



## R6-1 Tracing the COVID 分数 8

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作者 何钦铭、陈越 单位 浙江大学

To trace the variations (变异) of COVID, we notice that it can produce several variant strains through mutation (突变), and these variant viruses may be induced to mutate to produce a second generation of mutations, and so on so forth.

Given some variation relationships between viruses, you are asked to find the longest variation chain (变异链).

It is assumed that all the variations given here are caused by mutation, leaving aside the complex problem of genetic recombination (基因重组) variation -- that is, each virus is mutated from a unique virus, and there is no cyclic variation.

### Format of functions:

```
1 int LVC( Virus V, int Chain[]);
```

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Here `Virus` is defined as the following:

```
typedef struct VNode *Virus;
struct VNode {
    int n;          //number of different kinds of viruses
    //the viruses are indexed from 0 to n-1
    int *var[MAXN];
};
```

Here `var[i]` is an array which stores the variations of the `i`-th virus (`i=0, ..., n-1`). The number of variations is stored in `var[i][0]`, then `var[i][j]` stores the `j`-th variation of virus `i` (`j=1, ..., var[i][0]`).

`Chain` is an array which stores the indices of the viruses along the longest variation chain, starting from the **unique** source. If the chain is not unique, save the smallest one.

Note: we say a sequence  $\{a_1, \dots, a_n\}$  is smaller than another sequence  $\{b_1, \dots, b_n\}$ , if there exists  $1 \leq k \leq n$  such that  $a_i = b_i$  for all  $i < k$ , and  $a_k < b_k$ .

### Sample program of judge:

```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #define MAXN 10000
4
5 typedef struct VNode *Virus;
6 struct VNode {
```

```

5
6
7     int n; //number of different kinds of viruses
8     //the viruses are indexed from 0 to n-1
9     int *var[MAXN];
10 }
11
12 int LVC( Virus V, int Chain[] );
13 Virus Read();
14
15 int main()
16 {
17     Virus V;
18     int Len, Chain[MAXN], i;
19
20     V = Read();
21     Len = LVC( V, Chain );
22     printf("%d\n", Len);
23     printf("%d", Chain[0]);
24     for (i=1; i<Len; i++)
25         printf(" %d", Chain[i]);
26
27     return 0;
28 }
29
30 Virus Read()
31 {
32     Virus V;
33     int i, j, ni;
34
35     V = (Virus)malloc(sizeof (struct VNode));
36     scanf("%d", &V->n);
37     for (i=0; i<V->n; i++) {
38         scanf("%d", &ni);
39         V->var[i] = malloc(sizeof(int) * (ni+1));
40         V->var[i][0] = ni;
41         for (j=1; j<=ni; j++)
42             scanf("%d", &V->var[i][j]);
43     }
44     return V;
45 }
46
47 /* Your function will be put here */
48
49

```

## Sample Input:

```

10
3 6 4 8
0
0
0
2 5 9
0
1 7
1 2
0
2 3 1

```

## Sample Output:

```
4  
0 4 9 1
```

代码长度限制	16 KB
时间限制	400 ms
内存限制	64 MB

C (gcc)

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⑦ ⑧

```
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22
```

测试用例

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