Question # 1

Revisit

What is time complexity of the following code?

```
int sum=0;
for (int i = 0; i < n; i++) {
    sum=sum+10;
    for (int j = 0; j < n; j++) {
        sum=sum + j;
        break;
    }
}
```

Choose the best option

- $O(n^2)$
- O(n)
- O(1)
- O(log n)

Question # 2

Revisit

If the list is a circular linked list, with first points to the first node and temp points to the last node. Which of the following code snippet will delete a node, which is after temp?

```
class Node{
    int data;
    Node next;
}
```

Choose the best option

- mynode=first
  mynode.next=temp.next;
  mynode.next=first;
- mynode=first
  temp.next=mynode;
  mynode.next=first;
- temp.next=first.next;
  mynode=first;
  first=first.next;
  mynode.next=null
- None of the above

Question # 3

Revisit

What is the time complexity of the following code:

```
int a = 0, i = N;
while (i > 0)
{
a += i;
i /= 2;
}
```

Choose the best option

- O(N)
- O(Sqrt(N))
- O(N/2)
- O(log N)

Question # 4

Revisit

How many Stacks are required to implement Queue data structure?

Choose the best option

- 5
- 1
- 2
- 3

5 of 40

Question # 5

Revisit

What does the following return?

```
Public int getval( Bnode T)
{// T =root node
   int value =0;
   if(T)
   { //LC = Left child  and  RC = right child
     if((T.LC)==NULL) && (T.RC) ==NULL))
         value =1;
     else
         value =value+ getval(T.LC) + getval(T.RC);
   }
   return value;
}
```

Choose the best option

- Number of internal nodes in the tree
- height of the tree
- Number of nodes without right sibling in the tree
- Number of leaf nodes in the tree

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Question # 6

Revisit

Which of the following options is not true about the Binary Search Tree?

Choose the best option

- The value of the left child should be less than the root node.
- The value of the right child should be greater than the root node.
- The left and the right sub trees should also be a binary search tree.
- None of the above.

7 8 9 10

Question # 7

Revisit

What is the maximum height of any AVL tree with 7 nodes? Assume that the height of a tree with single node is 0.

Choose the best option

- 2
- 3
- 4
- 5

8 9 10 < 8 of 40

Question # 8

Revisit

An algorithm that calls itself directly or indirectly is known as _____.

Choose the best option

- Sub algorithm
- Recursive algorithm
- Polish notation
- Traversal algorithm

1 2 3 4 5 6 7 8 9 10 <

Question # 9

Revisit

_____is a collision-resolution scheme that searches the hash table for an unoccupied location beginning with the original location that the hash function specifiesand continuing at increments of 1^2,, 2^2, 3^2,, and so on.

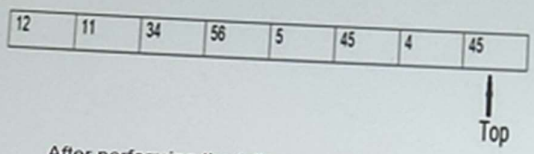
Choose the best option

- Linear probing
- Double hashing
- Quadratic probing
- Separate chaining

Question # 10

Revisit

Consider the stack shown below:



After performing the following operations in sequence, which value will be at the top of the stack?

pop,pop,pop,push 29,push 30,pop,pop,pop

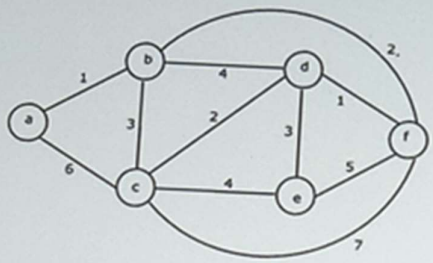
Choose the best option

- 29
- 30
- 5
- 56

Question # 11

Revisit

Find the MST for Figure 1 and List order in which the edges are added in MST using kruskals algorithm .



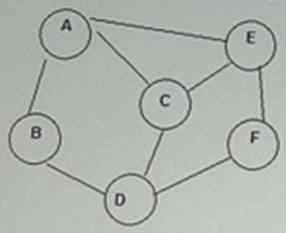
Choose the best option

- a-b , d-f, b-f, c-d,d-e
- a-b, b-f,d-f,d-c,d-e
- d-f,d-c,-f-b,a-b,d-e
- None of the above

Question # 12

Revisit

Which is the correct representation of the given graph using adjacency matrix?



Choose the best option

	A	B	C	D	E	F
A	0	1	1	0	1	0
B	1	1	0	1	0	0
C	1	0	1	1	1	0
D	0	1	1	0	0	1
E	1	0	1	0	0	1
F	0	0	0	1	1	0

	A	B	C	D	E	F
A	0	1	1	0	1	0
B	1	0	0	1	0	0
C	1	0	0	1	1	0
D	1	1	1	0	0	1
E	1	0	1	0	1	1
F	0	0	0	0	1	0

	A	B	C	D	E	F
A	0	1	1			

Question # 13

Revisit

Using _____ in java, one can sort the arrays.

Choose the best option

- System.sort()
- Collection.sort()
- Arrays.sort()
- Array.sort()

10 11 12 13 14 15 <

Question # 14

Revisit

In Hash Table, which collision handling technique results in Secondary Clustering?

Choose the best option

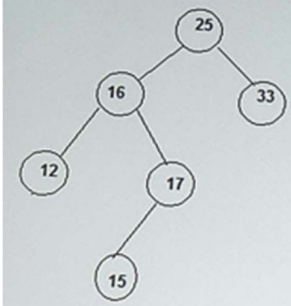
- Mid-Square
- Quadratic Probing
- Linear Probing
- Folding

12 13 14 15 < 15 of 40 > All

Question # 15

Revisit

Which of the following statement is true for the given tree?



Choose the best option

- Given tree is AVL tree.
- Given tree is not AVL tree.
- Given tree is not AVL tree but it is binary search tree.
- Given tree is Ordered Binary Search Tree.

16 17 18 19 20 <

Question # 16

Revisit

What is the worst case time complexity of Search() operation in an unbalanced Binary Search Tree having 'n' nodes?

Choose the best option

- O(1)
- O(log n)
- O(n)
- O(n log n)

Question # 17

Revisit

What is the best-case time complexity of Bubble sort to sort an array of 'n' elements?

Choose the best option

- O(n^2)
- O(n log n)
- O(1)
- O(n)

Question # 18

Revisit

An ADT is defined to be a mathematical model of a user-defined type along with the collection of all _____ operations on that model.

Choose the best option

- Cardinality
- Assignment
- Primitive
- Structure

Question # 19

Revisit

Which data structure is required to convert the infix to prefix notation?

Choose the best option

- Stack
- Linked List
- Binary Tree
- Queue

Question # 20

Revisit

Which of the following data structure is BEST suited to implement LRU Cache?

Choose the best option

- Array
- Binary Tree
- Doubly Linked List
- Graph

Question # 21

Revisit

Which of the following algorithm can be used to efficiently sort a linked list?

Choose the best option

- Merge Sort
- Quick Sort
- Heap Sort
- Selection Sort

Question # 22

Revisit

How many numbers of comparisons will be done in worst case using Binary Search if the number of elements in the array are 32?

Choose the best option

- 10
- 2
- 5
- 4

Question # 23

Revisit

Which of the given options provides the increasing order of asymptotic complexity of functions f1, f2, f3 and f4?

f1(n) = 2^n
f2(n) = n^(3/2)
f3(n) = nLogn
f4(n) = n^(Logn)

Choose the best option

- f3, f2, f4, f1
- f3, f2, f1, f4
- f2, f3, f1, f4
- f2, f3, f4, f1

Question # 24

Revisit

Which node pointer should be updated if a new node B is to be inserted in the middle of A and C nodes of a doubly linked list?

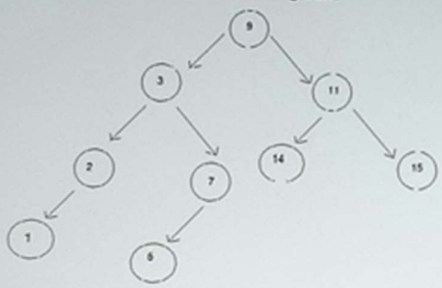
Choose the best option

- Next Pointer of A, Previous Pointer of B, Next Pointer of C ,and previous pointer of C
- Next Pointer of A, Previous Pointer of B, Next Pointer of B and previous pointer of C
- Next Pointer of A, Previous pointer of A,next pointer of B and previous pointer of C
- None of the above

Question # 25

Revisit

What is Inorder traversal of the following tree?



Choose the best option

- 1 2 3 5 7 14 9 15 11
- 1 2 3 5 7 9 14 11 15
- 1 2 3 5 9 7 14 11 15
- 1 2 3 5 7 9 11 14 15

Question # 26

Revisit

Which of the following data structure is BEST suited to implement Priority Queue?

Choose the best option

- Doubly Linked List
- Heap
- Queue using Linked List
- Array

Question # 27

Revisit

Which algorithm strategy builds up a solution by choosing the option that looks the best at every step?

Choose the best option

- Greedy method
- Branch and bound
- Dynamic programming
- Divide and conquer return count

Question # 28

Revisit

If already sorted array is passed to a sorting algorithm, which one will be the slowest?

Choose the best option

- Insertion Sort
- Selection Sort
- Heap Sort
- Merge Sort

Question # 29

Revisit

The time complexity of merge sort algorithm is _____.

Choose the best option

- O(n)
- O(log n)
- O(n^2)
- O(nlogn)

Question # 30

Revisit

Complete the following code if the function implements bubble sort, to sort elements in ascending order.

```
public static void bubbleSort(int arr[]){
    int n=arr.length;
    for(int i=0;i<n;i++)
{
        for(int j=1;j<(n-i);j++) {
            if(arr[j-1]>arr[j]) {
                ----------//code goes here
            }
        }
    }
}
```

Choose the best option

- int temp=arr[j];
  arr[j+1]=arr[j];
  arr[j]=temp;
- int temp=arr[j-1];
  arr[j-1]=arr[j];
  arr[j]=temp;
- int temp=arr[i-1];
  arr[i-1]=arr[j];
  arr[i]=temp;
- int temp=arr[i-1];
  arr[i-1]=arr[j];
  arr[j]=temp;

Question # 31

Revisit

In singly linked list if headpoints to the first node, which of the following code will print data in the last node?

Choose the best option

- temp=head;
  while(temp!=null) {
  temp=temp.next;
  }
  System.out.println(temp.data);
- temp=head;
  while(temp.next!=null) {
  temp=temp.next;
  }
  System.out.println(temp.data);
- temp=head;
  while(temp.next==null) {
  temp=temp.next;
  }
  System.out.println(temp.data);
- temp=head;
  while(temp==null) {

Question # 32

Revisit

The Inorder traversal of _____ will yield a sorted listing of elements.

Choose the best option

- Binary trees
- Binary search trees
- Heaps
- AVL Trees

Question # 33

Revisit

Which of the following is recursive preorder traversal function, if class node is defined as follows?

```
class Node {
 int data;
 Node left, right;
 public Node(int key) {
data = key;
left = right = null;
 }
}
```

Choose the best option

-
```
void preorder(Node node) {
        if (node == null)
          return;
        System.out.print(node.data + "------>");
        preorder(node.left);
        preorder(node.right);
    }
```
-
```
void preorder(Node node) {
        if (node != null)
          return;
        System.out.print(node.data + "------>");
        preorder(node.left);
        preorder(node.right);
    }
```
-
```
void preorder(Node node) {
  if (node !=null)
    return;
```


Question # 34

Revisit

Which of the following is NOT an example of balanced Binary Search Tree?

Choose the best option

- Threaded Binary Tree
- AVL Tree
- Red-black Tree
- Splay Tree

Question # 35

Revisit

In Computational thinking terms, breaking down a complex problem into smaller, more specific sub-problems is called as _____.

Choose the best option

- Problem Identification
- Decomposition
- Pattern Recognition
- Algorithmic Thinking

31 32 33 34 35 36 37 38 39 40 < 36 of 40 > All

Question # 36

Revisit

Consider the following type declaration for a doubly linked list node.

```
class DListNode {
  int data;
  DListNode prev;
  DListNode next;
}
```

Which of the following statements (in correct order) will correctly insert a 'newNode' node, before the node referenced by current?Assume that current is neither first nor last node in the linked list.

Choose the best option

- newNode.next = current; current.prev = newNode; newNode.prev = current.prev; current.prev.next = newNode;
- current.prev = newNode; newNode.next = current; newNode.prev = current.prev; current.prev.next = newNode;
- newNode.prev = current.prev; newNode.next = current; current.prev.next = newNode; current.next.prev = newNode;
- newNode.prev = current.prev; newNode.next = current; current.prev.next = newNode; current.prev = newNode;

Question # 37

Revisit

Which of the following algorithm can be used to detect negative cycle in a Graph?

Choose the best option

- Prim
- Kruskal
- Dijkstra
- Bellman Ford

31 32 33 34 35 36 37 38 39 40 < 38 of 40 >

Question # 38

Revisit

Create a Binary search tree for the given set of strings :
MAR, MAY, NOV,AUG,APR, JAN, DEC,JULY,FEB,JUNE,OCT,SEPT

What are the leaf nodes generated in the tree?

Choose the best option

- APR, FEB DEC, JULY, SEPT
- FEB,JUNE, SEPT
- Can't create the tree
- None of the above

34 35 36 37 38 39 40 < 39

Question # 39

Revisit

You are very hungry and you decide to bake a batch by following your grandmother's chocolate chip cookie recipe.Which of the following computational thinking skills required to complete the abovetask?

Choose the best option

- Abstraction
- Algorithm Design
- Pattern Recognition
- Decomposition

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Question # 40

Revisit

Which of the following uses queue as data structure to store data?

Choose the best option

- Waiting queue for railway reservation system
- To check whether given string is palindrome
- Display string in reverse order
- DFS traversal of the tree