

Java Школа

Пример тестового задания

Passion to Perform

1. There is a binary search tree. It is required to develop a method `getMaxDepth(BinaryNode root)` which returns the maximum depth of the tree.
2. Develop a program which reverses the one-way linked list.
3. Develop a program which solves the following task:
Find one of the numbers which exists in each of three nondecreasing arrays $x[p]$, $y[q]$, $z[r]$.
Algorithm complexity should be $O(p+q+r)$.
4. Develop a program which solves the following task:
In the office each visitor's arrival and departure times are registered. So at the end of the day for N visitors there are N pairs of values: the first value in pair is arrival time and the second – departure time. Need to find time interval during the day when there are maximum visitors in the office.
5. What does *method1* do? How could you improve it?

```
public static int method1 (int a, int n) {  
    int p = 0;  
    if (n==0) {  
        p=1;  
    } else if (n % 2 == 0) {  
        // '%' in Java - modulus operator  
        p = method1(a, n/2)*method1(a, n/2);  
    } else {  
        p = method1(a, n-1)*a;  
    }  
    return p;  
}
```

6. It is required to swap values of two integer variables without using any additional memory.
7. Логическая задача (так и будет на русском языке). В стакане находятся бактерии. Через секунду каждая из бактерий делится пополам, затем каждая из получившихся бактерий через секунду делится пополам и так далее. Через минуту стакан полон. Через какое время стакан был заполнен наполовину.