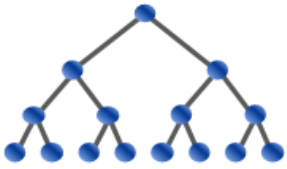
USA Computing Olympiad



USACO 2026 Second Contest, Silver
Problem 2. Declining Invitations

Time Remaining: **1 hrs, 56 min, 28 sec**

Not submitted yet

English (en)

N contestants participated in a contest, each placing a distinct rank from 1 to N. There are C criteria used to invite contestants to participate in the final round, and the ith-ranked contestant satisfies a specified n_i of them ($1 \le n_i \le C$).

The invitation process runs as follows. First, the top f_1 students who satisfy the 1st criteria will be invited. Then, out of all students who haven't yet been invited, the top f_2 (or all remaining if there are fewer than f_2 remaining) students who satisfy the 2nd criterion will be invited. This process repeats, for each i from 1 to C ($1 \le f_i \le N$).

However, some contestants will decline to participate in the final round, in which case they will be ignored when determining who to invite.

You are given a permutation $p_1, p_2, \ldots, p_N$ of $1 \ldots N$. For each i from 0 to $N-1$, determine the sum of the ranks of the contestants who will be invited if the participants with ranks given by the first i elements of p decline to attend.

INPUT FORMAT (input arrives from the terminal / stdin):

The first line contains N and C ($1 \le N, C \le 10^5$).

The next line contains $f_1, f_2, \ldots, f_C$.

The next line contains $p_1, \ldots, p_N$.

The next N lines each contain n_i ($1 \le n_i \le C$), followed by n_i distinct integers in $[1, C]$, representing the criteria that the ith-ranked contestant satisfies. It is guaranteed that $\sum n_i \le 10^6$.

OUTPUT FORMAT (print output to the terminal / stdout):

Output N lines, the sum of ranks of invitees before each declination.

SAMPLE INPUT:

```
5 1
3
5 1 3 2 4
1 1
1 1
1 1
1 1
1 1
```

SAMPLE OUTPUT:

```
6
6
9
6
4
```

There is only one criterion. The top three remaining contestants who have not declined will be invited.

SAMPLE INPUT:

```
5 4
1 1 1 1
1 2 3 4 5
1 1

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

SAMPLE OUTPUT:

10
14
12
9
5

Initially, the ith contestant gets invited under criterion i for all $1 \leq i \leq 4$.

After the first declination, the $i+1$th contestant gets invited under criterion i for all $1 \leq i \leq 4$.

SAMPLE INPUT:

```
6 10
5 6 4 1 3 3 3 6 5 3
1 4 6 5 2 3
1 9
5 4 3 9 5 10
10 6 2 10 1 7 8 3 9 4 5
10 4 5 3 1 2 9 10 6 7 8
2 3 1
8 1 9 7 4 3 10 6 2
```

SAMPLE OUTPUT:

```
21
20
16
10
5
3
```

SCORING:

- Inputs 4-6: $N, C \leq 10^3, \sum n_i \leq 10^4$
- Inputs 7-8: $C = 1$
- Inputs 9-10: $C = 2$
- Inputs 11-16: No additional constraints.

Problem credits: Benjamin Qi

Language: C

Source File: 选择文件 未选择任何文件

Submit Solution