

7003 A Balance Game on Trees

In a k -balance game on trees, a vertex v is called a balanced vertex if v is a white vertex and exactly k vertices of its neighbors are black vertices. If a vertex cannot be balanced, then we have to set the vertex to be a black vertex.

For example, see Figure 4. In Figure 4(a), the parameter k is equal to 1. Thus the solution to the balance game contains three balanced vertices. In Figure 4(b), the parameter k is equal to 2. We can find only one balanced vertex.

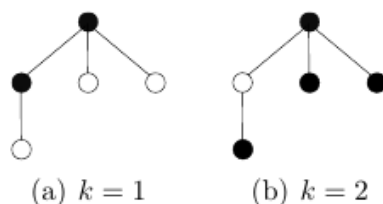


Figure 4: A tree of 5 vertices.

Initially, all vertices in the tree are white vertices. You are asked to design an algorithm to set some vertices to be black so that there are as many balanced vertices as possible in the tree.

Technical Specification

- $k \leq 10$.
- The number of vertices in a tree is at most 100.

Input

The first line of the input contains an integer denoting the number of test cases. There are at most 10 test cases. In each test case, the first line contains two integers n and k , where n is the number of vertices in a tree and k is the parameter in the balance game. Then the following n lines contain the children of vertex v_i for $1 \leq i \leq n$, where v_1 is the root of the tree. If a vertex v_i is a leaf, then there is a '0' in the corresponding input line. Note that there is a blank between any two integers in the sequence.

Output

For each test case, output the maximal number of balanced vertices of the tree in a line.

Sample Input

```

3
5 1
2 3 4
5
0
0
0
5 2
  
```

```
2 3 4
5
0
0
0
17 3
2 3
4 5
6 7 8
0
0
0
9 10 11 12
13 14
15 16 17
0
0
0
0
0
0
0
0
```

Sample Output

```
3
1
4
```