Problem D: Dungeon explorer 3: Survival Mode

Advanced Algorithms for Programming Contests

Restrictions

Time: 2 seconds
Memory: 512 MB

Problem description

Exploring type 3 dungeons is a dangerous endeavor. Visiting an unexplored room will certainly lead to a loss of your hit points (HP). Although HP regenerates over time, you don't want to spend your time waiting, so you only use the time it takes to travel from one location to the next to regenerate. Obviously you don't want to waste your time revisiting already explored regions either. For your next expedition, you want to find out how many rooms you can explore at most.

Input

The input consists of

- one line containing two integers n and h ($1 \leq n \leq 18, 100 \leq h \leq 10^9$) – the number of unexplored locations and your maximal HP (you start with max HP and can not gain more than that later on, regardless of how much you regenerate)
- one line containing n integers $l_1, ..., l_n$, ($1 \leq l_i \leq 10^9$) - the i-th being the amount of HP lost by exploring the i-th location
- n lines containing n integers $d_{i,j}$ each ($0 \leq d_{i,j} \leq 10^9$) – the j-th number in the i-th line is the amount of HP that can be recovered while moving from location i to location j.

Output

Output the maximum number of locations you can explore without dying (i.e. your HP falling below 1) at any point in the exploration.

Sample input and output

Input	Output
1 100 200 0	0
3 150 100 120 80 0 60 40 60 0 20 40 20 0	2