

CS301 by Sparrow

Final Term

Fall 2021-2022

1. An expression tree will always be a,
 - Complete binary tree
 - **Binary search tree#**
 - Heap AVL tree
2. Derived class can inherit from public base class as well as private and protected base classes
 - **True#**
 - False
3. Which line will produce error. Class phone: Private Transmit, private Receiver { }
1.int main () 2. {3.phone obj; 4.Tranmit*obj1 = &obj; 5.Received obj2 = &obj; 6.}
 - **3rd line will produce error#**
 - 4th line will produce error
 - 3rd and 4th line will produce error.
 - 5th line will produce error.
4. Consider a max heap, represented by the following array; 40,30,20,10,15,16,17,18,4 after inserting a nodes with value 35. Which of following is the updated max heap?
 - **40,30,20,10,15,16,17,8,4,35#**
 - 40,30,20,10,35,16,17,8,4,15
5. 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) _____Successor.
 - Preorder
 - **Inorder#**

6. Which one of the following is known as "Last-In, First-Out" or LIFO Data Structure?

- Linked List
- **Stack #**
- Queue

7. For compiler a postfix expression is easier to evaluate than infix expression?

- **True #**
- False

8. What will be postfix expression of the following infix expression?

Infix Expression : $a + b * c - d$

- $Ab + c * d -$
- **$abc * + d - \#$**
- $abc + * d -$

9. Consider the following function:

```
void test_a (int n)
{
  cout << n << " ";
  if (n>0)
    test_a (n-2);
}
```

What is printed by the call test_a(4)?

- **4 2#**
- 0 2 4

10. A binary tree with 45 internal nodes has _____ links to external nodes.

- 44
- 45
- **46#**

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

- Max heap
- Binary search tree
- Threaded Binary tree
- **Complete Binary tree #**

12. It is necessary for Huffman encoding tree to be,

- AVL tree
- **Binary tree#**

13. Methodologies to the development of reusable software relate to _____.

- Structure programming
- Procedural programming
- **Generic programming#**
- None of the given

14. Which of the following is a property of binary tree?

- A binary tree of N external nodes has N internal node
- **A Binary tree of N internal nodes has N+1 external node#**
- A Binary tree of N external nodes has N+1 internal node
A Binary tree of N internal has N-1 external node

15. In a threaded binary tree which nodes have NULL child pointers?

- **All leaf nodes#**
- Nodes other than leaf nodes
- Root Node
- None of the nodes

16. A template provides a convenient way to make a family of.

- variables and data members
- **functions and classes#**
- classes and exceptions
- programs and algorithms

17. The total numbers of nodes on 10th level of perfect binary tree are

- 256
- 512
- **1024 #**

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

- Cluster
- Class
- **Forest #**

19. The total numbers of nodes on 5th level of perfect binary tree are:

- 16
- 15
- 31
- **32 #**

20. If the height of perfect binary tree is 4, what will be the total number of nodes in it?

- 15
- 16
- **21 #**

21. If we want to find 3rd minimum element from an array of element, then after applying build heap method. How many times deleteMin method will be called?

- 1
- 2
- **3 #**

22. Which of the following properties are satisfied by equivalence relationship?

- Reflexive, symmetric
- Reflexive, transitive
- Symmetric, transitive
- **Reflexive, symmetric and transitive#**

23. A class template may inherit from another class template.

- **True #**
- False

24. Target of a _____ function call is determined at run time.

- Instance
- **Virtual #**
- Operator
- none of given

25. In threaded binary tree, the NULL pointers are replaced by the

- Preorder successor or predecessor
- **Inorder successor or predecessor#**
- post order successor or predecessor
- NULL pointers are not replaced

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

- Partially
- **Completely#**
- Incompletely
- Partly

27. Suppose there are set of fruits and the set of vegetables, both sets are _____ sets.

- **Disjoint#**
- Subset
- Whole

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

- Reflexivity
- Symmetry
- Transitivity
- **All of Above#**

29. Which one of the following is TRUE about iteration?

- Iterative function calls consumes a lot of memory
- Threaded Binary Trees use the concept of iteration
- **Iteration extensively uses stack memory#**
- Recursion is more efficient than iteration

30. We implement the heap by _____ .

- Threaded Tree
- AVL tree
- **Complete binary tree#**
- Expression

31. Which of the following statement concerning heaps is NOT true?

- **Traversing a heap in order provides access to the data in numeric or alphabetical order.#**
- Removing the item at the top provides immediate access to the key value with highest (or lowest) priority.
- Inserting an item is always done at the end of the array, but requires maintaining the heap property.
- A heap may be stored in an array.

32. A binary tree with N internal nodes has _____ links, _____ links to internal nodes and _____ links to external nodes.

- **$2N, N-1, N+1$ #**
- $N-1, 2N, N+1$
- $N+1, 2N, N-1$
- $N+1, N-1, 2N$

33. The expression of (! heap-> is full()) check

- Heap is empty
- Heap is full
- **Heap is not empty#**
- Heap is not full

34. Threaded binary tree

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

- $2i-12i$
- $2i+1$
- **Floor ($I/2$) #**

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

- 2
- **4#**
- 6

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

- **Reflexive #**
- Symmetric

37. A binary tree of N nodes has _____.

- $\log_{10} N$ levels
- **$\log_2 N$ levels #**
- $N/2$ levels

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

- N
- N²
- Nlog₂N
- **log₂N#**

39. The easiest case of deleting a node from BST is the case in which the node to be deleted _____.

- **Is a leaf node #**
- Has left subtree only

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

Select correct option:

- N-1
- **N #**
- N+1
- N²

41. In private inheritance derived class pointer can be assigned to base class pointer in.

- **Main function #**
- In derived class member and friend functions
- In base class member and friend functions
- None of the given options

42. Which statement will be true for concrete class?

- It implements an virtual concept.
- **It can be instantiated #**
- it cannot be instantiated
- none of given

43. Target of a _____ function call is determined at run time.

- instance
- **Virtual #**
- operator
- None of given

44. The Specialization pattern after the name says that this specialization is to be used for every _____.

- data types

- meta types
- virtual types
- **Pointers type#**

45. Consider a binary tree, represented by the following array: A,B,C,D,E,F,G,I Is it a strictly binary tree ?

- Yes
- **No #**

46. In threaded binary tree the NULL pointers are replaced by the

- Preorder successor or predecessor
- **Inorder successor or predecessor#**
- Inorder successor or predecessor
- NULL pointers are not replaced

47. The following statements: 1) `int iArray[5];` 2) `int *pArr = iArray;`

- These statements will compile successfully
- Error in first statement
- **Error in second statement #**
- None of given options

48. Merge sort and quick sort both fall into the same category of sorting algorithms.

What is this category?

- $O(n \log n)$ sorts
- Interchange sort
- Average time is quadratic
- **None of the given options. #**

49. 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:

- 16, 18, 20, 22, 24, 28, 30
- 16, 20, 18, 24, 22, 30, 28
- 16, 24, 18, 28, 30, 20, 22
- **16, 24, 20, 30, 28, 18, 22 #**

50. If one pointer of the node in a binary tree is NULL then it will be a/an _____.

- **External node #**
- Root node

- Inner node

51. We convert the _____ pointers of binary to threads in threaded binary tree.

- Left
- Right
- **NULL #**

52. 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)

- 21
- 41
- **42#**

53. Methodologies to the development of reusable software relate to _____.

- Structure programming
- procedural programming
- **Generic programming #**
- None of the given

54. Function template must have a parameter.

- True
- **False#**

55. We implement the heap by _____ .

- Threaded Tree
- AVL tree
- **Complete binary tree#**
- Expression

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

- 54
- 55
- 56
- **57#**

57. Which of the following statement is correct about find(x) operation:

- A find(x) on element x is performed by returning exactly the same node that is

found.

- **A find(x) on element x is performed by returning the root of the tree containing x. #**
- A find(x) on element x is performed by returning the whole tree itself containing x.
- A find(x) on element x is performed by returning TRUE.

58. Which of the following statement is NOT correct about find operation?

- 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.
- **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.#**

59. Which one of the following operations returns top value of the stack?

- Push
- Pop
- **Top #**
- First

60. 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)

- **0 3 8 9 1 7 5 2 6 4 #**
- 2 6 4 0 3 8 9 1 7 5

61. Every AVL is _____

- Binary Tree
- Complete Binary Tree
- None of these
- **Binary Search Tree#**

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

- The array elements must form a heap.
- The array must have at least 2 entries.
- **The array must be sorted.#**

63. Compiler uses which one of the following in Function calls,

- **Stack #**
- Queue

64. Which of the following statement is correct?

- 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.
- 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 PREORDER successor.
- **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.#**
- 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.

65. Two functions with same names, parameters and return type can exist in,

- **Function overloading Function overriding #**
- Operator overloading
- None of these options

66. Consider the code below, `class class1{ private: int i; }; class class2 : public class1 { };`
Then int member i of class1 is _____ in class2,

- public
- protected
- private
- **none of the given options#**

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

- The left pointer of dummy node points to itself while the right pointer points to the root of tree.
- **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 #**
- The left pointer of dummy node points to the root node of the tree while the right pointer is always NULL.
- The right pointer of dummy node points to the itself while the left pointer is always NULL.

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

NOT a

- Expression tree
- Threaded binary tree
- **complete Binary tree #**
- Perfectly complete Binary tree

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

- 23
- 2
- 21
- **22#**

70. A function call is resolved at run-time in _____

- non-virtual member function
- virtual member function
- **Both non-virtual member and virtual member function.#**
- None of given

71. A class hierarchy

- shows the same relationships as an organization chart.
- describes “has a” relationships.
- **describes “is a kind of” relationships. #**
- shows the same relationships as a family tree.

72. Consider the code below, `class class1{ public: int i; }; class class2 : public class1 { };`
Then int member i of class1 is ____ in class2,

- **Public#**
- protected
- private
- none of the given options

73. Consider the code below, `class c1{ }; class c2 : public c1 { }; class c3 : public c2 { };`
Then c1 is,

- Direct base class of c3
- **Direct child class of c3 #**
- Direct base class of c2
- Direct child class of c2

74. Which one of the following is not an example of equivalence relation?

- Electrical connectivity
- Set of people
- **\leq relation#**

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

- **Sorted #**
- Unsorted

76. A simple sorting algorithm like selection sort or bubble sort has a worst-case of

- $O(1)$ time because all lists take the same amount of time to sort
- $O(n)$ time because it has to perform n swaps to order the list.
- **$O(n^2)$ time because sorting 1 element takes $O(n)$ time - After 1 pass through the list, either of these algorithms can guarantee that 1 element is sorted. #**

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

- This dummy node never has a value.
- This dummy node has always some dummy value.
- **This dummy node has either no value or some dummy value.#**

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

- **$\log_2(n)$ #**
- n

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

- **$N - 1$ #**
- $N + 1$
- $N + 2$
- N

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

- A binary tree with N internal nodes has $N + 1$ internal links.
- A binary tree with N external nodes has $2N$ internal nodes.
- **A binary tree with N internal nodes has $N + 1$ external node. #**

81. Which of the given option is NOT a factor in Union by Size:

- Maintain sizes (number of nodes) of all trees, and during union.
- Make smaller tree, the subtree of the larger one.
- **Make the larger tree, the subtree of the smaller one. #**

82. 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?

- 144
- 145
- **143#**

83. When we have declared the size of the array, it is not possible to increase or decrease it during the _____ of the program.

- Declaration
- **Execution#**

84. A binary tree with 24 internal nodes has _____ external nodes.

- 22
- 23
- 48
- **25 #**

85. _____ is the stack characteristic but _____ was implemented because of the size limitation of the array.

- isFull(), isEmpty()
- pop(), push()
- **isEmpty () , isFull()#**

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

- **Yes #**
- No

87. it will be efficient to place stack elements at the start of the list because insertion and removal take _____ time.

- Variable
- **Constant#**

88. 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?

Select correct option:

- 3,4,6,7,5,10,1
- 3,4,6,7,5,1,10
- 1,4,6,7,5,10,3
- **1,4,3,7,5,10,6 #**

89. What is the best definition of a collision on a hash table?

- **Two entries with different keys have the same exact hash value. #**
- Two entries with different keys have the exact has value

90. Which one of the following is not an open addressing technique to resolve collection?

- Quadratic probing
- Double hashing
- **Cubic probing#**

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

- Binary tree only
- **Threaded binary tree #**

92. 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?

- **10,30,20,31,40,50,80,60,70 #**
- 10,30,20,70,40,50,80,60,31

93. In complete binary tree the bottom level is filled from _____.

- **Left to right #**
- Right to left
- Not filled at all

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

Select correct option:

- Randomly remove walls until the entrance and exit cells are in the same set
- Removing a wall is the same as doing a union operation
- **Remove a randomly chosen wall if the cells it separates are already in**

the same set. #

95. When an array of object is created dynamically then there is no way to provide parameterized constructors for array of objects.

- True#
- False

96. Which of the following statement is NOT correct regarding Table ADT?

Select correct option:

- In a table, the type of information in columns may be different.
- A table consists of several columns, known as entities. #

97. Which property of relation is satisfied if we say: Ahmad R(is related to)Ahmad

- Reflexivity
- Symmetry#
- Transitivity

98. The main reason of using heap in priority queue is

Select correct option:

- Improve performance #
- code is readable

99. A class D can be derived from a class C, which is derived from a class B, which is derived from a class A

- True#
- False

100. A Class or class template can have member _____ that are themselves templates.

- Variable
- Function#
- Objects

101. Adding a derived class to a base class requires fundamental changes to the base class.

- True#
- False

102. Which property of equivalence relation is satisfied if we say: Ahmad R (is related to) Ahmad

Select correct option:

- Reflexivity
- **Symmetry#**

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

Select correct option:

- Sorted Sequential Array
- Linked List
- **Skip List #**

104. What kind of list is best to answer questions such as "What is the item at position n?"

- **Lists implemented with an array. Click here for detail #**
- Doubly-linked lists

105. Each node in doubly link list has,

- 1 pointer
- **2 pointers #**
- 3 pointers

106. The definition of Transitivity property is

- For all element x member of S , $x R x$
- For all elements x and y , $x R y$ if and only if $y R x$
- **For all elements x , y and z , if $x R y$ and $y R z$ then $x R z$ #**

107. _____ is a data structure that can grow easily dynamically at run time without having to copy existing

- Elements.
- Array ()
- List
- **Both of these #**

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

- 2
- 3
- **4#**

109. “+” is a _____ operator.
- Unary
 - **Binary#**
110. The maximum number of external nodes (leaves) for a binary tree of height H is _____
- **2H #**
 - 2H +1
111. Union is a _____ time operation.
- **Constant #**
 - Polynomial
112. Huffman encoding uses _____ tree to develop codes of varying lengths for the letters used in the original message.
- Linked list
 - Stack
 - Queue
 - **Binary tree#**
113. A kind of expressions where the operator is present between two operands called _____ expressions.
- Postfix
 - **Infix#**
114. 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?
- **11,22,33,44,55,66 #**
 - 11,22,33,44,66,55
115. Through interface we access object _____.
- States
 - Data members
 - **Behavior#**
116. Inheritance is a way to
- Organize data
 - Pass arguments to objects of classes

- **Add features to existing classes without rewriting them#**
117. **If a complete binary tree has height h then its no. of nodes will be,**
- Log (h)
 - **$2^{h+1} - 1$ #**
118. **In Private Inheritance the public members of base class become _____ in derived class.**
- Public
 - **Private#**
119. **Function overriding is done in context of,**
- Single class
 - **Single derived class#**
120. _____ **is automatically called when the object is created.**
- Member function
 - Object
 - **Constructor#**
121. **Which of the following is not true regarding the maze generation?**
- Randomly remove walls until the entrance and exit cells are in the same set.
 - Removing a wall is the same as doing a union operation.
 - **Remove a randomly chosen wall if the cells it separates are already in the same set. #**
122. **Which one of the following is not the property of equivalence relation**
- Reflexive
 - Symmetric
 - Transitive
 - **Associative#**
123. **If a max heap is implemented using a partially filled array called data, and the array contains n elements ($n > 0$), where is the entry with the greatest value?**
- **Data [0] #**
 - Data [1]

124. Which one is a self-referential data type?
- Stack
 - Queue
 - **Link list#**
125. If both pointers of the node in a binary tree are NULL then it will be a/an _____.
- Inner node
 - **Leaf node#**
126. This of the following can be the inclusion criteria for pixels in image segmentation.
- Pixel intensity
 - Texture
 - Threshold of intensity
 - **All of the given options#**
127. In a perfectly balanced tree the insertion of a node needs _____ .
- **One rotation #**
 - Two rotations
128. The _____ method of list will position the currentNode and lastCurrentNode at the start of the list.
- Remove
 - Next
 - **Start #**
129. 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?
- **The pivot could be either the 7 or the 9. #**
 - The pivot could be the 7, but it is not the 9.
130. Consider the following array 23 15 5 12 40 10 7 After the first pass of a particular algorithm, the array looks like 15 5 12 23 10 7 40 Name the algorithm used
- Heap sort
 - Selection sort

- Insertion sort
 - **Bubble sort#**
131. A binary tree with 33 internal nodes has _____ links to internal nodes.
- 31
 - **32#**
132. If Ahmad is cousin of Ali and Ali is cousin of Asad then Ahmad is also cousin of Asad the statement has the following property.
- Reflexivity
 - Symmetry
 - **Transitivity#**
133. The arguments passed to a function should match in number, type and order with the parameters in the function definition.
- **True#**
 - False
134. Which of the following method is helpful in creating the heap at once?
- insert
 - add
 - update
 - **preculatDown #**
135. If numbers 5, 222, 4, 48 are inserted in a queue, which one will be removed first?
- 48
 - 4
 - 222
 - **5#**
136. Compiler uses which one of the following to evaluate a mathematical equation,
- Binary Tree
 - Binary Search Tree
 - **Parse Tree#**
137. 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?

- Both x and y are still 0.
- x is now 1, but y is still 0.
- **x is still 0, but y is now 2.#**

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

- **Stack #**
- Queue

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

- Bubble Sort
- Insertion Sort
- **Quick Sort#**

140. Suppose currentNode refers to a node in a linked list (using the Node class with member variables called data and next Node). What statement changes currentNode so that it refers to the next node?

- currentNode ++;
- currentNode = nextNode;
- currentNode += nextNode;
- **currentNode = currentNode->nextNode; #**

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

- $\log_2(n+1)$
- $\log_2(n+1) - 1$
- **$1.44 \log_2 n$ #**

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

- 8 to 14
- **8 to 15 #**

143. 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?

- Both x and y are still 0.
- x is now 1, but y is still 0.
- **x is still 0, but y is now 2.#**

144. Select the one FALSE statement about binary trees:

- **Every binary tree has at least one node. #**
- Every non-empty tree has exactly one root node.

145. Heap can be used to implement

- Stack
- Link list
- Queue
- **Priority Queue#**

146. Which of the following is a weak relationship between two objects?

Select correct option:

- Inheritance
- Composition
- **Aggregation#**

147. Data items in a class must be private.

Select correct option:

- True
- **False#**

148. Which one of the following is NOT true regarding the skip list?

- Each list S_i contains the special keys + infinity and - infinity.
- List S_0 contains the keys of S in non-decreasing order.
- Each list is a subsequence of the previous one.
- **List S_h contains only the n special keys. #**

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

Select correct option:

- 5
- **25#**

150. The worst case of building a heap of N keys is _____ .
Select correct option:
- N
 - N^2
 - **$N \log n$ #**
151. If there is a pointer, p , to objects of a base class, and it contains the address of an object of a derived class, and both classes contain a virtual member function, $ding()$, then the statement $p \rightarrow ding()$; will cause the version of $ding()$ in the _____ class to be executed.
- Base
 - Derived
 - **Virtual#**
152. The default inheritance mode is,
- **Public inheritance#**
 - Protected Inheritance
 - Private Inheritance
153. Which will be the Primary task or tasks of generic programming?
- Categorize the abstractions in a domain into concepts
 - Implement generic algorithms based on the concepts
 - Build concrete models of the concepts
 - **All of given#**
154. For a perfect binary tree of height h , having N nodes, the sum of heights of nodes is _____.
- Select correct option:
 - $N - (h - 1)$
 - **$N - (h + 1)$ #**
155. If a tree has 50 nodes, then the total edges/links in the tree will be :
Select correct option:
- 55
 - 51
 - 50
 - **49 #**

156. given the values are the array representation of heap; 12 23 26 31 34 44 56 64 78 100 What is the 5th smallest element in the given heap?

Select correct option:

- 31
- **34 #**
- 44

157. We can build a heap in _____ time.

Select correct option:

- **Linear #**
- Exponential
- Polynomial

158. Binary Search Tree violates the condition of AVL tree when any node has balance equal to

Select correct option:

- **2 or -2#**
- 1 or -1

159. There are _____ cases for Rotation in AVL tree.

Select correct option:

- 2
- 3
- **4#**

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

- N-1
- N
- **N+1#**

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

- **Randomly #**
- That occur first in the text message

162. A queue is a data structure where elements are,

- **Inserted at the front and removed from the back. #**
- Inserted and removed from the top.

- Inserted at the back and removed from the front.
 - inserted and removed from both ends
163. 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?
- (i) queue (ii) insertion (iii) removals (iv) top
 - (i) stack (ii) insertion (iii) removals (iv) bottom
 - **(i) stack (ii) insertion (iii) removals (iv) top #**
164. In an array we can store data elements of different types.
- True
 - **False#**
165. In a min heap, precalculateDown procedure will move smaller value ____ and bigger value ____.
- left,right
 - right,left
 - **up,down#**
166. Which of the following heap methods increase the value of key at position „p“ by the amount „delta“?
- **increaseKey(p,delta) #**
 - decreaseKey(p,delta)
167. Which one of the following is TRUE about recursion?
- **Recursion extensively uses stack memory. #**
 - Threaded Binary Trees use the concept of recursion.
168. The data of the problem is of 2GB and the hard disk is of 1GB capacity, to solve this problem we should
- Use better data structures
 - **Increase the hard disk space #**
169. 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?
- $(last \% 1) + CAPACITY$
 - $last \% (1 + CAPACITY)$

➤ $(last + 1) \% CAPACITY\#$

170. See the below code and fill the appropriate answer for? `Void fastInorder(TreeNod+p) {while((p+nextInorder(p)) != ?) cout p->getInfo();}`

- **Dummy#**
- rootNode

171. If an expression tree is correct then its root should have,

- **An operator#**
- (
-)
- an operand

172. The preclateDown procedure will move the smallvalue_____ and bigger value_____.

Select correct option:

- left,right
- right,left
- up,down
- **down,up#**

173. If there are 100 elements in an equivalence class then we will have _____ sets initially.

Select correct option:

- 50
- **100 #**
- 1000

174. A solution is said to be efficient if it solves the problem within its resource constraints i.e. hardware and time.

- **True #**
- False

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

- Traversal
- Heap
- Union
- **Huffman encoding #**

176. Which of the following is a correct equivalent expression(s) for the above?

- $x y - a * b + c /$
- $x * y a - b c / +$
- **$x y a * - b c / + \#$**
- $x y a * - b / + c$

Contact for Help.

We have checked all the Answers if you find any mistake let us know.

Sparrow +923313000225.

Remember in Prayers.

Best of Luck.