

# Tuple Division

## Description

You are given  $N$  tuples with  $M$  dimensions. You need to choose some tuples and divide them into  $M$  groups. Each tuple can be used for only once and the size of the  $i^{\text{th}}$  group is  $C_i$ . We define the score of the  $i^{\text{th}}$  group is the sum of value in the  $i^{\text{th}}$  dimension of the tuples in the  $i^{\text{th}}$  group. Your target is to firstly maximize the score of  $1^{\text{th}}$  group, then maximize the score  $2^{\text{th}}$  group and so on.

## Input

The first line of the input contains an integer  $T$  ( $T \leq 50$ ), indicating the number of cases. Each case begins with two integer  $N$  ( $1 \leq N \leq 10000$ ) and  $M$  ( $1 \leq M \leq 10$ ), the number of tuples and the number of groups. Then there is one line contain  $M$  integers. The  $i^{\text{th}}$  integer  $C_i$  ( $C_i \geq 0$ ,  $\sum C_i \leq N$ ) represents the size of the  $i^{\text{th}}$  group. Then  $N$  lines with  $M$  integers follow. Each of them describes a tuple. The  $j^{\text{th}}$  integer on the  $i^{\text{th}}$  line  $T_{ij}$  ( $0 \leq T_{ij} \leq 10000$ ) denotes the value of the  $j^{\text{th}}$  dimension of the  $i^{\text{th}}$  tuple.

## Output

For each test case, print one line with  $M$  score of some optimal division.

## Sample Input

```
2
4 2
2 1
3 2
2 1
2 2
1 1
4 3
1 1 2
8 7 1
8 7 2
8 7 4
8 2 3
```

## Sample Output

5 2

8 7 7

## Hint

In case 2, we can divide the group like:

Group 1: (8, 7, 2) score = 8

Group 2: (8, 7, 1) score = 7

Group 3: (8, 7, 4), (8, 2, 3) score = 4 + 3 = 7