18CSC201J-Data Structures and Algorithm

Multiple Choice Questions

A binary search tree generated by inserting the sequence of nodes 10, 15, 13, 2, 5, 8, 1, 7 in order. What will be the height of the resultant tree? 1 point

- ○ 6
- ◉ 5
- ○ 7
- ○ 8

Clear selection

In AVL tree, a node having two children is to be deleted, then it is replaced by its, 1 point

- ◉ In-order Predecessor
- ○ In-order Successor
- ○ Pre-Order Predecessor
- ○ Pre-order Successor

Clear selection

The minimum possible depth of a binary tree with 23 nodes is 1 point

- (●) 3
- ( ) 4
- ( ) 5
- ( ) 6

Clear selection

A binary search tree formed by inserting the sequence of nodes 47, 12, 59, 2, 17, 55, 88, 1, 5, 34, 57, 21, 35 in order. The number of nodes in the left sub-tree and right sub-tree of the root node is 1 point

- ( ) (4,8)
- ( ) (5,7)
- ( ) (7,5)
- (●) (8,4)

Clear selection

The best situation to choose B-Tree, Reb-Black Tree and AVL Tree is, 1 point

- ( ) When Managing more data items, Many Insertions, and Many searching respectively
- ( ) Many Insertion, Many Searching, and when Managing more data items respectively
- ( ) When Managing more data items, Many Sorting, and Many Insertion respectively
- ( ) Many Insertion, Many sorting and Many searching respectively

An AVL tree is formed by inserting the sequence of nodes 18, 6, 22, 5, 9, 19, 8 in order. Suppose if we remove the root node by replacing it with something from the left sub tree, what will be the new root? 1 point

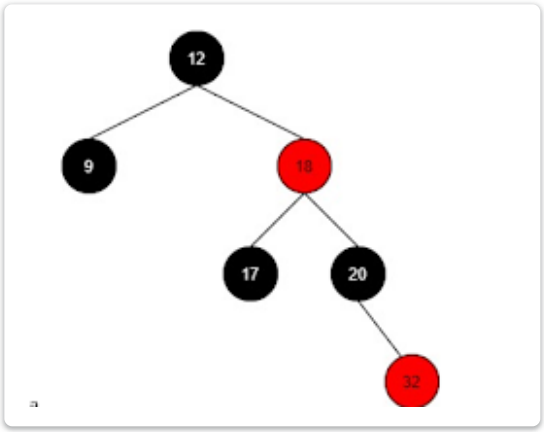
- ○ 8
- ○ 9
- ○ 5
- ○ 18

A B-tree of order 3 and of height 3 will have the maximum of ____ keys, when all nodes are completely filled. 1 point

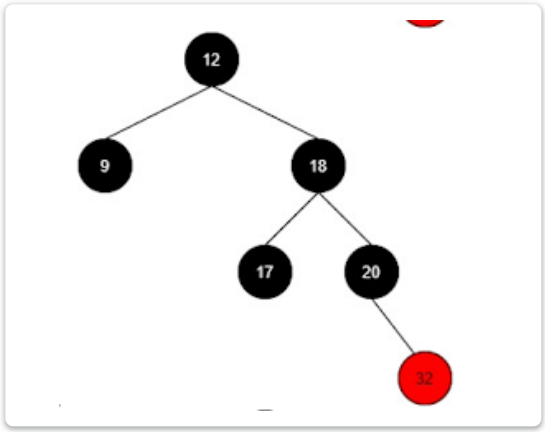
- ○ 26
- ○ 28
- ○ 82
- ◉ 80

Clear selection

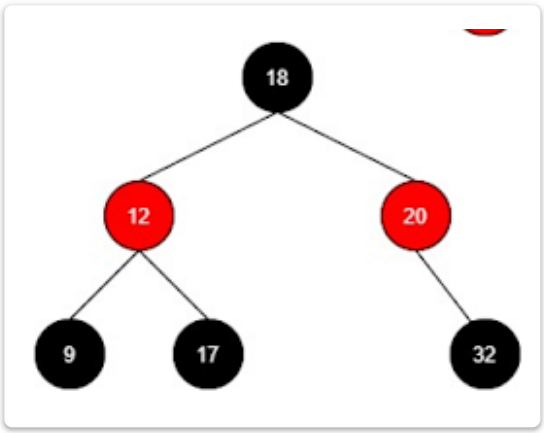
Which of the following is the Red-Black tree structure after inserting the following nodes in sequence : 12, 20, 9, 17, 18, 32. 1 point



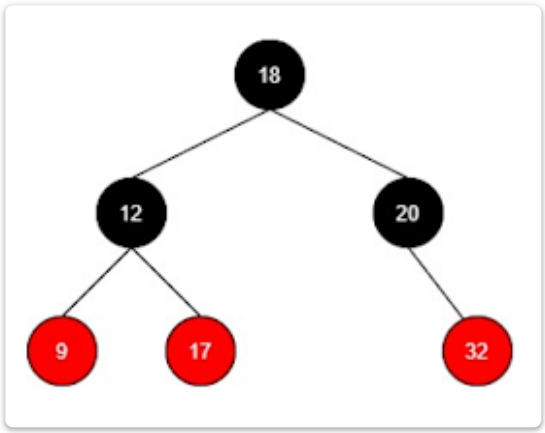
Option 1



Option 2



Option 3



Option 4

The infix, prefix and postfix expression is produced from an expression tree by, 1 point

- In-order traversal, Post-order traversal and Pre-order traversal respectively
- In-order traversal, Pre-order traversal and Post-order traversal respectively
- Level – order traversal, Pre-order traversal and Post-order traversal respectively
- Level-order traversal, Post-order traversal and Pre-order traversal respectively

Clear selection

In a tree, for any node n, every descendant node's value in the left sub tree of n is less than the value of n and every descendant node's value in the right sub tree is greater than the value n. This property should be satisfied for, 1 point

- (●) Red-Black tree, Binary search tree and AVL tree
- ( ) B-Tree, AVL tree and Heap tree
- ( ) Complete binary tree, Red-Black tree and Binary search tree
- ( ) Binary search tree, Extended binary tree and AVL tree

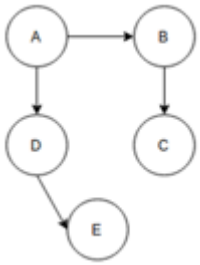
Clear selection

What graph traversal algorithm uses a queue data structure to keep track of vertices which need to be processed? 1 point

- (●) Breadth-first search.
- ( ) Depth-first search.
- ( ) Both BFS and DFS
- ( ) Neither BFS nor DFS

Clear selection

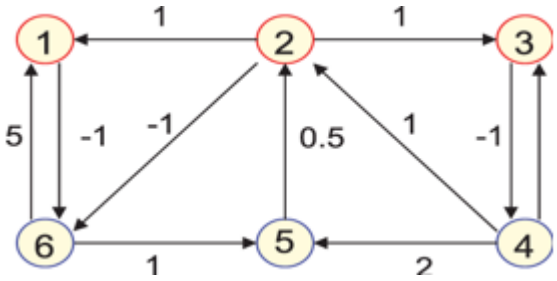
What would be the BFS traversal of the given Graph? 1 point



- ABCED
- AEDCB
- ABDCE
- ADECB

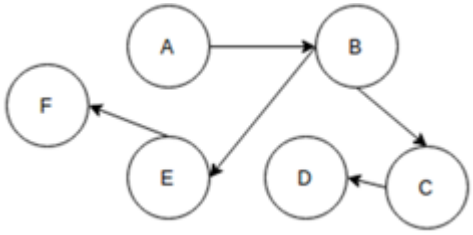
Clear selection

What is the out-degree of the node 2 in the given graph? 1 point



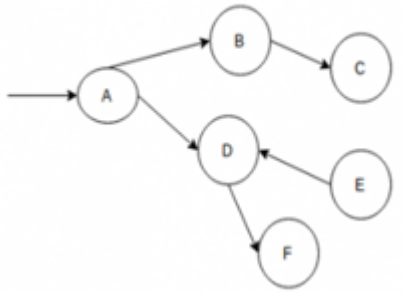
- 2
- 3
- 1
- 0

Which of the following is a topological sorting of the given graph? 1 point



- [ ] A B C D E F
- [ ] A B F E D C
- [ ] A B E C F D
- [ ] B C D E F A

What sequence would the BFS traversal of the given graph yield? 1 point



- ( ) A F D B C E
- ( ) ABCDFE
- (•) A B D C F
- ( ) F D C B A

Clear selection

If the number of nodes in complete graph is 4, then the maximum possible number of spanning tree will be _____ 1 point

- (●) 16
- ( ) 256
- ( ) 32
- ( ) 8

Clear selection

What is the search complexity in direct addressing/hashing? 1 point

- ( ) O(n)
- ( ) O(logn)
- ( ) O(nlogn)
- (●) O(1)

Clear selection

Calculate hash values of keys 1234 and 5462 while m=97 1 point

- ( ) 16,70
- ( ) 16,16
- (●) 70,16
- ( ) 17,60

Clear selection

What is the position of 72, 27, 36 in a hash table with size 10 using Linear probing

1 point

- (●) 2,7,6
- ( ) 7,6,2
- ( ) 6,2,7
- ( ) 1,3,4

Clear selection

What is the position of 271 in the following table

1 point

0	22
1	34
2	
3	
4	
5	
6	
7	
8	41
9	18
10	

- ( ) 3
- ( ) 4
- ( ) 5
- (●) 7

Clear selection

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