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?

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

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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(nlogn)
- ( ) B)O(logn)
- (●) 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(logn)
- ○ D) O(n2)

✓ 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 Out6)
- D)Last In Last Out

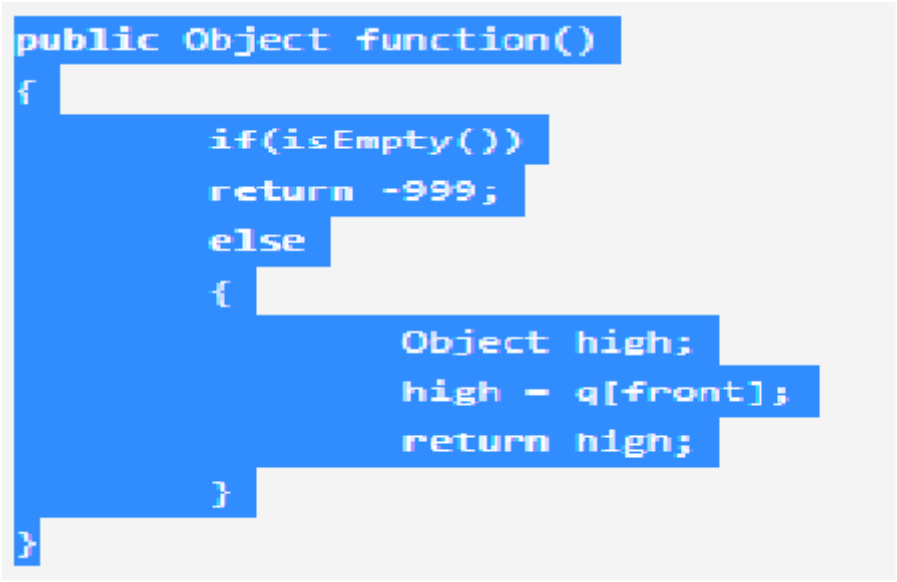
✓ 15. What is the need for a circular queue?

- 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

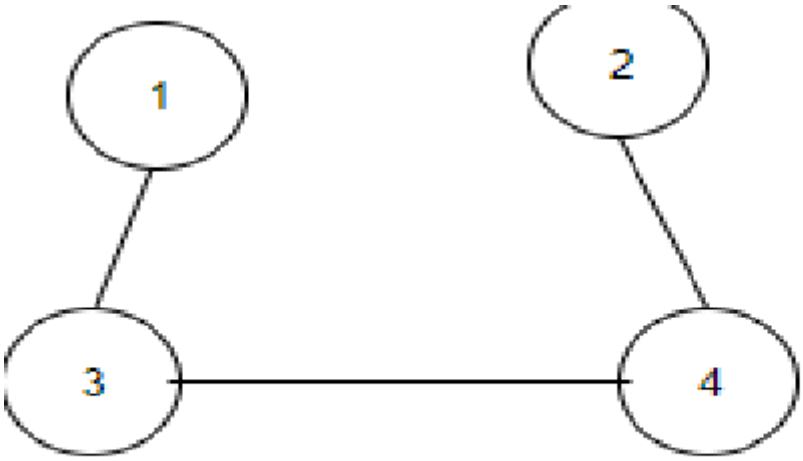
✓ 24. . An algorithm that call itself directly or indirectly known as?

- A) Sub Algoritham
- B) Recursion ✓
- C)Traversal Algoritham
- D) Greedy algoritham

✓ 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 algoritham

- 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(nlogn) ✓
- ○ C) O(n2)
- ○ 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 Conquery ✓
- ○ C)Linear Approach
- ○ D)None of the above
- ○ Other: .....

✓ 39.Which type of traversal of binary search tree output 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