

PAT (Advanced Level) Practise 1004 解题报告

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问题描述

1. Counting Leaves (30)

时间限制 400 ms

内存限制 65536 kB

代码长度限制 16000 B

判题程序 Standard

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A family hierarchy is usually presented by a pedigree tree. Your job is to count those family members who have no child.

Input

Each input file contains one test case. Each case starts with a line containing $0 < N < 100$, the number of nodes in a tree, and $M (< N)$, the number of non-leaf nodes. Then M lines follow, each in the format:

ID K ID₁ ID₂ ... ID_K

where ID is a two-digit number representing a given non-leaf node, K is the number of its children, followed by a sequence of two-digit ID's of its children. For the sake of simplicity, let us fix the root ID to be 01.

Output

For each test case, you are supposed to count those family members who have no child for every seniority level starting from the root. The numbers

must be printed in a line, separated by a space, and there must be no extra space at the end of each line.

The sample case represents a tree with only 2 nodes, where 01 is the root and 02 is its only child. Hence on the root 01 level, there is 0 leaf node; and on the next level, there is 1 leaf node. Then we should output "0 1" in a line.

Sample Input

2 1

01 1 02

Sample Output

0 1

大意是：

对于一个家族树，输出每层节点中叶子节点的个数。

解题思路

链表，或者用搜索也行。这里只列举了链表的做法。

代码

```
1.  #include<iostream>
2.  #include<cstdio>
3.  using namespace std;
4.  int main()
5.  {
6.      //freopen("in.txt", "r", stdin);
7.      int i, j, k, n, m, s, t, a[101]={0}, b[101]={0}, c[102]={0};
8.      cin>>n>>m;
9.      for (i=0; i<m; i++)
10.     {
11.         cin>>s>>t;
12.         b[s]=1;
```

```

13.         for (j=0;j<t;j++)
14.         {
15.             cin>>k;
16.             a[k]=s;
17.         }
18.     }
19.     s=0;
20.     for (i=1;i<=n;i++)
21.     if (b[i]==0)
22.     {
23.         t=a[i];
24.         k=1;
25.         while (t>0)
26.         {
27.             k++;
28.             t=a[t];
29.         }
30.         c[k]++;
31.         if (k>s) s=k;
32.     }
33.     cout<<c[1];
34.     for (i=2;i<=s;i++) cout<<' '<<c[i];
35.     return 0;
36. }

```

提交记录

测试点	结果	用时(ms)	内存(kB)	得分/满分
0	答案正确	4	384	10/10
1	答案正确	5	376	8/8
2	答案正确	5	384	3/3
3	答案正确	4	376	3/3
4	答案正确	4	384	3/3
5	答案正确	3	384	3/3