ADS | CCEE Practice Test - IV

Total points 14/20

Duration: 30 Mins

The respondent's email (**prathameshpatkar890@gmail.com**) was recorded on submission of this form.

0 of 0 points

Centre *

Kharghar

Name *

Prathamesh Patkar

PRN *

240840320073

Questions 14 of 20 points

✗ Which of the following insertion sequences will **not** require any rotations to maintain balance when inserting the elements {3, 4, 5, 6, 7, 8, 9} into an empty AVL tree? *0/1

○ 6, 4, 8, 3, 5, 7, 9

○ 6, 3, 5, 4, 9, 7, 8

● 9, 8, 7, 6, 5, 4, 3 ✗

○ 3, 4, 5, 6, 7, 8, 9

Correct answer

● 6, 4, 8, 3, 5, 7, 9

✓ If you were tasked with determining the total number of nodes N in a full binary tree, given that there are L leaves, which of the following equations would best describe this relationship? *1/1

○ N = 2*L

○ N = L + 1

○ N = L − 1

● N = 2*L − 1 ✓

✓ You are given an unsorted array containing **n** distinct integers. You need to determine the maximum value in the array using a single traversal of the elements. Which of the following option accurately describes the time complexity of this operation? *1/1

○ O(1)

○ O(log n)

● O(n) ✓

○ O(n log n)

✓ What is the worst case time complexity of inserting a node in a doubly linked list? *1/1

○ O(nlogn)

○ O(logn)

● O(n) ✓

○ O(1)

✓ What will be the output when aeeHelloPadhlo(new int[]{3, 7, 1, 2, 8, 4, 5}) is called? *1/1

```
int aeeHelloPadhlo(int[] arr) {
    int n = arr.length + 1;
    int expectedSum = (n * (n + 1)) / 2;
    int actualSum = 0;

    for (int num : arr) {
        actualSum += num;
    }

    return expectedSum - actualSum;
}

int padhneKeBaad = aeeHelloPadhlo(new int[]{3, 7, 1, 2, 8, 4, 5});
System.out.println(padhneKeBaad);
```

● 6 ✓

○ 9

○ 4

○ 5

✓ Consider an AVL tree that needs to maintain its balanced property while inserting the following elements in the specified order: 38, 53, 43, 28, 33, 63, 81, 23, 31. After performing all the insertions, how many rotations would be required to ensure the AVL tree remains balanced? *1/1

○ 2 left rotations, 2 right rotations

○ 2 left rotations, 3 right rotations

● 3 left rotations, 2 right rotations ✓

○ 3 left rotations, 1 right rotation

✗ In a full binary tree, If you were to derive a formula to express the number of leaves in relation to the number of internal nodes, which of the following relationships would accurately represent this connection? *0/1

○ L = 2*I

○ L = I + 1

○ L = I − 1

● L = 2*I − 1 ✗

Correct answer

● L = I + 1

✗ In a binary min-heap with 103 unique elements, let K represent the index in the array where the largest element is stored. How many possible values can K take in this scenario? *0/1

○ 53

○ 52

● 27 ✗

○ 1

Correct answer

● 52

✓ What is the total number of distinct binary trees that can be constructed using four unlabelled nodes? *1/1

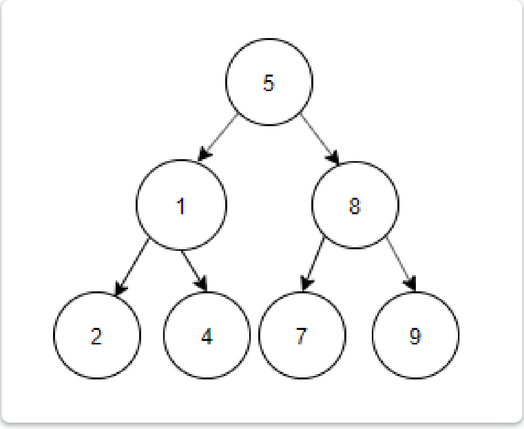
○ 10

● 14 ✓

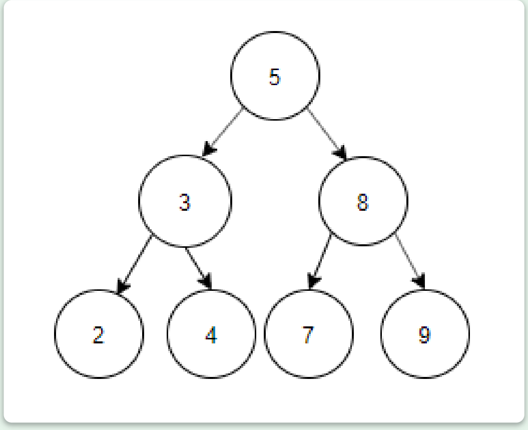
○ 13

○ 12

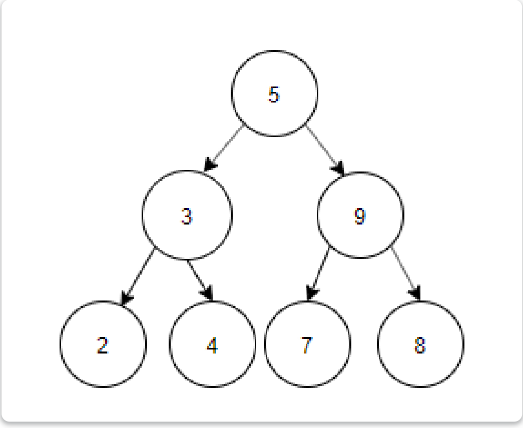
✓ Construct a binary search tree by using postorder sequence given below. * 1/1
Postorder: 2, 4, 3, 7, 9, 8, 5.



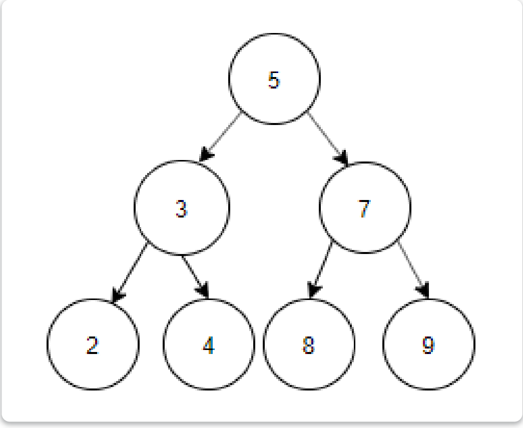
○ Option 1



● Option 2 ✓



○ Option 3



○ Option 4

✓ Consider the Binary Search algorithm, which is designed to operate on sorted arrays. If you were to evaluate its performance in terms of efficiency: *1/1

For a scenario where the element is not found or is located at the last position, think about how many comparisons would be required relative to the number of elements in the array.

In a typical case where the target element is somewhere in the middle of the search process, reflect on the expected number of comparisons needed.

Based on your analysis, what can be inferred about the time complexity of the Binary Search algorithm in terms of both worst-case and average-case scenarios?

○ O(n^2)

○ O(1)

○ O(n log n)

● O(log n) ✓

✓ The Binary Search algorithm is employed to find an element in a sorted array efficiently. What type of approach does it utilize to achieve this? *1/1

○ Linear way to search elements

● Divide and Conquer way to search elements ✓

○ Sort and search Linearly

○ Greedy search algorithm

○ None of the above

✗ * 0/1

```
class MyStack {
    protected static final int MAX_SIZE = 150;
    protected int count, index = -1;
    protected Object elements[];

    public MyStack() {
        elements = new Object[MAX_SIZE];
    }

    public void add(Object item) {
        if (count == MAX_SIZE) {
            System.out.println("Stack overflow");
            return;
        } else {
            index++;
            elements[index] = item;
            count++;
        }
    }

    public Object remove() {
        if (index < 0) {
            return null;
        } else {
            Object item = elements[index];
            index--;

            count--;

            return item;

        }

    }

}


public class StackTest {

    public static void main(String args[]) {

        MyStack myStack = new MyStack();

        myStack.add("First");

        myStack.add("Second");

        Object element1 = myStack.remove();

        Object element2 = myStack.remove();

        Object element3 = myStack.remove();

        System.out.println(element3);

    }

}
```

What will be the output of the StackTest class?

○ Second

○ First

○ null

● Stack overflow ✗

Correct answer

● null

✗ What will be the result of the following operation? * 0/1

Top(Push(T, Y))

○ Y

○ Y + T

○ T

● YT ✗

Correct answer

● Y

✓ The height of a binary tree is the maximum number of edges in any root to leaf path. The maximum number of nodes in a binary tree of height h is: *1/1

○ 2^h -1

○ 2^(h-1) – 1

● 2^(h+1) -1 ✓

○ 2*(h+1)

✗ Which one of the following sequences, when stored in an array at locations **A[1], A[2], A[3]..., A[10]**, forms a max-heap? *0/1

○ 28, 22, 19, 12, 18, 15, 6, 10, 11, 17

● 28, 22, 19, 10, 18, 15, 6, 11, 12, 17 ✗

○ 28, 19, 22, 12, 18, 15, 6, 10, 11, 17

○ 22, 28, 19, 12, 18, 15, 10, 11, 6, 17

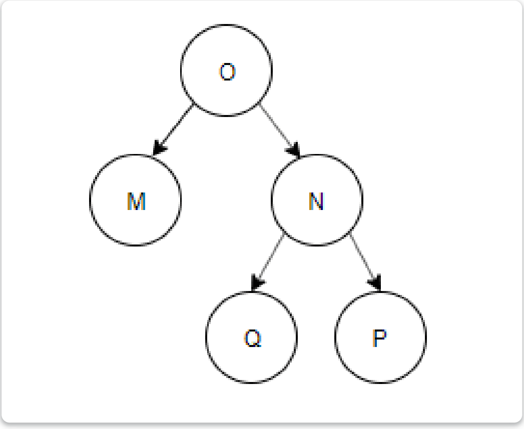
Correct answer

● 28, 22, 19, 12, 18, 15, 6, 10, 11, 17

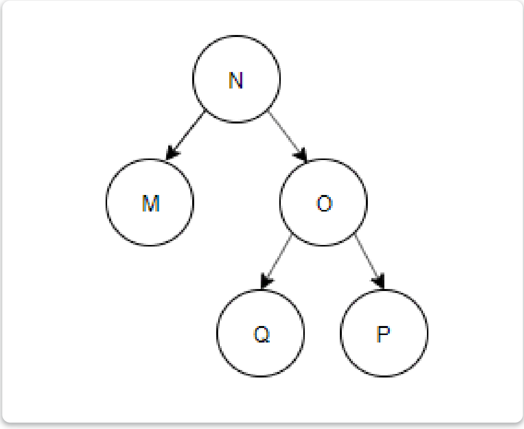
✓ Construct a binary tree by using postorder and inorder sequences given below. *1/1

Inorder: N, M, P, O, Q

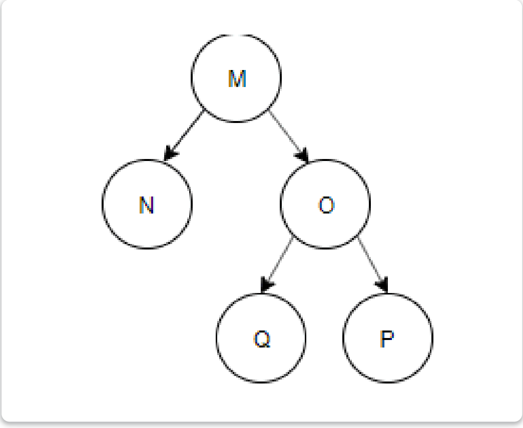
Postorder: N, P, Q, O, M



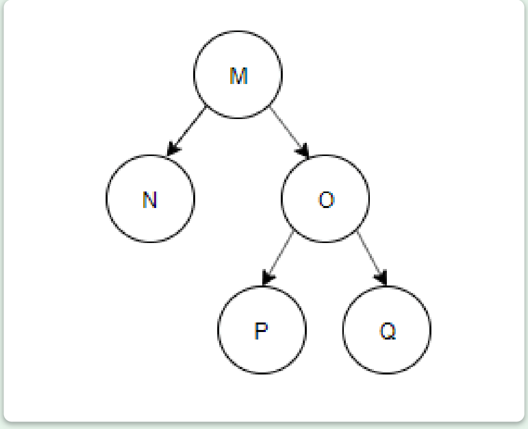
○ Option 1



○ Option 2



○ Option 3



● Option 4 ✓

✓ The preorder traversal of a binary search tree is 15, 10, 12, 11, 20, 18, 16, 19. Which one of the following is the postorder traversal of the tree? *1/1

○ 20, 19, 18, 16, 15, 12, 11, 10

○ 10, 11, 12, 15, 16, 18, 19, 20

● 11, 12, 10, 16, 19, 18, 20, 15 ✓

○ 19, 16, 18, 20, 11, 12, 10, 15

✓ What is the best-case time complexity of the Linear search? * 1/1

○ O(n)

● O(1) ✓

○ O(n log n)

○ O(n^2)

✓ What will be the output when chinTapakDum(new int[]{4, 1, 2, 1, 2}) is called? *1/1

```
int chinTapakDum(int[] arr) {
    int result = 0;
    for (int num : arr) {
        result ^= num;
    }
    return result;
}


int finalDum = chinTapakDum(new int[]{4, 1, 2, 1, 2});
System.out.println(finalDum);
```

● 4 ✓

○ 1

○ 2

○ 3

Feedback of Mock

0 of 0 points

How was your Mock's experience? (No one word answer) *

application based questions were there finding difficult taking time to analyse program how it works

I understand the responsibility towards my life & everyone around me. I promise, I am sincere towards my studies. *

● Yes

○ Other: ____________________

Level of exam *

○ Easy

● Moderate

○ Tough