

# MCQ

▼ In many applications like social media, the app suggests the list of friends that a particular user may know. It may be used on a system that has over a billion users. Which algorithm is best to implement this feature?

Floyd Warshall Algorithm

Ans. **Dijkstra's Algorithm**

Bellman-Ford algorithm

Prim's Algorithm

- Dijkstra's Algorithm is used to find the shortest path between the two nodes, efficiently.

▼ How many comparisons are required to merge two sorted lists of sizes  $m$  and  $n$  into a single sorted list of size  $m+n$ ?

$O(m)$

$O(n)$

Ans.  **$O(m+n)$**

$O(\log m + \log n)$

▼ Which of the following statements is true?

Ans. **Arrays in Java are essentially objects.**

It is not possible to assign one array to another. Individual elements of array can however be assigned.

Array elements are indexed from 1 to size of array.

If a method tries to access an array element beyond its range, a compile warning is generated.

▼ What is the time complexity to find an element in a linked list of length  $n$ ?

$O(\log n)$

Ans.  **$O(n)$**

$O(1)$

$O(n)$

▼ An input restricted dequeue is a linear list in which items may be inserted at one end but removed from either end. Such a data structure can be operated

neither as a queue nor as a stack  
as a queue but not as a stack  
as a stack but not as a queue

Ans. **both as a queue and as a stack**

▼ Given a full binary tree with  $n$  internal nodes, how many leaf nodes does it have?

Ans.  **$n + 1$**

$2n + 1$

$n - 1$

$n$

▼ How many binary trees with 3 nodes have a postorder traversal of A,B,C?

Ans. **5**

3

9

7

▼ The postorder and preorder traversals of a binary tree are:

postorder : D E B F G C A

preorder : A B D E C F G What is the inorder traversal of the tree?

Ans. **D B E A F C G**

E D B G F C A

E D B F G C A

D E F G B C A

▼ What is the inorder traversal of this tree?

```
      F
     / \
    B   G
   / \   \
  A  D   I
   / \   /
  C  E  H
```

F B A D C E G I H

Ans. **A B C D E F G H I**

A C E D B H I G F

A B C D E F G I H

▼ Consider the following code snippet:

```
int a = 1;
while (a < n) {
a = a * 2;
}
```

What is the complexity of the above code snippet?

O(n)

O(1)

Ans.  **$O(\log(n))$**

O(2)

▼ The string S is initially empty. The following can be performed on S any number of times.

Append any character to S for a cost of 5 points.

Copy any substring of S that ends at the current rightmost character. Append it to S for a cost

of 5 points.

What is the minimum cost to construct the string "abhihibhihi"?

Interview Guideline: Initially cost = 0, str = "".

First, we have to add 4 characters "a", "b", "h", and "i" in the string with cost = 5 x 4 = 20 and so str

becomes "abhi".

then we will copy the "hi" substring and append it. cost = 20 + 5 and str become "abhihi".

Now we can again copy substring "bhihi" and append it to the str and so new cost = 25 + 5 and str

= "abhihibhihi".

Cost = 30 // this is the minimum cost for constructing the given string.

35

Ans. **30**

25

20

▼ Space complexity refers to

Ans. **Memory required by an algorithm to run to completion**

Complexities involved in space mission transmission

Complexities of a 3D graphics creation

None of the above

▼ An array of 8 elements was sorted using some sorting algorithm. The algorithm found the largest number first. After 4 iterations, the array is [2, 4, 5, 7, 8, 1, 3, 6]  
Which statement is true?

The algorithm is neither merge sort nor insertion sort.

Ans. **The algorithm may be insertion sort but is not merge sort.**

The algorithm may be merge sort but not insertion sort.

The algorithm is selection sort.

None