**Amazon MCQ’s**

1)

The Following C function takes a single linked list of integers as a parameter and rearranges the elements of the list. The list is represented as pointer to a structure. The function is called with the list containing the integers 1, 2, 3, 4, 5, 6, 7 in the given order. What will be the contents of the list after the function completes execution?

struct node

{

int value;

struct node \*next;

};

void rearrange(struct node \*list)

{

struct node \*p,\*q;

int temp;

if(!list||!list->next)

return;

p=list; q=list->next;

while(q)

{

temp=p->value;

p->value=q->value;

q->value=temp;

p=p->next;

q=p?p->next:0;

}

}

1. 1,2,3,4,5,6,7
2. 2,1,4,3,6,5,7
3. 1,3,2,5,4,7,6
4. 2,3,4,5,6,7,1

Ans:- D

2) How many distinct BST can be created out of 4 distinct keys ?

0.

1. 5 b) 14 c) 24 d) 42

Ans:- b

3) Suppose that we have numbers between 1 to 100 in a BST and want to search for the number 55. Which of the following sequences Cannot be the sequence

1. 10,75,64,43,60,57,55
2. 90,12,68,34,62,45,55
3. 9,85,47,68,43,57,55
4. 79,14,72,56,16,53,55

Ans:-C

4) What is the largest integer m such that every simple connected graph with n vertices and n edges contains at least m different spanning trees ?

1. 1 B)2 c) 3 d) n

Ans:- C

5)

A BST is generated by inserting in order the following integers

50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 60, 24

The number of nodes in the left sub tree and right sub tree of the root respectively is

1. 4,7 B) 7,4 C) 8,3 D) 3,8

Ans:- b

6) In a binary tree, the number of internal nodes of degree 1 is 5, and the number of internal nodes of degree 2 is 10. The number of leaf nodes in the binary tree is

1. 10 b) 11 c) 12 d) 15

Ans:- b

7) Which one of the following binary trees has its inorder and preorder traversals as BCAD and ABCD respectively ?

1. B)

C) D)

Ans:-d

8)

The inorder and preorder traversal of abinary tree are

dbeafcg and abdecfg

The postorder traversal of the binary tree is

1. debfgca b) edbgfca c) edbfgca d) defgbca

Ans:- A

An interesting time complexity question

What is the time complexity of following function fun()?

int fun(int n)

{

for (int i = 1; i <= n; i++)

{

for (int j = 1; j < n; j += i)

{

// Some O(1) task

}

}

}

Ans:- D

A) O(n2)

B) Time cannot be calculated

C) O(n!)

D) O(n log n)

For i = 1, the inner loop is executed n times.

For i = 2, the inner loop is executed approximately n/2 times.

For i = 3, the inner loop is executed approximately n/3 times.

For i = 4, the inner loop is executed approximately n/4 times.

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For i = n, the inner loop is executed approximately n/n times.

So the total time complexity of the above algorithm is (n + n/2 + n/3 + … + n/n)

Which becomes n \* (1/1 + 1/2 + 1/3 + … + 1/n)

The important thing about series (1/1 + 1/2 + 1/3 + … + 1/n) is, it is equal to Θ(Logn)

So the time complexity of the above code is O(n log n)

10) What is the Best Case Time complexity of Quick Sort

1. O(*n* log *n)*  b) O(n) c)log(n) d) n

Ans:- a