Ivy and the Programming Contest

Problem ID: ivyprogrammingcontest

Ivy and her friends are participating as a team in a programming contest for elementary school students today. Although it is their first time competing, Ivy, as the team captain, is trying to develop the optimal strategy for the team to be ranked as high as possible.

All teams have t minutes to work on n problems in this contest. Teams are first ranked by the number of problems they solve and then by their penalty time as the tie-breaker. If a team solves their first problem x_1 minutes after the contest starts, their second at x_2 minutes, ..., their last problem at x_n minutes, that team gets a total of $x_1+x_2+...+x_n$ penalty time. A team solving no problems has a penalty time of 0. A team cannot solve a problem at or after the t-th minute.

Ivy's team has m contestants. After some quick assessment, Ivy estimates that it would take c_{ij} minutes for the i-th team member to solve the j-th problem. Ivy can assign problems to team members. A single member can only work on one problem at a time, and a problem can only be assigned to a single member. But different members can work on different problems in parallel. Consider the following example where the contest has 3 problems with a 30-minute time limit, and Ivy's team has two members:

	A	B	C
Member 1	8	20	32
Member 2	15	22	29

Ivy's best strategy is to have the first member solve problems A and B in that order and have the second member work on problem C. In theory, the team would solve problem A 8 minutes after the contest, problem B at $8+20=28$ minutes, and problem C at 29 minutes, resulting in a total penalty time of 65 minutes. Any other assignment would result in fewer problems solved or more time.

Could you write a program to compute the maximal number of solved problems and the minimal penalty time of solving that many for Ivy?

Input

The first line of the input contains 3 space-separated integers, $1 \leq n \leq 15, 1 \leq m \leq 6, 1 \leq t \leq 10^9$, the number of problems, the number of team members in Ivy's team, and the total time limit. The next m lines each contains n space-separated integers. The j-th integer in the $i+1$-th line is $1 \leq t_{ij} \leq 10^9$, the estimated time for the i-th team member to finish the j-th problem.

Output

Output two integers in a single line separated by a single space, the maximal number of solved problems, and the minimal penalty time of solving that many problems.

Sample Input 1

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3 2 30
8 20 32
15 22 29
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Sample Output 1

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3 65
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Sample Input 2

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5 3 120
10 10 30 60 1440
8 12 15 45 1440
20 20 40 5 1440
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Sample Output 2

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4 46
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