Professional Online Academy Vu Topper RM

CS301-Data Structures

Update Important MCQS

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Rizwan Manzoor

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Question No:1 **(Marks:1)** **Vu-Topper RM**

A pair of sets which does not have any _____ element are called disjoint sets

Common

Question No:2 **(Marks:1)** **Vu-Topper RM**

Which of the following is NOT true regarding the maze generation?

Remove a randomly chosen wall if the cells it separates are already in the same set. **Page 424**

Question No:3 **(Marks:1)** **Vu-Topper RM**

A table consists of several columns, known as

Fields

Question No:4 **(Marks:1)** **Vu-Topper RM**

The scenario "If Ali is brother of Asif and Asif is brother of Uzma then Ali is brother of Uzma" is the example of _____ property.

Transitive

Question No:5 **(Marks:1)** **Vu-Topper RM**

What is the time complexity of binary search with iteration?

O(logn)

Question No:6 **(Marks:1)** **Vu-Topper RM**

Which of the following heap method lowers the value of key at position 'p' by the amount 'delta'?

increaseKey(p,delta)

Question No:7 **(Marks:1)** **Vu-Topper RM**

Suppose there are a set of fruits and a set of vegetables. Both sets are _____ sets.

Disjoint

Question No:8 **(Marks:1)** **Vu-Topper RM**

The expressionif (! heap->isFull())check

Heap is not full

Question No:9 **(Marks:1)** **Vu-Topper RM**

In min heap, if there are 100 elements in a heap and we perform 100 deleteMin operations then we will get the elements in _____.

Ascending order

Question No:10 **(Marks:1)** **Vu-Topper RM**

If we want to find median of 50 elements, then after applying buildHeap method, how many times deleteMin method will be called ?

25

Question No:11 **(Marks:1)** **Vu-Topper RM**

There are 100 elements in a heap, if we perform 100 deleteMin operations then we will get _____ list

Sorted

Question No:12 **(Marks:1)** **Vu-Topper RM**

Which of the following is NOT an implementation of Table ADT?

Skip List

بری صحبت سے تنہائی بہتر ہے اور تنہائی سے نیک صحبت بہتر ہے

Question No:13 **(Marks:1)** **Vu-Topper RM**

For a perfect binary tree of height 4. What will be the sum of heights of nodes?

31

Question No:14 **(Marks:1)** **Vu-Topper RM**

If a tree has 20 edges/links, then the total number of nodes in the tree will be :

19

Question No:15 **(Marks:1)** **Vu-Topper RM**

Which of the following properties are satisfied by Equivalence relationship?

Reflexive , Symmetric and Transitive

Question No:16 **(Marks:1)** **Vu-Topper RM**

Suppose there are 100 elements in an equivalence class, so initially there will be 100 trees. The collection of these trees is called _____.

Forest

Question No:17 **(Marks:1)** **Vu-Topper RM**

For a perfect binary tree of height h, having N nodes, the sum of heights of nodes is _____.

N-(H+1)

Question No:18 **(Marks:1)** **Vu-Topper RM**

Heap can be used to implement

Priority Queue

Question No:19 **(Marks:1)** **Vu-Topper RM**
Which of the following statement is NOT correct regarding Table ADT?
A table consists of several columns, known as entities.

Question No:20 **(Marks:1)** **Vu-Topper RM**
The percolateDown procedure will move the smaller value____ and bigger value_____.
Up,down

Question No:21 **(Marks:1)** **Vu-Topper RM**
Suppose there is an image segmented into pixels. Each pixel has _____ neighbour(s).
4

Question No:22 **(Marks:1)** **Vu-Topper RM**
If the height of a perfect binary tree is 4. What will be the total number of nodes in it?
15

Question No:23 **(Marks:1)** **Vu-Topper RM**
The main reason of using heap in priority queue is
improve performance

Question No:24 **(Marks:1)** **Vu-Topper RM**
Given the values are the array representation of heap;
12.23.26.31.34.44.56.64.78.100
If we perform 4 deleteMin operations, the last element deleted is_____.
34

Question No:25 **(Marks:1)** **Vu-Topper RM**

The array in binary search is sub divided _____.

Until a sublist is no more divisible

Question No:26 **(Marks:1)** **Vu-Topper RM**

If a tree has 50 nodes, then the total edges/links in the tree will be :

49

Question No:27 **(Marks:1)** **Vu-Topper RM**

If whole data is given to construct the min heap, then which of the following is true?

A. Insert method is appropriate for construction
B. Both Insert and BuildHeap method are equally appropriate
C. BuildHeap method is appropriate for construction
D. Both Insert and Buildheap methods are inappropriate.

Question No:28 **(Marks:1)** **Vu-Topper RM**

In perfect binary tree _____ .

A. Internal nodes has only right child
B. Internal nodes has only left child
C. Internal nodes has exactly two child nodes
D. Leaf nodes are situated at different levels

Question No:29 **(Marks:1)** **Vu-Topper RM**

Median is _____.

A. K = N * 3
B. K = N / 3
C. K = N * 2
D. K = N /2

Question No:30 **(Marks:1)** **Vu-Topper RM**

Which of the following possible operations are performed on Table ADT?

A. Only Find and Remove
B. Insert, Find, Remove
C. Only Insert and Remove
D. Only Insert and Find

Question No:31 **(Marks:1)** **Vu-Topper RM**

A perfect binary tree is constructed using 131071 nodes then what will be the maximum height of that binary tree?

A. 14
B. 15
C. 16
D. 17

Question No:32 **(Marks:1)** **Vu-Topper RM**

If the bottom level of a binary tree is not completely filled, depicts that the tree is not a _____.

A. Expression tree
B. Threaded binary tree
C. Complete Binary tree **Page 323**
D. Perfectly complete Binary tree

Question No:33 **(Marks:1)** **Vu-Topper RM**

There are four cases of rotation in an _____ tree.

A. AVL
B. Tree
C. Binary
D. Heap

Question No:34 **(Marks:1)** **Vu-Topper RM**

Which type of rotation can balance the following AVL tree?

A. Single left
B. Single right
C. Double right-left
D. Double left-right **Google**

Question No:35 **(Marks:1)** **Vu-Topper RM**

Finding the minimum is easy; it is _____ of the min heap.

A. Top **Page 351**
B. Left most child.
C. Right most child
D. None of the given options.

Question No:36 **(Marks:1)** **Vu-Topper RM**

When a complete binary tree, represented by an array then for any array element at position i, the parent is at position _____ .

A. 2i
B. 2i-1
C. (2i+1)
D. Floor(i/2)

Question No:37 **(Marks:1)** **Vu-Topper RM**

If there are 56 internal nodes in a binary tree then how many external nodes this binary tree will have?

A. 55
B. 56
C. 57 **Page 303**
D. 58

Question No:38 **(Marks:1)** **Vu-Topper RM**

In an expression tree, a unary operator will have only _____ subtree.

A. One **Google**
B. Two
C. Three
D. None

Question No:39 **(Marks:1)** **Vu-Topper RM**
Consider a min heap, represented by the following array:
3,4,6,7,5,10
After inserting a node with value 1. Which of the following is the updated min heap?
A. 3,4,6,7,5,1,10
B. 1,4,3,7,5,10,6 **Google**
C. 1,4,6,7,5,10,3
D. 3,4,6,7,5,10,1

Question No:40 **(Marks:1)** **Vu-Topper RM**
For the inorder traversal of threaded binary tree, we introduced a dummy node. The left pointer of the dummy node is pointing to the _____ node of the tree.
A. Root
B. Left must
C. Right must
D. any of the given node

Question No:41 **(Marks:1)** **Vu-Topper RM**
If both pointers of the node in a binary tree are NULL then it will be a/an
A. Leaf node
B. Root node
C. Inner node
D. None of the given options

Question No:42 **(Marks:1)** **Vu-Topper RM**

In complete binary tree the bottom level is filled from _____

A. Left to right

B. Right to left

C. Not filled at all

D. None of the given options

Question No:43 **(Marks:1)** **Vu-Topper RM**

Consider a max heap, represented by the following array:
40,30,20,10,15,16,17,8,4
After inserting a node with value 35.
Which of the following is the updated max heap?

A. 40,30,20,10,15,16,17,8,4,35

B. 40,35,20,10,30,16,17,8,4,15

C. 40,30,20,10,35,16,17,8,4,15

D. 40,35,20,10,15,16,17,18,4,30

Question No:44 **(Marks:1)** **Vu-Topper RM**

A complete binary tree of height 3 has between _____ nodes.

A. 8 to 17

B. 8 to 14

C. 8 to 15

D. 8 to 17

Question No:45 **(Marks:1)** **Vu-Topper RM**

To develop a character encoding scheme in Huffman tree, _____ will be assigned to left branch.

A. 1

B. 2

C. 3 **Page 301**

D. 4

Question No:46 **(Marks:1)** **Vu-Topper RM**

If there are 23 external nodes in a binary tree then what will be the no. of internal nodes in this binary tree?

A. 20
B. 21
C. 22
D. 23

Question No:47 **(Marks:1)** **Vu-Topper RM**

Which of the following is a correct statement?

A. An AVL tree is not identical to a BST, its altogether kind of tree.
B. An AVL tree is identical to a BST except height of the left and right subtrees can differ by at least 1.
C. An AVL tree is identical to a BST except height of the left and right subtrees can differ by at most 1. Page 220
D. An AVL tree is identical to a BST except height of the left and right subtrees must differ by at least 1.

Question No:48 **(Marks:1)** **Vu-Topper RM**

Which of the following statement is true about dummy node of threaded binary tree?

A. The right pointer of dummy node points to the itself while the left pointer is always NULL.
B. The left pointer of dummy node points to the root node of the tree while the right pointer is always NULL.
C. The left pointer of dummy node points to the itself while the right pointer points to the root of tree.
D. The left pointer of dummy node points to the root node of the tree while the right pointer points itself i.e. to *dummy* node

Question No:49 **(Marks:1)** **Vu-Topper RM**

Which one of the following is TRUE about iteration?

A. Iteration extensively uses stack memory
B. Recursion is more efficient than iteration
C. Iterative function calls consumes a lot of memory
D. Threaded Binary Trees use the concept of iteration

Question No:50 (Marks:1) Vu-Topper RM

Traversing a binary tree can only be done using _____

A. Recursion
B. Iteration
C. None of the given options
D. Both Iteration and Recursion

Question No:51 (Marks:1) Vu-Topper RM

In the SingleRightRotation function, the height routine will return _____ if the argument passed to it is NULL.

A. 0
B. -1 Page 259
C. 1
D. Invalid

Question No:52 (Marks:1) Vu-Topper RM

The worst case of building a heap of N keys is _____ .

A. N
B. N-1
C. N2
D. NlogN

Question No:53 (Marks:1) Vu-Topper RM

By using _____we avoid the recursive method of traversing a Tree, which makes use of stacks and consumes a lot of memory and time.

A. Binary tree only
B. Huffman encoding

C. Heap data structure
D. Threaded binary tree **Page 306**

Question No:54 **(Marks:1)** **Vu-Topper RM**
We implement the heap by _____ .
A. AVL tree
B. Threaded Tree
C. Expression tree
D. Complete binary tree **Page 336**

Question No:55 **(Marks:1)** **Vu-Topper RM**
In threaded binary tree, the NULL pointers are replaced by the
A. NULL pointers are not replaced.
B. preorder successor or predecessor
C. inorder successor or predecessor
D. postorder successor or predecessor

Question No:56 **(Marks:1)** **Vu-Topper RM**
Which one of the following is best for traversals,
A. Heap
B. AVL tree
C. Binary Search Tree
D. Threaded Binary Tree

Question No:57 **(Marks:1)** **Vu-Topper RM**
If min heap is implemented through array, then the first element of heap will be will be stored _____.
A. 0
B. 1
C. 2
D. 3

Question No:58 **(Marks:1)** **Vu-Topper RM**

In which of the following tree, parent node has key greater than or equal to its both children?

A. Max heap
B. Binary search tree
C. Threaded Binary tree
D. Complete Binary tree

Question No:59 **(Marks:1)** **Vu-Topper RM**

If the bottom level of a binary tree is NOT completely filled, depicts that the tree is NOT a ----------

A. Expression tree
B. Threaded binary tree
C. Complete Binary tree **Page 323**
D. Perfectly complete Binary tree

Question No:60 **(Marks:1)** **Vu-Topper RM**

An expression tree will always be a/an,

A. Heap
B. AVL tree
C. Strictly binary tree
D. Binary search tree

Question No:61 **(Marks:1)** **Vu-Topper RM**

To search an element in ALV tree, it takes maximum 1.88 Log2n time.

A. False
B. True
C. In some cases
D. Searching cannot be performed in AVL tree

Question No:62 **(Marks:1)** **Vu-Topper RM**

See the below code and fill the appropriate answer for ? sign.

```
void fastInorder(TreeNode* p)
{
while((p=nexInorder(p)) != ? )
cout << p->getInfo();}
```

A. RTH
B. LTH
C. Dummy
D. RootNode

Question No:63 **(Marks:1)** **Vu-Topper RM**

A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its _____ successor.

A. Inorder
B. Preorder
C. Postorder
D. Levelorder

Question No:64 **(Marks:1)** **Vu-Topper RM**

While building Huffman encoding tree the parent node is _____ of left and right child nodes.

A. Addition
B. Division
C. Subtraction
D. Multiplication

Question No:65 **(Marks:1)** **Vu-Topper RM**

Which of the following statement is correct?

A. A Threaded Binary Tree is a binary tree in which every node that does not have a left child has a THREAD (in actual sense, a link) to its INORDER successor.

B. A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its PREOREDR successor.

C. A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its INORDER successor.

D. A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its POSTORDER successor.

Question No:66 **(Marks:1)** **Vu-Topper RM**

In a threaded binary tree which nodes have NULL child pointers,

A. Root Node

B. All leaf nodes

C. None of the nodes

D. Nodes other then leaf nodes

Question No:67 **(Marks:1)** **Vu-Topper RM**

Consider a binary tree, represented by the following array:
10,7,9,5,2,1,6,3,4
This is a _____.

A. Min heap

B. Max heap

C. Binary Search tree

D. Threaded binary tree

Question No:68 **(Marks:1)** **Vu-Topper RM**

If there are N internal nodes in a binary tree then what will be the no. of external nodes in this binary tree?

A. N

B. N-1

C. N+1 **Page 303**

D. N+2

Question No:69 **(Marks:1)** **Vu-Topper RM**

Which of the following statement is true about dummy node of threaded binary tree?

A. This dummy node never has a value

B. This dummy node has always some integer value.

C. This dummy node has always some dummy value

D. This dummy node has either no value or some dummy value.

Question No:70 **(Marks:1)** **Vu-Topper RM**

If there are N external nodes in a binary tree then what will be the no. of internal nodes in this binary tree?

A. N

B. N-1

C. N+1

D. N+2

Question No:71 **(Marks:1)** **Vu-Topper RM**

In AVL tree during insertion, a single rotation can fix the balance in cases _____ and 4.

A. 1 **Page 239**

B. 2

C. 3

D. 4

Question No:72 **(Marks:1)** **Vu-Topper RM**

In Huffman tree, the process of combining the two nodes of lowest frequency will be carried out until _____ node/nodes left.

A. One **Page 293**

B. Two

C. Six

D. None

Question No:73 **(Marks:1)** **Vu-Topper RM**

We are given N items to build a heap of items , this can be done with _____ successive inserts.

A. N

B. N-1

C. N+1

D. N*2

Question No:74 **(Marks:1)** **Vu-Topper RM**

There are _____ cases of deletion of a node from an AVL tree.

A. One

B. Two

C. Five **Page 278**

D. Three

Question No:75 **(Marks:1)** **Vu-Topper RM**

While building Huffman encoding tree the new node that is the result of joining two nodes has the frequency.

A. Equal to the small frequency

B. Equal to the greater frequency

C. Equal to the sum of the two frequencies

D. Equal to the difference of the two frequencies

Question No:76 **(Marks:1)** **Vu-Topper RM**

When a complete binary tree represented by an array then if right child is at position 5 then left child will be at position _____

A. 2

B. 4

C. 6

D. 8

Question No:77 **(Marks:1)** **Vu-Topper RM**

If there are _____ nodes in an AVL tree, its levels will be roughly as Log2(10 million).

A. 2 million
B. 5 million
C. 10 million **Page 249**
D. 100 million

Question No:78 **(Marks:1)** **Vu-Topper RM**

We can build a heap in _____ time.

A. Linear **Page 353**
B. Exponential
C. Polynomial
D. None of the given options

Question No:79 **(Marks:1)** **Vu-Topper RM**

What is a skip list?

A. a linked-list with size value in nodes
B. a tree which is in the form of linked list
C. a linked-list that allows faster search within an ordered sequence
D. a linked-list that allows slower search within an ordered sequence

Question No:80 **(Marks:1)** **Vu-Topper RM**

The total number of nodes on 10th level of a perfect binary tree are :

A. 256
B. 512
C. 1024
D. Can't be determined

Question No:81 **(Marks:1)** **Vu-Topper RM**

The total number of nodes on 5th level of a perfect binary tree are :

A. 15
B. 16
C. 31
D. 32

Question No:82 **(Marks:1)** **Vu-Topper RM**

If we want to find 3rd minimum element from an array of elements, then after applying buildHeap method, how many times deleteMin method will be called ?

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

Question No:83 **(Marks:1)** **Vu-Topper RM**

Which of the following method is helpful in creating the heap at once?

A. insert
B. add
C. update
D. preculateDown

Question No:1 **(Marks:1)** **Vu-Topper RM**

_____ only removes items in reverse order as they were entered.

A. Stack
B. Queue
C. Both
D. None of these

Question No:84 **(Marks:1)** **Vu-Topper RM**

Here is a small function definition:

void f(int i, int &k)

{
i = 1;
k = 2;
}
Suppose that a main program has two integer variables x and y, which are given the value 0. Then the main program calls f(x,y); What are the values of x and y after the function f finishes?

A. Both x and y are still 0.
B. x is now 1, but y is still 0.
C. x is still 0, but y is now 2.
D. x is now 1, and y is now 2.

Question No:85 (Marks:1) Vu-Topper RM

Select the one *FALSE* statement about binary trees:

A. Every binary tree has at least one node.
B. Every non-empty tree has exactly one root node.
C. Every node has at most two children.
D. Every non-root node has exactly one parent.

Question No:86 (Marks:1) Vu-Topper RM

Every AVL is _____

A. Binary Tree
B. Complete Binary Tree
C. None of these
D. Binary Search Tree

Question No:87 (Marks:1) Vu-Topper RM

Searching an element in an AVL tree take maximum _____ time (where n is no. of nodes in AVL tree),

A. $Log_2(n+1)$
B. $Log_2(n+1) -1$
C. $1.44\ Log_2 n$
D. $1.66\ Log_2 n$

Question No:88 **(Marks:1)** **Vu-Topper RM**

Suppose you implement a heap (with the largest element on top) in an array. Consider the different arrays below, determine the one that *cannot* possibly be a heap:

A. 7 6 5 4 3 2 1
B. 7 3 6 2 1 4 5
C. 7 6 4 3 5 2 1
D. 7 3 6 4 2 5 1

Question No:89 **(Marks:1)** **Vu-Topper RM**

Which one of the following is NOT the property of equivalence relation:

A. Reflexive
B. Symmetric
C. Transitive
D. Associative

Question No:90 **(Marks:1)** **Vu-Topper RM**

The definition of Transitivity property is

A. For all element x member of S, x R x
B. For all elements x and y, x R y if and only if y R x
C. For all elements x, y and z, if x R y and y R z then x R z
D. For all elements w, x, y and z, if x R y and w R z then x R z

Question No:91 **(Marks:1)** **Vu-Topper RM**

Union is a _____ time operation.

A. Constant
B. Polynomial
C. Exponential
D. None of the given options

Question No:92 **(Marks:1)** **Vu-Topper RM**

In the worst case of deletion in AVL tree requires _____.

A. Only one rotation
B. Rotation at each non-leaf node
C. Rotation at each leaf node
D. Rotations equal to log2 N

Question No:93 (Marks:1) Vu-Topper RM

Binary Search is an algorithm of searching, used with the _____ data.

A. Sorted
B. Unsorted
C. Heterogeneous
D. Random

Question No:94 (Marks:1) Vu-Topper RM

Which of the following statement is NOT true about threaded binary tree?

A. Right thread of the right-most node points to the *dummy* node.
B. Left thread of the left-most node points to the *dummy* node.
C. The left pointer of dummy node points to the root node of the tree.
D. Left thread of the right-most node points to the *dummy* node

Question No:95 (Marks:1) Vu-Topper RM

Consider a min heap, represented by the following array:
11,22,33,44,55
After inserting a node with value 66.Which of the following is the updated min heap?

A. 11,22,33,44,55,66
B. 11,22,33,44,66,55
C. 11,22,33,66,44,55
D. 11,22,66,33,44,55

Question No:96 **(Marks:1)** **Vu-Topper RM**

Consider a min heap, represented by the following array:
3,4,6,7,5
After calling the function deleteMin().Which of the following is the updated min heap?

A. 4,6,7,5
B. 6,7,5,4
C. 4,5,6,7
D. 4,6,5,7

Question No:97 **(Marks:1)** **Vu-Topper RM**

Suppose we are sorting an array of eight integers using quick sort, and we have just finished the first partitioning with the array looking like this:
2 5 1 7 9 12 11 10
Which statement is correct?

A. The pivot could be either the 7 or the 9.
B. The pivot could be the 7, but it is not the 9.
C. The pivot is not the 7, but it could be the 9.
D. Neither the 7 nor the 9 is the pivot.

Question No:98 **(Marks:1)** **Vu-Topper RM**

Which formula is the best approximation for the depth of a heap with n nodes?

A. log (base 2) of n
B. The number of digits in n (base 10), e.g., 145 has three digits
C. The square root of n
D. n

Question No:99 **(Marks:1)** **Vu-Topper RM**

Suppose you implement a Min heap (with the smallest element on top) in an array. Consider the different arrays below; determine the one that *cannot* possibly be a heap:

A. 16, 18, 20, 22, 24, 28, 30
B. 16, 20, 18, 24, 22, 30, 28
C. 16, 24, 18, 28, 30, 20, 22
D. 16, 24, 20, 30, 28, 18, 22

Question No:100 **(Marks:1)** **Vu-Topper RM**

While joining nodes in the building of Huffman encoding tree if there are more nodes with same frequency, we choose the nodes _____.

A. Randomly
B. That occur first in the text message
C. That are lexically smaller among others.
D. That are lexically greater among others

Question No:101 **(Marks:1)** **Vu-Topper RM**

Consider the following paragraph with blanks.
A …….. is a linear list where …… and …… take place at the
same end . This end is called the ……
What would be the correct filling the above blank positions?

A. queue (ii) insertion (iii) removals (iv) top
B. stack (ii) insertion (iii) removals (iv) bottom
C. stack (ii) insertion (iii) removals (iv) top
D. tree (ii) insertion (iii) removals (iv) top

Question No:102 **(Marks:1)** **Vu-Topper RM**

A binary tree with 33 internal nodes has _____ links to internal nodes.

A. 31
B. 32
C. 33

D. 66

Question No:103 (Marks:1) Vu-Topper RM

Which of the following is a non linear data structure?

A. Linked List
B. Stack
C. Queue
D. Tree

Question No:104 (Marks:1) Vu-Topper RM

The data of the problem is of 2GB and the hard disk is of 1GB capacity, to solve this problem we should

A. Use better data structures
B. Increase the hard disk space
C. Use the better algorithm
D. Use as much data as we can store on the hard disk

Question No:105 (Marks:1) Vu-Topper RM

In an array list the current element is

A. The first element
B. The middle element
C. The last element
D. The element where the current pointer points to

Question No:106 (Marks:1) Vu-Topper RM

Which one of the following is a valid postfix expression?

A. ab+c*d-
B. abc*+d-
C. abc+*d-
D. (abc*)+d-

Question No:107 **(Marks:1)** **Vu-Topper RM**

I have implemented the queue with a circular array. If data is a circular array of CAPACITY elements, and last is an index into that array, what is the formula for the index after last?

A. (last % 1) + CAPACITY
B. last % (1 + CAPACITY)
C. (last + 1) % CAPACITY
D. last + (1 % CAPACITY)

Question No:108 **(Marks:1)** **Vu-Topper RM**

Compiler uses which one of the following to evaluate a mathematical equation,

A. Binary Tree
B. Binary Search Tree
C. Parse Tree
D. AVL Tree

Question No:109 **(Marks:1)** **Vu-Topper RM**

Which of the following heap method increase the value of key at position 'p' by the amount 'delta'?

A. increaseKey(p,delta)
B. decreaseKey(p,delta)
C. preculateDown(p,delta)
D. remove(p,delta)

Question No:110 **(Marks:1)** **Vu-Topper RM**

If we have 1000 sets each containing a single different person. Which of the following relation will be true on each set:

A. Reflexive
B. Symmetric
C. Transitive
D. Associative

Question No:111 **(Marks:1)** **Vu-Topper RM**

Which one of the following is not an example of equivalence relation:

A. Electrical connectivity
B. Set of people
C. <= relation
D. Set of pixels

Question No:112 **(Marks:1)** **Vu-Topper RM**

A binary tree of N nodes has _____.

A. Log_{10} N levels
B. Log_2 N levels
C. N / 2 levels
D. N x 2 levels

Question No:113 **(Marks:1)** **Vu-Topper RM**

Which of the following statements is correct property of binary trees?

A. A binary tree with N internal nodes has N+1 internal links.
B. A binary tree with N external nodes has 2N internal nodes.
C. A binary tree with N internal nodes has N+1 external nodes.
D. None of above statement is a property of the binary tree.

Question No:114 **(Marks:1)** **Vu-Topper RM**

In a selection sort of n elements, how many times the swap function is called to complete the execution of the algorithm?

A. n-1
B. n log n
C. n^2
D. 1

Question No:115 **(Marks:1)** **Vu-Topper RM**

Which of the following statement is NOT correct about find operation:

A. It is not a requirement that a find operation returns any specific name, just

that finds on two elements return the same answer if and only if they are in the same set.

B. One idea might be to use a tree to represent each set, since each element in a tree has the same root, thus the root can be used to name the set.

C. Initially each set contains one element.

D. Initially each set contains one element and it does not make sense to make a tree of one node only.

Question No:116 (Marks:1) Vu-Topper RM

In threaded binary tree the NULL pointers are replaced by ,

A. preorder successor or predecessor

B. inorder successor or predecessor

C. postorder successor or predecessor

D. NULL pointers are not replaced

Question No:117 (Marks:1) Vu-Topper RM

In a min heap , preculateDown procedure will move smaller value_____ and bigger value_____.

A. left,right

B. right,left

C. up,down

D. down,up

Question No:118 (Marks:1) Vu-Topper RM

Which of the following statement is correct about union:

A. To perform Union of two sets, we merge the two trees by making the root of one tree point to the root of the other.

B. To perform Union of two sets, we merge the two trees by making the leaf node of one tree point to the root of the other.

C. To perform Union of two sets, merging operation of trees in not required at all.

D. None of the given options.

Question No:119 **(Marks:1)** **Vu-Topper RM**

Suppose A is an array containing numbers in increasing order, but some numbers occur more than once when using a binary search for a value, the binary search always finds _____

A. the first occurrence of a value.
B. the second occurrence of a value.
C. may find first or second occurrence of a value.
D. None of the given options.

Question No:120 **(Marks:1)** **Vu-Topper RM**

Let heap stored in an array as H = [50, 40, 37, 32, 28, 22, 36, 13]. In other words, the root of the heap contains the maximum element. What is the result of deleting 40 from this heap

A. [50,32, 37,13, 28, 22, 36]
B. [37, 28, 32, 22, 36, 13]
C. [37, 36, 32, 28, 13, 22]
D. [37, 32, 36, 13, 28, 22]

Question No:121 **(Marks:1)** **Vu-Topper RM**

In an array we can store data elements of different types.

True
False

Question No:122 **(Marks:1)** **Vu-Topper RM**

Which one of the following statement is NOT correct .

A. In linked list the elements are necessarily to be contiguous
B. In linked list the elements may locate at far positions in the memory
C. In linked list each element also has the address of the element next to it
D. In an array the elements are contiguous

Question No:123 **(Marks:1)** **Vu-Topper RM**

Doubly Linked List always has one NULL pointer.

True

False

Question No:124 **(Marks:1)** **Vu-Topper RM**

A queue is a data structure where elements are,

A. inserted at the front and removed from the back.

B. inserted and removed from the top.

C. inserted at the back and removed from the front.

D. inserted and removed from both ends.

Question No:125 **(Marks:1)** **Vu-Topper RM**

Each node in doubly link list has,

A. 1 pointer

B. 2 pointers

C. 3 pointers

D. 4 pointers

Question No:126 **(Marks:1)** **Vu-Topper RM**

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

A. Neither changes

B. Only front pointer changes.

C. Only rear pointer changes.

D. Both change.

Question No:127 **(Marks:1)** **Vu-Topper RM**

If a complete binary tree has n number of nodes then its height will be,

A. $Log_2 (n+1) -1$

B. 2^n

C. Log_2 (n) – 1
D. 2^n - 1

Question No:128 **(Marks:1)** **Vu-Topper RM**

If a complete binary tree has height h then its no. of nodes will be,

A. Log (h)
B. 2^{h+1}- 1
C. Log (h) - 1
D. 2^h - 1

Question No:129 **(Marks:1)** **Vu-Topper RM**

A binary relation R over S is called an equivalence relation if it has following property(s)

A. Reflexivity
B. Symmetry
C. Transitivity
D. All of the given options

Question No:130 **(Marks:1)** **Vu-Topper RM**

If there are N elements in an array then the number of maximum steps needed to find an element using Binary Search is _____ .

A. N
B. N^2
C. $Nlog_2N$
D. log_2N

Question No:131 **(Marks:1)** **Vu-Topper RM**

Use of binary tree in compression of data is known as _____ .

A. Traversal
B. Heap
C. Union
D. Huffman encoding

Question No:132 **(Marks:1)** **Vu-Topper RM**

A complete binary tree is a tree that is _____ filled, with the possible exception of the bottom level.

A. Partially
B. Completely
C. Incompletely
D. partly

Question No:133 **(Marks:1)** **Vu-Topper RM**

Suppose that a selection sort of 100 items has completed 42 iterations of the main loop. How many items are now guaranteed to be in their final spot (never to be moved again)?

A. 21
B. 41
C. 42
D. 43

Question No:134 **(Marks:1)** **Vu-Topper RM**

Consider the following infix expression:
x – y * a + b / c
Which of the following is a correct equivalent expression(s) for the above?

A. x y -a * b +c /
B. x *y a - b c / +
C. x y a * - b c / +
D. x y a * - b/ + c

Question No:135 **(Marks:1)** **Vu-Topper RM**

A complete binary tree of height ____ has nodes between 16 to 31 .

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

Question No:136 **(Marks:1)** **Vu-Topper RM**

Here is an array of ten integers:

5 3 8 9 1 7 0 2 6 4

The array after the FIRST iteration of the large loop in a selection sort (sorting from smallest to largest).

A. 0 3 8 9 1 7 5 2 6 4

B. 2 6 4 0 3 8 9 1 7 5

C. 2 6 4 9 1 7 0 3 8 5

D. 0 3 8 2 6 4 9 1 7 5

Question No:137 **(Marks:1)** **Vu-Topper RM**

What requirement is placed on an array, so that *binary search* may be used to locate an entry?

A. The array elements must form a heap.

B. The array must have at least 2 entries.

C. The array must be sorted.

D. The array's size must be a power of two.

Question No:138 **(Marks:1)** **Vu-Topper RM**

Queue is the LIFO structure.

True

False

Question No:139 **(Marks:1)** **Vu-Topper RM**

In binary search tree (BST) every node has two or zero node.

True

False

Question No:140 **(Marks:1)** **Vu-Topper RM**

In Stack we can access elements from both ends

True

False

Question No:141 **(Marks:1)** **Vu-Topper RM**

Each node of linked list contains data element and pointer.

True

False

Question No:142 **(Marks:1)** **Vu-Topper RM**

Every AVL is binary search tree (BST).

True

False

Question No:143 **(Marks:1)** **Vu-Topper RM**

If numbers 5, 222, 4, 48 are inserted in a queue, which one will be removed first?

A. 48

B. 4

C. 222

D. 5

Question No:144 **(Marks:1)** **Vu-Topper RM**

A Compound Data Structure is the data structure which can have multiple data items of same type or of different types. Which of the following can be considered compound data structure?

A. Arrays

B. LinkLists

C. Binary Search Trees

D. All of the given options

Question No:145 **(Marks:1)** **Vu-Topper RM**

The difference between a binary tree and a binary search tree is that ,

A. a binary search tree has two children per node whereas a binary tree can have none, one, or two children per node

B. in binary search tree nodes are inserted based on the values they contain

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C. in binary tree nodes are inserted based on the values they contain
D. none of these

Question No:146 (Marks:1) Vu-Topper RM

Consider a min heap, represented by the following array:
10,30,20,70,40,50,80,60
After inserting a node with value 31.Which of the following is the updated min heap?

A. 10,30,20,31,40,50,80,60,70
B. 10,30,20,70,40,50,80,60,31
C. 10,31,20,30,40,50,80,60,31
D. 31,10,30,20,70,40,50,80,60

Question No:147 (Marks:1) Vu-Topper RM

Which one of the following algorithms is most widely used due to its good average time,

A. Bubble Sort
B. Insertion Sort
C. Quick Sort
D. Merge Sort

Question No:148 (Marks:1) Vu-Topper RM

The following are statements related to queues.
(i) The last item to be added to a queue is the first item to be removed
(ii) A queue is a structure in which both ends are not used
(iii) The last element hasn't to wait until all elements preceding it on the queue are removed
(iv) A queue is said to be a last-in-first-out list or LIFO data structure.
Which of the above is/are related to normal queues?

A. (iii) and (ii) only
B. (i), (ii) and (iv) only
C. (ii) and (iv) only
D. None of the given options

Question No:149 **(Marks:1)** **Vu-Topper RM**

We are given N items to build a heap , this can be done with _____ successive inserts.

A. N-1
B. N
C. N+1
D. N^

Question No:150 **(Marks:1)** **Vu-Topper RM**

Suppose we had a hash table whose hash function is “n % 12”, if the number 35 is already in the hash table, which of the following numbers would cause a collision?

A. 144
B. 145
C. 143
D. 148

Question No:151 **(Marks:1)** **Vu-Topper RM**

In case of deleting a node from AVL tree, rotation could be prolong to the *root* node.

Yes

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