Set Cover

In the set cover problem there is a collection $C = \{S_1, ..., S_m\}$ of subsets of the universe $[n] = \{0, ..., n-1\}$, and one must find a minimum-sized subcollection of C that still covers $[n]$ (it may be the case that S_i and S_j contain the exact same elements for some $i \neq j$). A **path of length r** is a graph on $r+1$ vertices $v_0, ..., v_r$ where v_i has an undirected edge to v_{i+1} for $i = 0, ..., r-1$ (these are the only edges). A set cover instance I is said to be **path-realizable** if there exists a mapping from I to a path of length m where the S_i are mapped to edges in the path and each i in $[n]$ is mapped to a pair of (not-necessarily distinct) vertices s_i, t_i on the path such that the edges lying between s_i and t_i correspond exactly to the sets of C that contain i. Two sets S_i, S_j must be mapped to different edges on the path if $i \neq j$. You will be given a set cover instance that is guaranteed to be path-realizable and should output the size of a minimum-sized subcollection of C still covering $[n]$.

Input

The first line of the input is "*N M*" ($1 \leq$ N, M $\leq$ 300), where N is the size of the universe and M is the number of sets S_i in the collection of subsets of $\{0, ..., N - 1\}$. What follows are M groups of lines. The ith group starts with one line containing $|S_i|$, the size of the ith subset. If $|S_i| = 0$, the current group of lines ends. Otherwise the next line is a space-separated list of the elements contained in S_i.

Output

If $[n]$ cannot be covered by a subcollection of C then you should output *-1*, followed by a newline. Otherwise, your output should consist of two lines. The first line is the size of a minimum-sized set cover. The second line is a space-separated list of the 0-based indices of the sets in an optimal set cover.

Example

Input:

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

Output:

```
2
1 2
```