

CS301

Mid Term Preparation

Short notes

CStudy With Amir

Lecture 1-22.

Q.1: Data Structure?

Ans: A data structure is a

1. Data organization
2. Data management
3. Data storage format
4. Collection of Data values relationship among them

Note: Data Security is not include Data Structure

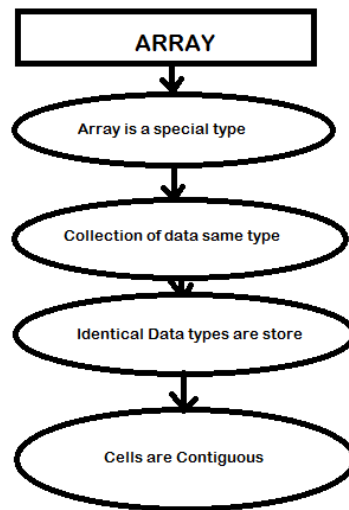
Basic three things associated with data structure

1. Space for each data items stores
2. Time to perform each basic operation
3. Programming effort

Q.2: An Array ?

Ans: 1. Array is a special type.

2. Collection of data same type
3. Identical data types are store
4. Cells are contiguous



Note : Size Of Array : `int x[6];`

`x[0],x[1],x[2],x[3],x[4],x[5]`

First Address of Array start from “0”

Q.3: List ?

Ans: A list is the collection of items of same data type

Like : grocery items, integers, names

Most generic of data structure

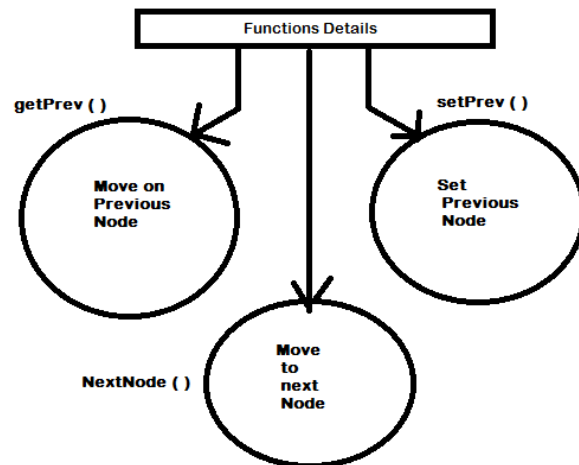
Functions Detail

Sr No	Names	Description
1	Start ()	Moves the “current” pointer to the very first elements
2	Tail ()	Moves the “ current” pointer to the very last elements
3	Next ()	Move the current position forward one elements
4	Back ()	Move the current position backward one element

5	createList ()	Create New List
6	Copy	Copy List
7	Clear ()	Clear all elements of List
8	Get ()	Get element of List
9	Length ()	Return elements of list

Q.4: Double link List ?

- Ans:**
1. Difficult to move backward
 2. Programmer uses two pointers in node (one point to next and other pint to previous
 3. Both pointer ha NULL values



Q.5: Stack ?

Ans:

1. Stack is a collection of elements arranged in a linear order
2. Used LIFO (Last in First Out) strategy
3. Reverse a string value

Functions Details

Sr No	Names	Description
1	Push (x)	Insert x as the top elements of the stack
2	Pop ()	Remove the top elements of the stack
3	Top ()	Return the top elements without removing it

Q.6: Precedence of Operators ?

Ans: Five binary operators, called addition, subtraction, multiplication, division and exponentiation .Difficult to understand and evaluate at first.

First exponentiation ↑

Multiplication/division *,/

Addition/subtraction +,-

Left to right: $A+B+C$ means $(A+B)+C$

Right to left: $A \uparrow B \uparrow C$ means $A \uparrow (B \uparrow C)$

Q.7: Queue ?

- Ans:**
1. Last item to be added
 2. The first item to be remove
 3. FIFO (First In First Out) strategy

Functions Details

Sr No	Names	Description
-------	-------	-------------

1	Enqueue	Place x
2	Dequeue	Remove the front elements
3	Front ()	Return front elements
4	IsEmpty ()	Return TRUE and FALSE

Q.8 Difference Between BST And SBT ?

BST	SBT
Binary search tree	Strictly Binary Tree
Finite set of elements	Non-leaf node
Partitioned into three disjoint subsets	Non-empty left and right
Root of the tree	
Left and right sub-trees	

Q.9: AVL Tree is develop by?

Ans: Two persons (Adelson- Velskii and Landis)

AVL identical of BST

AVL Tree conditions:

1. Any one node fulfills AVL condition
2. At least half of the nodes fulfills AVL condition
3. All the node fulfill the AVL condition

Q.10: First Element Address of Array ?

Ans: 1. The first element of memory address is called base address

2. first address is access through

Example: name of array [0]

Q.11: link List?

Ans: 1. Link lists

2. All elements are contiguous
3. All elements has the next to it
4. A node has two field **Object, Next**

5. Body we write **Public** and **Private** variables

Note : elements may locate at far positions are not include in link list

Q.12: linked list always has one NULL pointer?

Ans: True

Q.13: Which of the following strategy used by the Stack?

Ans: LIFO

Q.14: The binary operators (+ , - , / , *) are evaluate in-----direction ?

Ans: Left- to- right

Q.15: What is the out of the following:

Input	Opt 1	Opt 2	Value	Stack
8				8
2				2 8
/				

Ans: 4

Q.16: What is the size of following array?

Char str []= "abcd";

Ans: 5

Q.17: Which of the following function is used to remove the item from queue?

Ans: dequeue

Q.18: AVL Tree is identical to -----?

Ans: Binary Search Tree

**Q.19: The memory address of the first elements of an array is called -----
-?**

Ans: Base address

Q.20: What will be the result of arithmetic expression $6+27/3*3$?

Ans: 9

Q.21: Which of the following function is used to get the length of list ?

Ans: length ()

Q.22: The operation for adding an entry to a stack is traditionally called ?

Ans: Push

Q.23: ----- is the maximum number of nodes that you can have on a stack-linked list?

Ans: Any Number

Q.24: What is the out of the following:

Input	Opt 1	Opt 2	Value	Stack
5				5
2				2 5
*				

Ans: Ten

Q.25: In C, direction of expression evaluation is from -----?

Ans: left-to-right

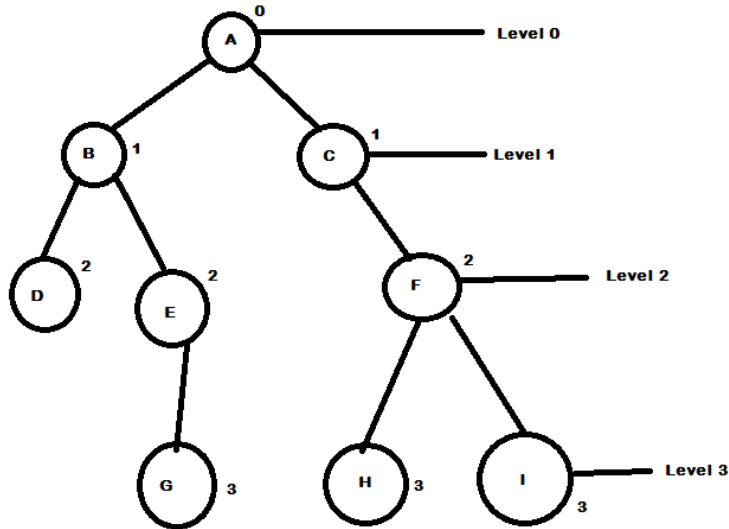
Q.26: Doubly linked List always has one NULL pointer.?

Ans: False

Q.27: Which of the following strategy used by queue?

Ans: FIFO

Q.28: How many level of the below tree?



Ans: 3

Q.29: How many AVL Tree conditions?

- Ans:
1. Any one node fulfills AVL condition
 2. At least half of the nodes fulfills AVL condition
 3. All the node fulfill the AVL condition

Q.30: Operators ?

Ans: Binary Operators

Addition + subtraction -

Division / Multiplication *

“+” is a -----operator.?

Ans: Binary

Q.31: In which of the following function used to get the address of next node is store link list?

Ans: getNext ()

Q.32: ADT stand for. ----- is collection of values and a set of operation form a mathematical construct known as:

Ans: Abstract Data Type

Q.33: Which of the following can be used to reverse a string value?

Ans: Stack

Q.34: The binary operators Exponentiation is evaluate in ----- direction?

Ans: Right-to-left

Q.35: The expression $AB+C^*$ is called ?

Ans: Postfix expression

Q.36: Parameters in function call are passed using?

Ans: Queue

Q.37: Binary Search Tree Operation?

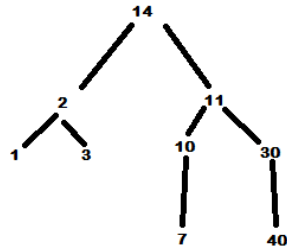
Ans:

Sr No	Operation	Description
1	Left (p)	Returns a pointer to the left sub-tree
2	Right (p)	Returns a pointer to the right sub- tree
3	Parent (p)	Returns the father node of p
4	Brother (P)	Returns the brother node of p
5	Info (p)	Returns the contents of node p

Q.38: AVL Tree is -----?

Ans: Non Linear data structure

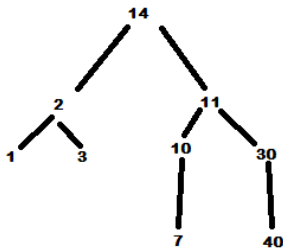
Q.39: Consider the following tree?



How many of the nodes have at least one sibling?

Ans: 6

Q.40: A binary search tree should have minimum of one ----- node/s at each level?



Ans: 1

Q.41: From which function we more to get the List Item?

Ans: get ()

Q.42: Consider the following sequence of push operations in a stack:

Stack.push('8');

Stack.push('9');

Stack.push('10');

Stack.push('11');

Stack.push('12');

Ans: 8 9 10 11 12

Q.43: Data Structure ?

Ans: 1. Array

2. List
3. Link List
4. Double Link List
5. Circular List
6. Stack

Q.44: Each operator in a postfix expression refers to the previous ----- operand(s).

Ans: Two

Q.45: We access elements in AVL Tree in-----?

Ans: Non Linear way

Q.46: The nodes with no successor are called-----?

Ans: Leaf nodes

Q.47: The nodes with successor are called-----?

Ans: Root nodes

Q.48: I have implemented the queue with a linked list, keeping track of a front pointer and a rear pointer. Which of these pointer will change during an insertion into an EMPTY queue?

Ans: Only rear pointer change

Q.49: Which of the following function used to connect the next node with the current node?

Ans: setNext ()

Q.50: ADT stand for-----?

Ans: Abstract Data Type

Q.51: Basic three things associated with data structure

Ans:

- | |
|-------------------------------------|
| 1. Space for each data items stores |
|-------------------------------------|

2. Time to perform each basic operation
3. Programming effort

BEST OF LUCK