

DSA EXAM-March,2022

Total points 0/0 ?

DS EXAM

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✓ 1.Which of the following is a linear data structure?

- ☒ A) Array
- ☐ B)AVL Trees
- ☐ C)Binary Trees
- ☐ D)Graphs



✓ 2.From following which is not the operation of data structure?

- ☐ A)Operations that manipulate data in some way
- ☐ B)Operation that perform computation
- ☒ C)Operation that check for syntax errors
- ☐ D)Operations that monitor an object for the occurrence of controlling events



✓ 3.Which of the following is a linear data structure?

☒ A) Array



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✓ 5. In a stack, if a user tries to remove an element from an empty stack it is called _____

☒ A)Underflow



☐ B) Empty collection

☐ C) Overflow

☐ D) Garbage Collection



✓ 6. Pushing an element into stack already having five elements and stack size of 5, then stack becomes _____

- ☒ A) Overflow
- ☐ B) Crash
- ☐ C) Underflow
- ☐ D) User flow



✓ 7. What is the value of the postfix expression 6 3 2 4 + - *?

- ☐ A) 1
- ☐ B) 40
- ☐ C) 74
- ☒ D) -18



✓ 8. What is the worst case time complexity of inserting a node in a doubly linked list?

- ☐ A) $O(n \log n)$
- ☐ B) $O(\log n)$
- ☒ C) $O(n)$
- ☐ D) $O(1)$



✓ 9. How do you insert a node at the beginning of the list?

```
public class InsertFront(int data)
{
    Node node = new Node(data, head, head.getNext());
    node.getNext().setPrev(node);
    head.setNext(node);
    size++;
}
```

☒ A)



b)

```
public class insertFront(int data)
{
    Node node = new Node(data, head, head);
    node.getNext().setPrev(node);
    head.setNext(node);
    size++;
}
```

☐ b)

```
c)
public class InsertFront(int data)
{
    Node node = new Node(data, head, head.getNext());
    node.getNext().setPrev(head);
    head.setNext(node);
    size++;
}
```

☐ c)

```
d)
public class InsertFront(int data)
{
    Node node = new Node(data, head, head.getNext());
    node.getNext().setPrev(node);
    head.setNext(node.getNext());
    size++;
}
```

☐ d)



- ✓ 10. Consider the following doubly linked list: head-1-2-3-4-5-tail. What will be the list after performing the given sequence of operations?

```
Node temp = new Node(6,head,head.getNext());  
Node temp1 = new Node(0,tail.getPrev(),tail);  
head.setNext(temp);  
temp.getNext().setPrev(temp);  
tail.setPrev(temp1);  
temp1.getPrev().setNext(temp1);
```

- ☐ A) head-0-1-2-3-4-5-6-tail
- ☐ B) head-1-2-3-4-5-6-tail
- ☒ C) head-6-1-2-3-4-5-0-tail
- ☐ D) head-0-1-2-3-4-5-tail



- ✓ 11. What is the functionality of the following piece of code?

```
public int function()  
{  
    Node temp = tail.getPrev();  
    tail.setPrev(temp.getPrev());  
    temp.getPrev().setNext(tail);  
    size--;  
    return temp.getItem();  
}
```

- ☐ A) Return the element at the tail of the list but do not remove it
- ☒ B) Return the element at the tail of the list and remove it from the list
- ☐ C) Return the last but one element from the list but do not remove it
- ☐ D) Return the last but one element at the tail of the list and remove it from the list



✓ 12. What is the time complexity to count the number of elements in the linked list?

☐ A) $O(1)$

☒ B) $O(n)$

☐ C) $O(\log n)$

☐ D) $O(n^2)$



✓ 13. What is the functionality of the following code?

```
public void function(Node node)
{
    if(size == 0)
        head = node;
    else
    {
        Node temp,cur;
        for(cur = head; (temp = cur.getNext())!=null; cur = temp);
        cur.setNext(node);
    }
    size++;
}
```

☐ A) Inserting a node at the beginning of the list

☐ B) Deleting a node at the beginning of the list

☒ C) Inserting a node at the end of the list

☐ D) Deleting a node at the end of the list



✓ 14. Which of the following properties is associated with a queue?

- ☐ A) First In Last Out
- ☒ B) First In First Out
- ☐ C) Last In First Out
- ☐ D) Last In Last Out



✓ 15. What is the need for a circular queue?

- ☒ A) effective usage of memory
- ☐ B) easier computations
- ☐ C) to delete elements based on priority
- ☐ D) implement LIFO principle in queues



✓ 16. What is the term for inserting into a full queue known as?

- ☒ A) overflow
- ☐ B) underflow
- ☐ C) null pointer exception
- ☐ D) program won't be compiled



✓ 17. What does the following Java code do?

```
public Object function()  
{  
    if(isEmpty())  
        return -999;  
    else  
    {  
        Object high;  
        high = q[front];  
        return high;  
    }  
}
```

- ☐ A) Dequeue
- ☐ B) Enqueue
- ☒ C) Return the front element
- ☐ D) Return the last element



✓ 18. How many children does a binary tree have?

- ☐ A) 2
- ☐ B) any number of children
- ☒ C) 0 or 1 or 2
- ☐ D) 0 or 1



✓ 19. Which of the following ways can be used to represent a graph?

- ☐ A)Adjacency List and Adjacency Matrix
- ☐ B) Incidence Matrix
- ☒ C)Adjacency List, Adjacency Matrix as well as Incidence Matrix ✓
- ☐ D) No way to represent . A graph with all vertices having equal degree is known as a

✓ 20. In linked list implementation of a queue, where does a new element be inserted?

- ☐ A) At the head of link list
- ☐ B) At the centre position in the link list
- ☒ C) At the tail of the link list ✓
- ☐ D) At any position in the linked list

✓ 21. In linked list implementation of a queue, from where is the item deleted?

- ☒ A) At the head of link list ✓
- ☐ B) At the centre position in the link list
- ☐ C) At the tail of the link list
- ☐ D) Node before the tail



✓ 22. What is a hash table?

- ☐ A) A structure that maps values to keys
- ☒ B) A structure that maps keys to values
- ☐ C) A structure used for storage
- ☐ D) A structure used to implement stack and queue



23. If several elements are competing for the same bucket in the hash table, what is it called?

- ☐ A) Diffusion
- ☐ B) Replication
- ☒ C) Collision
- ☐ D) Duplication

✓ 24. . An algorithm that call itself directly or indirectly known as?

- ☐ A) Sub Algorithm
- ☒ B) Recursion
- ☐ C) Traversal Algorithm
- ☐ D) Greedy algorithm

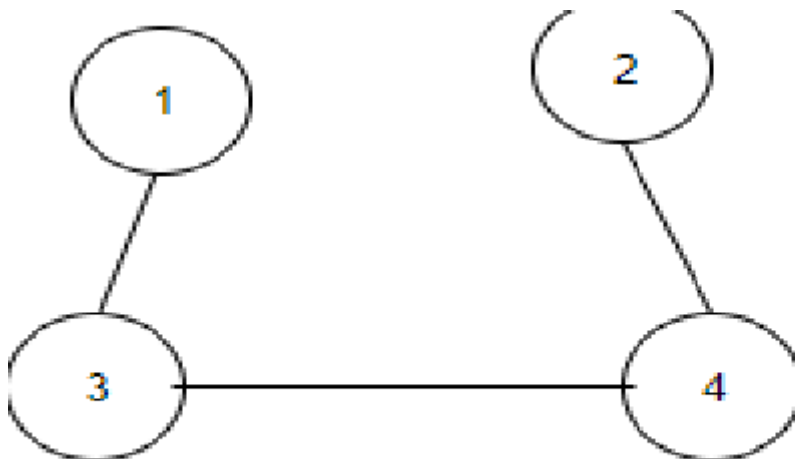


✓ 25. The number of elements in the adjacency matrix of a graph having 7 vertices is _____

- ☐ A) 14
- ☐ B) 36
- ☒ C) 49
- ☐ D) 7



✓ 26. What would be the number of zeros in the adjacency matrix of the given graph?



- ☐ A) 10
- ☒ B) 6
- ☐ C) 16
- ☐ D) 0



✓ 27. What data structure would you mostly likely see in non recursive implementation of a recursive algorithm?

- ☐ A) Linked List
- ☒ B) Stack
- ☐ C) Queue
- ☐ D) Tree



✓ 28.

Given an array of element 5, 7, 9, 1, 3, 10, 8, 4. Which of the following are the correct sequences of elements after inserting all the elements in a min-heap?

- ☐ A)1,3,7,4,8,5,9,10
- ☐ B)1,3,4,5,8,7,8,10
- ☒ C)1,3,4,5,7,8,9,10
- ☐ D)1,4,3,9,8,5,7,10



✓ 29.The post order traversal of Binary Tree is DEBFCA.Find out the preorder traversal

- ☐ A)ABFCDE
- ☐ B)ADBFEC
- ☒ C)ABDECF
- ☐ D)ABDCEF



✓ 30. In a graph if $e=[u,v]$, then u and v are called

- ☐ A) End points of e
- ☐ B) Adjacent nodes
- ☐ C) Neighbours
- ☒ D) All of the above



31. The complexity of bubble sort algorithm

- ☐ A) $O(n)$
- ☐ B) $O(\log n)$
- ☒ C) $O(n^2)$
- ☐ D) $O(n \log n)$

✓ 32. The complexity of the average case of an algorithm is

- ☒ A) Much more complicated to analyse than that of worse case
- ☐ B) Much more simpler to analyse than that of worse case
- ☐ C) Some time more complicated and some other time simpler than that of worse case
- ☐ D) NONE or above



✓ 33. In Array representation of Binary tree the right child of root will be at location of

- ☐ A) 2
- ☒ B) 5
- ☐ C) 2
- ☐ D) 4



✓ 34. Breadth First Search

- ☐ A) Scan each incident node along with its children
- ☒ B) Scan all incident edges before moving to other node
- ☐ C) is same as back tracking
- ☐ D) scans all the nodes in random order



✓ 35. Which of the following is not linear type

- ☐ a) String
- ☐ B) Array
- ☐ C) Stack
- ☒ D) None of the above



✓ 36 Running merge sort on an array of size n which is already sorted is

- ☐ A) $O(n)$
- ☒ B) $O(n \log n)$
- ☐ C) $O(n^2)$
- ☐ D) None



37. If the given input array is sorted or nearly sorted, which of the following algorithm gives the best performance?

- ☒ A) Insertion sort
- ☐ B) Selection sort
- ☐ C) Quick sort
- ☐ D) Merge sort



✗ 38. Which of the following algorithm design technique is used in the quick sort algorithm?

- ☐ A) Greedy Approach
- ☐ B) Divide and Conquer
- ☐ C) Linear Approach
- ☐ D) None of the above
- ☒ Other: Divide and conquer

✗

Correct answer

- ☒ B) Divide and Conquer

✓ 39. Which type of traversal of binary search tree outputs the value in sorted order

- ☐ A) Pre order
- ☒ B) In order
- ☐ C) POST order
- ☐ D) NONE

✓

✓ 40. The post order traversal of binary tree is DEBFCA. Find out the pre order traversal?

- ☐ A) ABFCDE
- ☐ B) ADBFCE
- ☒ C) ABDECF
- ☐ D) ABDCEF

✓



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