Searching

Question 1

What is the output of following program?

```
#include <stdio.h>

void print(int n, int j)
{
   if (j >= n)
      return;
   if (n-j > 0 && n-j >= j)
       printf("%d %d\n", j, n-j);
   print(n, j+1);
}

int main()
{
    int n = 8;
    print(n, 1);
}
```

A

1 7
2 6
3 5
4 4
4 4

B
1 7
2 6
3 5
4 4

C
1 7
2 6
3 5

D
1 2
3 4
5 6
7 8

Discuss it

Question 2

Which of the following is correct recurrence for worst case of Binary Search?

A T(n) = 2T(n/2) + O(1) and T(1) = T(0) = O(1)

B T(n) = T(n-1) + O(1) and T(1) = T(0) = O(1)

C T(n) = T(n/2) + O(1) and T(1) = T(0) = O(1)

D T(n) = T(n-2) + O(1) and T(1) = T(0) = O(1)

Discuss it

Question 3

Given a sorted array of integers, what can be the minimum worst case time complexity to find ceiling of a number x in given array? Ceiling of an element x is the

Categories

smallest element present in array which is greater than or equal to x. Ceiling is not present if x is greater than the maximum element present in array. For example, if the given array is {12, 67, 90, 100, 300, 399} and x = 95, then output should be 100.

A O(LogLogn)

B O(n)

C O(Logn)

D O(Logn * Logn)

Discuss it

Question 4

Consider the following C program that attempts to locate an element x in an array Y[] using binary search. The program is erroneous. (GATE CS 2008)

```
1.    f(int Y[10], int x) {
2.      int i, j, k;
3.      i = 0; j = 9;
4.      do {
5.               k =  (i + j) /2;
6.               if( Y[k] < x)  i = k; else j = k;
7.           } while(Y[k] != x && i < j);
8.      if(Y[k] == x) printf ("x is in the array ") ;
9.      else printf (" x is not in the array ") ;
10. }
```

On which of the following contents of Y and x does the program fail?

A Y is [1 2 3 4 5 6 7 8 9 10] and x < 10

Recent Discussions

Sumit Khatri this is the sorting technique which can work...

Insertion Sort · 7 hours ago

Sumit Khatri no, quick sort requires more swaps than...

Selection Sort · 7 hours ago

Sumit Khatri yes, it is the only sorting technique which...

Selection Sort · 7 hours ago

B Y is [1 3 5 7 9 11 13 15 17 19] and x < 1

C Y is [2 2 2 2 2 2 2 2 2 2] and x > 2

D Y is [2 4 6 8 10 12 14 16 18 20] and 2 < x < 20 and x is even

Discuss it

Question 5

In the above question, the correction needed in the program to make it work properly is (GATE CS 2008)

A Change line 6 to: if (Y[k] < x) i = k + 1; else j = k-1;

B Change line 6 to: if (Y[k] < x) i = k - 1; else j = k+1;

C Change line 6 to: if (Y[k] <= x) i = k; else j = k;

D Change line 7 to: } while ((Y[k] == x) && (i < j));

Discuss it

Question 6

You are given a list of 5 integers and these integers are in the range from 1 to 6. There are no duplicates in list. One of the integers is missing in the list. Which of the following expression would give the missing number. **^** is bitwise XOR operator. **~** is bitwise NOT operator. Let elements of list can be accessed as list[0], list[1], list[2], list[3], list[4]

Sudhakar Mishra I think it should be 2n + 1

Data Structures | Binary Trees | Question 12 · 7 hours ago

Sudhakar Mishra (2n)!/((n+1)!*n!)

Data Structures | Binary Trees | Question 6 · 1 day ago

Sudhakar Mishra Always Y will be more than one because after...

Data Structures | Stack | Question 7 · 1 day ago

A list[0] ^ list[1] ^ list[2] ^ list[3] ^ list[4]

B list[0] ^ list[1] ^ list[2] ^ list[3] ^ list[4] ^ 1 ^ 2 ^ 3 ^ 4 ^ 5 ^ 6

C list[0] ^ list[1] ^ list[2] ^ list[3] ^ list[4] ^ 1 ^ 2 ^ 3 ^ 4 ^ 5

D ~(list[0] ^ list[1] ^ list[2] ^ list[3] ^ list[4])

Discuss it

Question 7

Consider the C function given below. Assume that the array listA contains n (> 0) elements, sorted in ascending order.

```
int ProcessArray(int *listA, int x, int n)
{
    int i, j, k;
    i = 0;
    j = n-1;
    do
    {
        k = (i+j)/2;
        if (x <= listA[k])
            j = k-1;
        if (listA[k] <= x)
            i = k+1;
    }
    while (i <= j);
    if (listA[k] == x)
        return(k);
    else
        return -1;
}
```

Which one of the following statements about the function ProcessArray is CORRECT?

A It will run into an infinite loop when x is not in listA.

B It is an implementation of binary search.

C It will always find the maximum element in listA.

D It will return −1 even when x is present in listA.

Discuss it

There are 7 questions to complete.