Dangerous Data

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

Mr. Nežmah has started working as a secret agent for SOA. Evil Mr. M has a secret set of $n + k$ distinct integers, and SOA has already figured out n of them. Nežmah is currently in Mr. M's secret lair and has access to all of the $n + k$ integers. However, he can only memorize k integers, and he doesn't know which n integers SOA already knows. Help Nežmah construct k integers (not necessarily from Mr. M's set) to remember so that he can figure out what integers SOA is missing once he comes back.

This is a run twice problem.

In the first run, you are given n and k, and $n + k$ different integers. You have to output k integers.

In the second run, you are given n and k and n integers which form a proper subset of the $n + k$ integers given in the first run. The order may be shuffled. You are also given the k integers outputted in the first run **in the same order**. You should output the missing k integers from the first input.

Input

In the first run:

The first line contains the word `first` and the numbers n and k ($1 \le n \le 10^5$, $1 \le k \le 10$).

The second line contains $n + k$ integers a_i, the elements of Mr. M's set ($1 \le a_i \le 10^6$).

In the second run:

The first line contains the word `second` and the numbers n and k.

The second line contains k integers, the output of your first run.

The third line contains n integers b_i, the elements of Mr. M's set that SOA has already figured out ($1 \le b_i \le 10^6$).

Output

In the first run, output a single line with k integers m_i ($0 \le m_i < 2^{20}$).

In the second run, output a single line with the k required elements in any order.

Examples

standard input	standard output
first 3 2 5 2 3 4 1	12345 0
second 3 2 12345 0 3 1 5	4 2