**题目使用文件输入输出**

**提交程序文件名每道题有写在题目名字右侧，读入文件xxx.in，输出文件xxx.out，提交文件xxx.cpp**

**一12 二12 三12 四12**

1 cowrect

The locations of Farmer John's N cows (1 <= N <= 500) are described by distinct points in the 2D plane. The cows belong to two different breeds: Holsteins and Guernseys. Farmer John wants to build a rectangular fence with sides parallel to the coordinate axes enclosing only Holsteins, with no Guernseys (a cow counts as enclosed even if it is on the boundary of the fence). Among all such fences, Farmer John wants to build a fence enclosing the maximum number of Holsteins. And among all these fences, Farmer John wants to build a fence of minimum possible area. Please determine this area. A fence of zero width or height is allowable.

INPUT: (file cowrect.in) The first line of input contains N. Each of the next N lines describes a cow, and contains two integers and a character. The integers indicate a point (x,y) (0 <= x, y <= 1000) at which the cow is located. The character is H or G, indicating the cow's breed. No two cows are located at the same point, and there is always at least one Holstein.

SAMPLE INPUT: 5 1 1 H 2 2 H 3 3 G 4 4 H 6 6 H

OUTPUT: (file cowrect.out) Print two integers. The first line should contain the maximum number of Holsteins that can be enclosed by a fence containing no Guernseys, and second line should contain the minimum area enclosed by such a fence.

SAMPLE OUTPUT: 2 1

坐标系上给出n个点，分”H”和”G”，一个整点坐标上至多一个点。

现在求一个不包含”G”的包含尽量多”H”的子矩形，然后在保证”H”最多的情况下还要问最小面积。

输出”H”的最大数量，和保证”H”最多时的最小矩形面积。

2 movie

Bessie is out at the movies. Being mischievous as always, she has decided to hide from Farmer John for L (1 <= L <= 100,000,000) minutes, during which time she wants to watch movies continuously. She has N (1 <= N <= 20) movies to choose from, each of which has a certain duration and a set of showtimes during the day. Bessie may enter and exit a movie at any time during one if its showtimes, but she does not want to ever visit the same movie twice, and she cannot switch to another showtime of the same movie that overlaps the current showtime. Help Bessie by determining if it is possible for her to achieve her goal of watching movies continuously from time 0 through time L. If it is, determine the minimum number of movies she needs to see to achieve this goal (Bessie gets confused with plot lines if she watches too many movies).

INPUT: (file movie.in) The first line of input contains N and L. The next N lines each describe a movie. They begin with its integer duration, D (1 <= D <= L) and the number of showtimes, C (1 <= C <= 1000). The remaining C integers on the same line are each in the range 0..L, and give the starting time of one of the showings of the movie. Showtimes are distinct, in the range 0..L, and given in increasing order.

SAMPLE INPUT: 4 100 50 3 15 30 55 40 2 0 65 30 2 20 90 20 1 0

OUTPUT: (file movie.out) A single integer indicating the minimum number of movies that Bessie needs to see to achieve her goal. If this is impossible output -1 instead.

SAMPLE OUTPUT: 3 SOLUTION NOTES: Bessie should attend the first showing of the fourth movie from time 0 to time 20. Then she watches the first showing of the first movie from time 20 to time 65. Finally she watches the last showing of the second movie from time 65 to time 100.

PoPoQQQ要在电影院里呆L分钟，这段时间他要看小型电影度过。电影一共N部，每部都播放于若干段可能重叠的区间，PoPoQQQ决不会看同一部电影两次。现在问他要看最少几部电影才能度过这段时间？

注：必须看电影才能在电影院里呆着，同时一场电影可以在其播放区间内任意时间入场出场。

3 cowroute

Tired of the cold winter weather on her farm, Bessie the cow plans to fly to a warmer destination for vacation. Unfortunately, she discovers that only one airline, Air Bovinia, is willing to sell tickets to cows, and that these tickets are somewhat complicated in structure. Air Bovinia owns N planes (1 <= N <= 1000), each of which flies on a specific "route" consisting of two or more cities. For example, one plane might fly on a route that starts at city 1, then flies to city 5, then flies to city 2, and then finally flies to city 8. No city appears multiple times in a route. If Bessie chooses to utilize a route, she can board at any city along the route and then disembark at any city later along the route. She does not need to board at the first city or disembark at the last city. Each route has a certain cost, which Bessie must pay if she uses any part of the route, irrespective of the number of cities she visits along the route. If Bessie uses a route multiple times during her travel (that is, if she leaves the route and later comes back to use it from antoher city), she must pay for it each time it is used. Bessie would like to find the cheapest way to travel from her farm (in city A) to her tropical destination (city B). Please help her decide what is the minimum cost she must pay, and also the smallest number of individual flights she must use take to achieve this minimum cost.

INPUT: (file cowroute.in) The first line of input contains A, B, and N, separated by spaces. The next 2N lines describe the available routes, in two lines per route. The first line contains the cost of using the route (an integer in the range 1..1,000,000,000), and the number of cities along the route (an integer in the range 1..100). The second line contains a list of the cities in order along the route. Each city is identified by an integer in the range 1..1000. Note that the cost of an itinerary can easily add up to more than can fit into a 32-bit integer, so you should probably use 64-bit integers (e.g., "long long" integers in C/C++).

SAMPLE INPUT: 3 4 3 3 5 1 2 3 4 5 2 3 3 5 4 1 2 1 5 OUTPUT: (file cowroute.out)

Output the minimum cost of an itinerary that Bessie can use to travel from city A to city B, as well as the minimum number of individual flights required to achieve this minimum cost. If there is no solution, output "-1 -1" (quotes for clarity) on a single line.

SAMPLE OUTPUT: 2 2

从样例讲起。

第一行 s，t，m表示：起点，终点，m条航线。

然后m组，每组第一行len，n表示这条航线的代价，

这类似于公交车，只要用了就花这些钱，但是用多少都这些钱。

注意是单向边。

举例：

2333 4

3 2 1 4

就是3->2、3->1、3->4、2->1、2->4、1->4都花2333元。

这个花销是第一键值。

第二键值是经过几站。

比如3->2->1->4花费2333

而如果有其它航线使得3->5->4花费1000+1333==2333的话，

那么因为它经过了2站，所以更优。

然后求双键值最短路。

输出这俩键值。

无解输出“-1 -1”。

4 grass

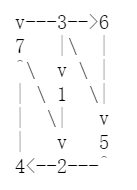
In an effort to better manage the grazing patterns of his cows, Farmer John has installed one-way cow paths all over his farm. The farm consists of N fields, conveniently numbered 1..N, with each one-way cow path connecting a pair of fields. For example, if a path connects from field X to field Y, then cows are allowed to travel from X to Y but not from Y to X. Bessie the cow, as we all know, enjoys eating grass from as many fields as possible. She always starts in field 1 at the beginning of the day and visits a sequence of fields, returning to field 1 at the end of the day. She tries to maximize the number of distinct fields along her route, since she gets to eat the grass in each one (if she visits a field multiple times, she only eats the grass there once). As one might imagine, Bessie is not particularly happy about the one-way restriction on FJ's paths, since this will likely reduce the number of distinct fields she can possibly visit along her daily route. She wonders how much grass she will be able to eat if she breaks the rules and follows up to one path in the wrong direction. Please compute the maximum number of distinct fields she can visit along a route starting and ending at field 1, where she can follow up to one path along the route in the wrong direction. Bessie can only travel backwards at most once in her journey. In particular, she cannot even take the same path backwards twice.

INPUT: (file grass.in) The first line of input contains N and M, giving the number of fields and the number of one-way paths (1 <= N, M <= 100,000). The following M lines each describe a one-way cow path. Each line contains two distinct field numbers X and Y, corresponding to a cow path from X to Y. The same cow path will never appear more than once.

SAMPLE INPUT: 7 10 1 2 3 1 2 5 2 4 3 7 3 5 3 6 6 5 7 2 4 7

OUTPUT: (file grass.out) A single line indicating the maximum number of distinct fields Bessie can visit along a route starting and ending at field 1, given that she can follow at most one path along this route in the wrong direction.

SAMPLE OUTPUT: (file grass.out) 6 SOLUTION NOTES: Here is an ASCII drawing of the sample input:



Bessie can visit pastures 1, 2, 4, 7, 2, 5, 3, 1 by traveling backwards on the path between 5 and 3. When she arrives at 3 she cannot reach 6 without following another backwards path.

给一个有向图，然后选一条路径起点终点都为1的路径出来，有一次机会可以沿某条边逆方向走，问最多有多少个点可以被经过？（一个点在路径中无论出现多少正整数次对答案的贡献均为1）