

# Data Structure MCQ Questions

This section focuses on "basics" of Data Structure. These Multiple Choice Questions (MCQ) should be practiced to improve the Data Structure skills required for various interviews (campus interviews, walk-in interviews, company interviews), placements, entrance exams and other competitive examinations.

1. How many cases are there, which are used to compare various data structure's execution time in a relative manner?

- A. 2
- B. 3
- C. 4
- D. 5

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Ans : B

Explanation: There are three cases which are usually used to compare various data structure's execution time in a relative manner : Worst Case ,Average Case and Best Case.

2. Which case of data structure operation takes maximum time?

- A. Worst Case
- B. Average Case
- C. Best Case
- D. None of the above

[View Answer](#)

Ans : A

Explanation: Worst Case : This is the scenario where a particular data structure operation takes maximum time it can take.

3. In Average case, if operation takes  $f(n)$  time in execution, then  $m$  operations will take?

- A.  $f(n)$
- B.  $f(m)$
- C.  $mf(n)$
- D.  $nf(m)$

View Answer

Ans : C

Explanation: If an operation takes  $f(n)$  time in execution, then  $m$  operations will take  $mf(n)$  time.

4. \_\_\_\_\_ is a single elementary unit of information representing an attribute of an entity.

- A. Entity Set
- B. Record
- C. File
- D. Field

View Answer

Ans : D

Explanation: Field is a single elementary unit of information representing an attribute of an entity.

5. What is true about Interface in data structure?

- A. Each data structure has an interface.
- B. Interface represents the set of operations that a data structure supports.
- C. An interface only provides the list of supported operations, type of parameters they can accept and return type of these operations.
- D. All of the above

View Answer

Ans : D

Explanation: Interface : Each data structure has an interface. Interface represents the set of operations that a data structure supports. An interface only provides the list of supported operations, type of parameters they can accept and return type of these operations.

6. Which of the following is not a Characteristics of a Data Structure?

- A. Completeness
- B. Correctness
- C. Time Complexity
- D. Space Complexity

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Ans : A

Explanation: Completeness is not a Characteristics of a Data Structure.

7. Which characteristics shows that running time or the execution time of operations of data structure must be as small as possible?

- A. Completeness
- B. Correctness
- C. Time Complexity
- D. Space Complexity

[View Answer](#)

Ans : C

Explanation: Time Complexity : Running time or the execution time of operations of data structure must be as small as possible.

8. Data items that cannot be divided are called as?

- A. Group Items
- B. Attribute and Entity
- C. Elementary Items
- D. File items

[View Answer](#)

Ans : C

Explanation: Data items that cannot be divided are called as Elementary Items.

9. Which of the following analysis known as theoretical analysis of an algorithm?

- A. A Posterior Analysis
- B. A Priori Analysis
- C. A Feasibility Analysis
- D. A Independent Analysis

View Answer

Ans : B

Explanation: A Priori Analysis : This is a theoretical analysis of an algorithm. Efficiency of an algorithm is measured by assuming that all other factors, for example, processor speed, are constant and have no effect on the implementation.

10. Which of the following analysis known as empirical analysis of an algorithm?

- A. A Posterior Analysis
- B. A Priori Analysis
- C. A Feasibility Analysis
- D. A Independent Analysis

View Answer

Ans : A

Explanation: A Posterior Analysis : This is an empirical analysis of an algorithm. The selected algorithm is implemented using programming language. This is then executed on target computer machine. In this analysis, actual statistics like running time and space required, are collected.

11.  $O(1)$  means computing time is \_\_\_\_\_

- A. Constant
- B. Quadratic
- C. Linear
- D. Cubic

View Answer

Ans : A

Explanation:  $O(1)$  means computing time is Constant.

12. Which data structure allows deleting data elements from front and inserting at rear?

- A. Stacks
- B. Queues
- C. Deques
- D. Binary search tree

View Answer

Ans : B

Explanation: Queues data structure allows deleting data elements from front and inserting at rear.

13. Which of the following sorting algorithm is of divide-and-conquer type?

- A. Bubble sort
- B. Insertion sort
- C. Quick sort
- D. Selection sort

[View Answer](#)

Ans : C

Explanation: Quick sorting algorithm is of divide-and-conquer type.

14. 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

[View Answer](#)

Ans : B

Explanation: The time factor when determining the efficiency of algorithm is measured by Counting the number of key operations.

15. In an array representation of binary tree the right child of root will be at location of?

- A. 2
- B. 3
- C. 4
- D. 6

[View Answer](#)

Ans : B

Explanation: In an array representation of binary tree the right child of root will be at location of 3.

16. The upper bound on the time complexity of the nondeterministic sorting algorithm is?

- A.  $O(n)$
- B.  $O(n \log n)$
- C.  $O(1)$
- D.  $O(\log n)$

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Ans : A

Explanation: The upper bound on the time complexity of the nondeterministic sorting algorithm is  $O(n)$

17. In analysis of algorithm, approximate relationship between the size of the job and the amount of work required to do is expressed by using \_\_\_\_\_.

- A. Central tendency
- B. Differential equation
- C. Order of magnitude
- D. Order of execution

[View Answer](#)

Ans : D

Explanation: In analysis of algorithm, approximate relationship between the size of the job and the amount of work required to do is expressed by using Order of execution

18. What is the type of the algorithm used in solving the 8 Queens problem?

- A. Backtracking
- B. Dynamic
- C. Branch and Bound
- D. Both A and B

[View Answer](#)

Ans : A

Explanation: Backtracking algorithm used in solving the 8 Queens problem.

19. Which of the following belongs to the algorithm paradigm?

- A. Minimum & Maximum problem
- B. Knapsack problem
- C. Selection problem
- D. Merge sort

View Answer

Ans : B

Explanation: Knapsack problem belongs to the algorithm paradigm.

20. The  $[]$  notation is

- A. Symmetric
- B. Reflexive
- C. Transitive
- D. All of the above

View Answer

Ans : D

Explanation: The  $[]$  notation is All of the above.

21. An algorithm should have \_\_\_\_\_ well-defined outputs

- A. 0
- B. 1
- C. 0 or more
- D. 1 or more

View Answer

Ans : D

Explanation: An algorithm should have 1 or more well-defined outputs, and should match the desired output.

22. \_\_\_\_\_ of an algorithm represents the amount of memory space required by the algorithm in its life cycle.

- A. Space complexity
- B. Time Complexity
- C. Quadratic Complexity
- D. Exponential Complexity

View Answer

Ans : A

Explanation: Space complexity of an algorithm represents the amount of memory space required by the algorithm in its life cycle.

23. The space required by an algorithm is equal to the sum of the following \_\_\_\_\_ components.

- A. 1
- B. 2
- C. 3
- D. 4

View Answer

Ans : B

Explanation: The space required by an algorithm is equal to the sum of the following two components : A fixed part that is a space required to store certain data and variables and A variable part is a space required by variables.

24. Which is the formal way to express the upper bound of an algorithm's running time.

- A. Big Oh Notation
- B. Omega Notation
- C. Theta Notation
- D. None of the above

View Answer

Ans : A

Explanation: Big Oh Notation : The notation  $O(n)$  is the formal way to express the upper bound of an algorithm's running time. It measures the worst case time complexity or the longest amount of time an algorithm can possibly take to complete.

25. The Omega notation is the formal way to express the \_\_\_\_\_ of an algorithms running time.

- A. upper bound
- B. medium bound
- C. lower bound
- D. both the lower bound and the upper bound