# GeeksQuiz

Computer science mock tests for geeks

# 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);
          17
          26
          3 5
          44
          44
          17
          26
          3 5
          44
          17
```

26

3 5

12

3 4

5 6

78

# Discuss it

#### Question 2

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

Δ

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

F

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

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

L

$$T(n) = T(n-2) + O(1)$$
 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 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.

O(LogLogn)

P

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) {
       int i, j, k;
i = 0; j = 9;
2.
3.
4.
       do {
                k = (i + j) /2;
5.
                if( Y[k] < x) i = k; else j = k;
6.
7.
            } while(Y[k] != x && i < j);</pre>
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
- Y is [1 3 5 7 9 11 13 15 17 19] and x < 1
- Y is [2 2 2 2 2 2 2 2 2 ] and x > 2
- 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;
В	Change line 6 to: if $(Y[k] < x)$ $i = k - 1$ ; else $j = k+1$ ;
С	Change line 6 to: if $(Y[k] \le x)$ i = k; else j = k;
D	Change line 7 to: } while ((Y[k] == x) && (i < j));
Discuss i	t
Question	6
duplicate would giv	iven a list of 5 integers and these integers are in the range from 1 to 6. There are no is in list. One of the integers is missing in the list. Which of the following expression the missing number. A is bitwise XOR operator. Is bitwise NOT operator. Let of list can be accessed as list[0], list[1], list[2], list[3], list[4]
A	list[0] ^ list[1] ^ list[2] ^ list[3] ^ list[4]
В	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[4])
Discuss i	t
Question	7
	the C function given below. Assume that the array listA contains n (> 0) elements, sorted ing order.
int Prod {	cessArray(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;
}</pre>
```

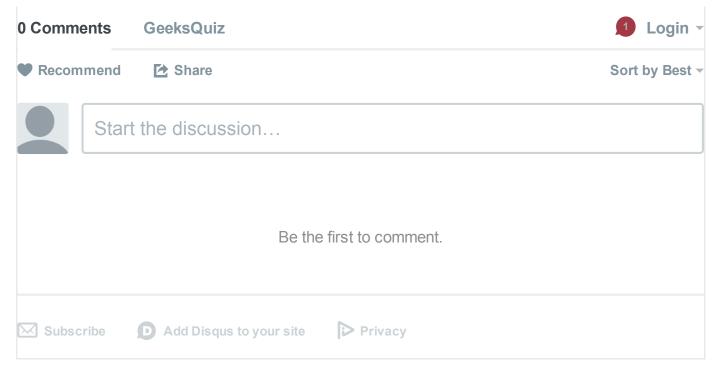
Which one of the following statements about the function ProcessArray is CORRECT?

- A It will run into an infinite loop when x is not in listA.
- It is an implementation of binary search.
- It will always find the maximum element in listA.
- It will return –1 even when x is present in listA.

## Discuss it

There are 7 questions to complete.

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