DATA STRUCTURE INTERVIEW QUESTIONS

1. What is data structure?

The logical and mathematical model of a particular organization of data is called data structure.
There are two types of data structure

Linear

Nonlinear

2. What is a linked list?

A linked list is a linear collection of data elements, called nodes, where the linear order is given by pointers. Each node has two parts first part contain the information of the element second part contains the address of the next node in the list.

3. What is a queue?

A queue is an ordered collection of items from which items may be deleted at one end (front end) and items inserted at the other end (rear end). It obeys FIFO rule there is no limit to the number of elements a queue contains.

4. What is a spanning Tree?

A spanning tree is a tree associated with a network. All the nodes of the graph appear on the tree once. A minimum spanning tree is a spanning tree organized so that the total edge weight between nodes is minimized.

5. What is precision?

Precision refers the accuracy of the decimal portion of a value. Precision is the number of digits allowed after the decimal point.

6. What are the goals of Data Structure?

It must rich enough in structure to reflect the actual relationship of data in real world. The structure should be simple enough for efficient processing of data.

7. What is the difference between a Stack and an Array?

Stack

Stack is a dynamic object whose size is constantly changing as items are pushed and popped .

Stack may contain different data types.

Stack is declared as a structure containing an array to hold the element of the stack, and an integer to indicate the current stack top within the array.

Stack is a ordered collection of items.

Array

Array is an ordered collection of items.

Array is a static object.

It contains same data types.

Array can be home of a stack i.e. array can be declared large enough for maximum size of the stack.

8. What is sequential search?

In sequential search each item in the array is compared with the item being searched until a match occurs. It is applicable to a table organized either as an array or as a linked list.

9. What are the disadvantages array implementations of linked list?

The no of nodes needed can't be predicted when the program is written.

The no of nodes declared must remain allocated throughout its execution.

10. What is a priority queue?

The priority queue is a data structure in which the intrinsic ordering of the elements.

11. What are the disadvantages of sequential storage?

Fixed amount of storage remains allocated to the data structure even if it contains less element.

No more than fixed amount of storage is allocated causing overflow.

12. Define circular list?

In linear list the next field of the last node contain a null pointer, when a next field in the last node contain a pointer back to the first node it is called circular list.

13. What does abstract Data Type Mean?

Data type is a collection of values and a set of operations on these values. Abstract data type refer to the mathematical concept that define the data type.

14. What do you mean by recursive definition?

The definition which defines an object in terms of simpler cases of itself is called recursive definition.

15. What actions are performed when a function is called?

When a function is called

arguments are passed

local variables are allocated and initialized

transferring control to the function

21. What is a node class?

A node class is a class that has added new services or functionality beyond the services inherited from its base class.

22. what is binary tree?

A binary tree is a tree data structure in which each node has at most two child nodes, usually distinguished as left and right.

Why is the isEmpty() member method called?
The isEmpty() member method is called within the dequeue process to determine if there is an item in the queue to be removed i.e. isEmpty() is called to decide whether the queue has at least one element. This method is called by the dequeue() method before returning the front element.

How is the front of the queue calculated ?
The front of the queue is calculated by front = (front+1) % size.

What does each entry in the Link List called?
Each entry in a linked list is called a node. Think of a node as an entry that has three sub entries. One sub entry contains the data, which may be one attribute or many attributes. Another points to the previous node, and the last points to the next node. When you enter a new item on a linked list, you allocate the new node and then set the pointers to previous and next nodes.

What is Linked List ?
Linked List is one of the fundamental data structures. It consists of a sequence of? nodes, each containing arbitrary data fields and one or two (”links”) pointing to the next and/or previous nodes. A linked list is a self-referential datatype because it contains a pointer or link to another data of the same type. Linked lists permit insertion and removal of nodes at any point in the list in constant time, but do not allow random access.

What member function places a new node at the end of the linked list?
The appendNode() member function places a new node at the end of the linked list. The appendNode() requires an integer representing the current data of the node.

How is any Data Structure application is classified among files?
A linked list application can be organized into a header file, source file and main application file. The first file is the header file that contains the definition of the NODE structure and the LinkedList class definition. The second file is a source code file containing the implementation of member functions of the LinkedList class. The last file is the application file that contains code that creates and uses the LinkedList class.

Which file contains the definition of member functions?

Definitions of member functions for the Linked List class are contained in the LinkedList.cpp file.

What are the major data structures used in the following areas : RDBMS, Network data model & Hierarchical data model.

1. RDBMS Array (i.e. Array of structures)
2. Network data model Graph
3. Hierarchical data model Trees.

Difference between calloc and malloc ?

malloc: allocate n bytes
calloc: allocate m times n bytes initialized to 0