Problem F : Hezardastan

Hezardastan, a leading information technology development group in Iran, has launched a new project: a private space telescope with a monetized service for taking photos from all known astronomical objects (stars, planets, galaxies, constellations, ...). For special research, we need to use this service. The research must be done in k consecutive days, numbered 1 through k. Let S_i denote the set of astronomical objects whose photo should be taken on the i-th day ($1 \leqslant i \leqslant k$). We have to specify the set S_i separately for each day on the photography website.



In order to specify a set of astronomical objects, we should enter the name of its members. The name of each astronomical object is a non-empty string of at most 10 characters. The characters can be the hyphen (`-`), digits (`0` to `9`), or capital letters (`A` to `Z`). The website provides limited support of wildcards for entering a set of astronomical object names. More specifically, each entered string on the website can refer to multiple astronomical objects by having at most one asterisk (`*`), either in its beginning or its end (but not both). The asterisk matches any string (including the empty string). For example, `A*` refers to all known objects whose name starts with `A`, while `*99` refers to all objects whose name ends with `99` (including the name `99` itself if there is an astronomical object with this name).

We have to pay 1000 dollars for each photo. In order to reduce the load on the service website, Hezardastan has put an additional tax on the data entry: we have to pay 1 extra dollar for each string entered to specify a set of astronomical objects. So for example, we have to pay 5002 dollars by entering the set {`A*`, `*B`} if there are 5 astronomical objects whose name starts with `A` or ends with `B`.

Given the name of all the known astronomical objects and the sets $S_1, \ldots, S_k$, your task is to find a minimum cost representation for each S_i.

Input

The input starts with a line containing two space-separated integers n ($1 \leqslant n \leqslant 1000$) and k ($1 \leqslant k \leqslant 100$). The second line contains n space-separated unique strings, as the names of all known astronomical objects. The objects are numbered 1 through n in the same order. The next k lines specify $S_1, \ldots, S_k$, one set per line. Each line starts with $|S_i|$ (size of S_i) followed by $|S_i|$ integers, the numbers of the objects in S_i.

Output

Print a single line for each day in the output. The i-th line must start with the minimum possible cost to take the photos of the i-th day. It should then contain a representation of S_i for such a minimum cost method. If the representation contains m elements, print the integer m, followed by the m elements. All the numbers and strings in the line should be separated by single space characters. If there are multiple optimum representations for a set, you can print any one of them.

Example

Standard Input
8 7 K-PAX SIRIUS REGULUS ARCTURUS BELLATRIX ANDROMEDA CYGNUS SCORPIUS 8 1 2 3 4 5 6 8 7 6 2 3 4 7 8 6 5 1 2 3 5 8 3 5 6 7 2 2 8 0 1 1
Standard Output
8001 1 * 6002 2 *US A* 5003 3 *X *IUS REGULUS 3003 3 B* AND* *NUS 2001 1 S* 0 0 1001 1 K*