more complicated to analyze than that of worst case
b. Much more simpler to analyze than that of worst case
c. Sometimes more complicated and some other times simpler than that of worst case
d. None or above

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8. The complexity of linear search algorithm is
a. O(n)
b. O(log n)
c. O(n2)
d. O(n log n)

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9. The complexity of Binary search algorithm is
a. O(n)
b. O(log)
c. O(n2)
d. O(n log n)

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10. The complexity of Bubble sort algorithm is
a. O(n)
b. O(log n)
c. O(n2)
d. O(n log n)

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11. The complexity of merge sort algorithm is
a. O(n)
b. O(log n)
c. O(n2)
d. O(n log n)

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12. The indirect change of the values of a variable in one module by another module is called
a. internal change
b. inter-module change
c. side effect
d. side-module update

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13. Which of the following data structure is not linear data structure?
a. Arrays
b. Linked lists
c. Both of above
d. None of above

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14. Which of the following data structure is linear data structure?
a. Trees
b. Graphs
c. Arrays
d. None of above

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15. The operation of processing each element in the list is known as
a. Sorting
b. Merging
c. Inserting
d. Traversal

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16. Finding the location of the element with a given value is:
a. Traversal
b. Search
c. Sort
d. None of above

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17. Arrays are best data structures
a. for relatively permanent collections of data
b. for the size of the structure and the data in the structure are constantly changing
c. for both of above situation
d. for none of above situation

18. Linked lists are best suited
a. for relatively permanent collections of data
b. for the size of the structure and the data in the structure are constantly changing
c. for both of above situation
d. for none of above situation

19. Each array declaration need not give, implicitly or explicitly, the information about
a. the name of array
b. the data type of array
c. the first data from the set to be stored
d. the index set of the array

20. The elements of an array are stored successively in memory cells because
a. by this way computer can keep track only the address of the first element and the addresses of other elements can be calculated
b. the architecture of computer memory does not allow arrays to store other than serially
c. both of above
d. none of above

Answers

1. Two main measures for the efficiency of an algorithm are c. Time and space 2. The time factor when determining the efficiency of algorithm is measured by
b. Counting the number of key operations

3. The space factor when determining the efficiency of algorithm is measured by
a. Counting the maximum memory needed by the algorithm

4. Which of the following case does not exist in complexity theory
d. Null case

5. The Worst case occur in linear search algorithm when
d. Item is the last element in the array or is not there at all

6. The Average case occur in linear search algorithm
a. When Item is somewhere in the middle of the array

7. The complexity of the average case of an algorithm is
a. Much more complicated to analyze than that of worst case

8. The complexity of linear search algorithm is
a. O(n)

9. The complexity of Binary search algorithm is
b. O(log n)

10. The complexity of Bubble sort algorithm is
c. $O(n^2)$

11. The complexity of merge sort algorithm is
d. O(n log n)

12. The indirect change of the values of a variable in one module by another module is called
c. side effect

13. Which of the following data structure is not linear data structure?
d. None of above

14. Which of the following data structure is linear data structure?
c. Arrays

15. The operation of processing each element in the list is known as
d. Traversal

16. Finding the location of the element with a given value is:
b. Search

17. Arrays are best data structures
a. for relatively permanent collections of data

18. Linked lists are best suited
b. for the size of the structure and the data in the structure are constantly changing

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c. the first data from the set to be stored

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