QUIZIZZ **Worksheets**

Batch 4 Recap Data Structure Quiz
Total questions: 25
Worksheet time: 23mins
Instructor name: Mr. Phitron Hero

Name

Class

Date

1.

What is the time complexity of inserting at tail of a singly linked list?

a) O(N)   b) O(N*N)

c) O(1)   d) None of them

2.

How many Queues are required to implement a Stack?

a) 1   b) 2

c) 3   d) 4

3. Binary search algorithm time complexity when array is not sorted?

a) O(logN)   b) O(N*logN)

c) O(N*N)   d) O(N)

4. How much time will it take to execute 10^15 operations?

a) 100,000,000 seconds   b) 10,000 seconds

c) 1,000,000 seconds   d) 10,000,000 seconds

5.

To implement Queue we should not use _____.

a) Array   b) Singly Linked List

c) Doubly Linked List

6.
```cpp
1   int main()
2   {
3       int n;
4       cin>>n;
5       int a[n];
6       for(int i=0;i<n;i++)
7       {
8           cin>>a[i];
9       }
10      sort(a,a+n);
11      int m;
12      cin>>m;
13      for(int i=0;i<m;i++)
14      {
15          cout<<a[i]<<" ";
16      }
17  }
```
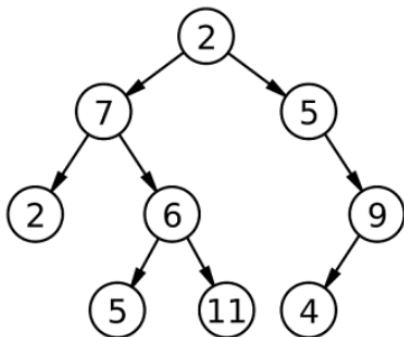
What will be the time complexity of the following code?

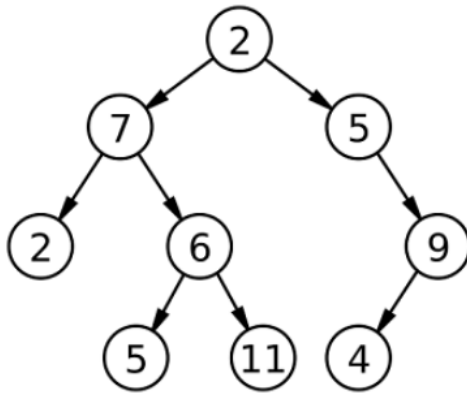a) O(N+M)

b) O(N*M)

c) O(Nlog(N))

d) O(log(N))

7.

What will be the Level-order traversal of this binary tree?

a) 2 7 5 2 6 9 5 11 4

b) 2 7 5 6 2 5 4 11 9

c) 2 7 2 6 5 11 5 9 4

d) 2 5 7 9 6 2 4 11 5

8.

What will be the In-order traversal of this binary tree?

a) 2 7 2 6 5 11 5 9 4   b) 2 7 5 6 11 2 5 4 9

c) 2 7 5 6 2 5 4 11 9   d) 2 7 6 5 11 2 5 4 9

9.

We have a Queue. Now we will do following operation:
push(10);
push(20);
push(30);
pop();
pop();
push(25);
pop();
after this operation, what is current front value of the queue?

a) 15   b) 25

c) 10   d) 30

10.

Which data structure is best suited for implementing a browser's history feature, where you need to be able to go back to previously visited pages and forward to pages after going back?

a) Doubly linked list   b) Binary search

c) Array   d) Binary Search Tree

11. Which data structure is best suited for implementing a priority queue where you need to efficiently extract the maximum or minimum element?

   a) Stack   b) Array

   c) Heap   d) Linked List

12. Which data structure is ideal for implementing a function that needs to process elements in a first-in, first-out (FIFO) manner?

   a) Stack   b) Queue

   c) Binary Search Tree   d) Heap

13. What is the time complexity of accessing an element in an Doubly Linked List by its index?

   a) O(1)   b) O(N)

   c) O(log N)   d) O(N log N)

14.

   A binary tree can have

   a) 0 child.   b) 1 child.

   c) 2 children.   d) All of the above.

15.

   This is a complete binary tre

   a) True   b) False

16. **If you have a queue with elements [A, B, C, D] and you move them to a stack and then to another queue, what will be the resulting order in the new queue?**
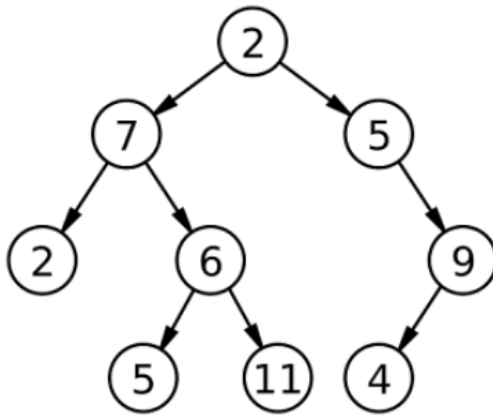
a) [A, B, C, D]   b) [D, C, B, A]

c) [A, C, B, D]   d) [D, B, A, C]

17.

Process of Removing an element in stack is called?

a) Push   b) Pop

c) Insert

18.

What will be the pre-order traversal of this binary tree?

a) 2 7 2 6 5 5 11 9 4   b) 2 7 2 6 5 11 9 5 4

c) 2 7 2 6 5 11 5 9 4   d) 2 7 2 5 11 6 5 9 4

19.

Leaf node is ___

a) Node with no parent.   b) Node with exactly 2 children.

c) Node with no child.   d) Node with max value.

20. What is the time complexity of extracting the maximum element from a max heap?

a) O(1)   b) O(N)

c) O(N log N)   d) O(log N)

21. What type of binary tree is a heap?

a) Balanced binary search tree   b) Complete binary tree

c) Full binary tree   d) Skewed binary tree

22. Which of the following is a property of a max heap?

a) All nodes in the heap must be greater than   b) Every node's value is greater than or equal to
    their parent node   the values of its children

c) The heap is sorted in descending order   d) The tree is always a perfect binary tree

23. Which of the following is a real-life example of a queue?

a) **A stack of books**   b) **People standing in line at a ticket counter**

c) **Plates stacked on a shelf**   d) **Recursive function calls**

24. Which of the following is a real-life application of a priority queue implemented using a heap?

a) Undo feature in a text editor   b) Reversing a string

c) Task scheduling in an operating system   d) Managing web browser tabs

25. What type of heap is commonly used to manage the leaderboards in a gaming system where the
     highest scores need to be accessed quickly?

a) Min Heap   b) Max Heap

c) Binary Search Tree   d) None of the above

Answer Keys

1. c) O(1)

2. b) 2

3. b) O(N*logN)

4. a) 100,000,000 seconds

5. a) Array

6. c) O(Nlog(N))

7. a) 2 7 5 2 6 9 5 11 4

8. b) 2 7 5 6 11 2 5 4 9

9. b) 25

10. a) Doubly linked list

11. c) Heap

12. b) Queue

13. b) O(N)

14. d) All of the above.

15. b) False

16. b) [D, C, B, A]

17. b) Pop

18. c) 2 7 2 6 5 11 5 9 4

19. c) Node with no child.

20. d) O(log N)

21. b) Complete binary tree

22. b) Every node's value is greater than or equal to the values of its children

23. b) **People standing in line at a ticket counter**

24. c) Task scheduling in an operating system

25. b) Max Heap