# C. Table Sorting

| | |
|---|---|
| Program: | `sorting .(cpp\|java)` |
| Input: | `sorting .in` |
| Balloon Color: | `yellow` |

## Description

Sorting a table is an interesting problem, which generates different views of the table based on desired criteria. For example, we may have a table of student records having student IDs, names, GPAs and so on. We may want to view this table sorted by the GPA to find the top ten students; alternatively, we may want to view the table sorted by the names to quickly search for a student by name and so on. Sometimes, when we sort using one attribute (e.g. GPA), we may find more than one students having the same GPA – in that case, we may want to sort students with same GPA based on student ID and so on.

## Input

The input consists of $n$ ($0< n <= 100$) tables. Each table starts with three integers $c$ <space> $r$ <space> $k$, where $c$ (< 10) is the number of attributes (i.e., columns), $r$ (< 100) is the number of rows, and $k$ (<100) is the number of sorting instructions. Then $r$ lines follow, where each line consists of $c$ values; the values may be of two types: strings (lower-case alphanumeric {'a'-'z'|'0'-'9'}, max 10 characters always starting with a letter) or numbers (real double precision numbers). After the table data, $k$ lines follow, each line containing the sorting column number $u$ ($1<= u <= c$) in order of priority, ending with a 0. A negative column number indicates sorting must be done in descending order and positive indicates sorting must be done in ascending order. If a column number does not appear in the sorting instructions, then the order in the input should be preserved (stable sort).

## Output

For each table, you should output the table number as "Table X" in one line. For each sorting instruction, you should output the instruction number as "Instruction Y" in one line, followed by the first $m$ lines of the sorted (as per instruction) table, where $m = \min(r, 5)$. Columns should be in the same order as in the input and separated by a single space.

## Sample Input/Output

sorting.in

```
1
3 4 2
hary 301 3.5
saly 201 3.5
mary 105 3.9
ali 203 4.0
-3 2 0
-3 0
```

OUTPUT

```
Table 1
Instruction 1
ali 203 4.0
mary 105 3.9
saly 201 3.5
hary 301 3.5
Instruction 2
ali 203 4.0
mary 105 3.9
hary 301 3.5
saly 201 3.5
```