1) What do you mean by Data Structure?

 -> A Data structure is a specialized format for organizing, processing, retrieving and storing data.

2) What are the some application of Data Structure?

 -> a) Array – 2D array commonly known as matrix used in Image Processing.

 -> b) Linked List – It is used for linking of Url

3) What are the advantages of linked list over an array?

 -> Linked List is a Dynamic Size whereas Array has fixed size.

 -> Addition/Deletion in list is O (1)

4) Write a syntax in C to create a node in singly linked list?

 -> // A linked list node

```
struct Node {
   int data;
   struct Node* next;
};
```

5) What is the use of Doubly Linked list when compare to that of a singly linked list?
  -> Doubly linked list allows two ways traversal forward and backward direction.
  -> The delete operation in doubly linked list is more efficient if the pointer of node to be deleted is given

6) What is the difference between Array and Stack?
 -> Stacks is dynamic size whereas Array is fixed size.
-> Stacks hold different data types whereas Array holds same data types.

7) What are the minimum number of Queues needed to implement the priority Queues?
 -> Two Queues are needed to implement the priority Queues , one is store for data and anonther is used for priorities.

8) What are the different kind of traversal techniques in a tree?
 a) InOrder (left , root , right)
 b) PreOrder(root , left , right)
 c) PostOrder(left , right , root)

9) Why it is said that searching a node in a binary search tree is efficient than that of a simple binary tree?
 ->

10) What are the application of Graph DS?
  -> GPS navigation System also uses shortest path APIs.
  -> Dijkstra Algorithm uses graph structure for finding the smallest path between the nodes of graph.

11) Can we apply Binary search Algorithm to a sorted Linked List?
   -> Yes , we can apply binary search algorithm if a linked list in ordered and you know the count of a element in list .

12) When can you tell that a Memory Leak will Occur?
   -> Memory leak occur when programmers create a memory in heap and forgot to delete it.
    To avoid memory leaks , memory allocated on heap should always be freed when no longer needed.

13) How will you check if a given Binary tree is a Binary Search tree or not?
   -> The left subtree of a node contains only nodes with keys less than the root node.
   -> The right subtree of a node contains only nodes with keys greater than the root node.

14) Which data structure is ideal to perform recursion operation and why?
   -> Stack is ideal to perform recursion operation because of its LIFO property its remember its 'caller ' so knows whom to return when the function has to return.

15) What are the some most application of Stack?
   -> Syntaxes in languages are parsed using stack.
   ->converting infix to postfix expression .

24) Find out kth smallest element in an unsorted array?

```java
import java.util.*;
public class Array_Kth_Smallest {
      public static void main(String[] args) {

              Scanner scan = new Scanner(System.in);
              int n;
              System.out.println("Enter the element you want in array");
              n = scan.nextInt();
              int arr[] = new int[n];
              System.out.println("Enter the elements");
              for(int i = 0; i < n; i++)
          {
              arr[i] = scan.nextInt();
          }
              Arrays.sort(arr);
              System.out.println("Enter to find kth smallest element");
              int k =scan.nextInt();

          System.out.println("The Kth smallest element = "+ arr[k-1]);

      }

}
```

25) How to find shortest path between two vertices?
    ->Dijkstra algorithm to find shortest path between two vertices.

23) Check if a graph is tree or not?
 -> if there is any cycle in graph then is not tree.

4 questions is Remaining   Submitted by ->Sunny Gupta