Master Chef (kitchen)

William is attending the finals of Master Chef Italia! For this last round of selection he will have to prepare N different dishes, each of them taking H_i units of heat in order to be cooked. Time is very limited, so he needs to plan carefully in order to cook everything in time. For this round, William will be provided of M stoves of various sizes, each of them taking T_i seconds to emit a full unit of heat (larger stoves are faster, smaller ones are slower).

On each stove, William can put only **one** of the dishes he has to prepare at a time: he may put other ones only **after** the dishes previously cooked there are ready. Furthermore, each dish can only be put on a **single** stove from the beginning until the end: changing stoves halfway through cooking may seriously impair the quality of the prepared dishes.

Figure 1: Some stoves at the location of the Master Chef Italia finals.

After spending half of his time planning, William is still puzzled about how to schedule the different dishes on the various stoves. Help William by telling him on which cooker to put every dish, in order to finish as soon as possibile!

☞ Among the attachments of this task you may find a template file `kitchen.*` with a sample incomplete implementation.

Input

The first line contains two integers N and M. The second line contains N integers H_i. The third line contains M integers T_i.

Output

You need to write two lines. The first line contains the total time you achieved for cooking everything. The second line contains N integers: the stoves (indexed from 0 to $M-1$) where to put each dish.

Constraints

- $1 \leq N, M \leq 10\,000$.
- $1 \leq H_i \leq 100$ for each $i = 0 \ldots N-1$.
- $1 \leq T_i \leq 100$ for each $i = 0 \ldots M-1$.
- The time to put and take a dish from a stove is zero.

Scoring

Your program will be tested against 20 different test cases. The score of your solution will be equal to the sum of the scores for all the test cases.

Your program will score zero points in a test case if the total time provided does not agree with the provided positions, or if the output format is invalid. Otherwise, the score is computed as follows:

$$\text{score} = 5 \cdot \min\left(\frac{T_{\text{official}}}{T_{\text{obtained}}}, 1\right)$$

where T_{official} is the time achieved by the official solution, and T_{obtained} is the time achieved by your program. Notice that the official solution is **not** granted to be optimal!

The contest platform will not show subtasks for this task explicitly, however, the test cases are designed in order to reflect the following subtasks:

– **Subtask 1** (10 points) $M = 1$ and $T_0 = 1$.

– **Subtask 2** (10 points) $M = 1$.

– **Subtask 3** (20 points) $T_i = 1$ for each i.

– **Subtask 4** (20 points) $N \leq M$.

– **Subtask 5** (10 points) $N, M \leq 5$.

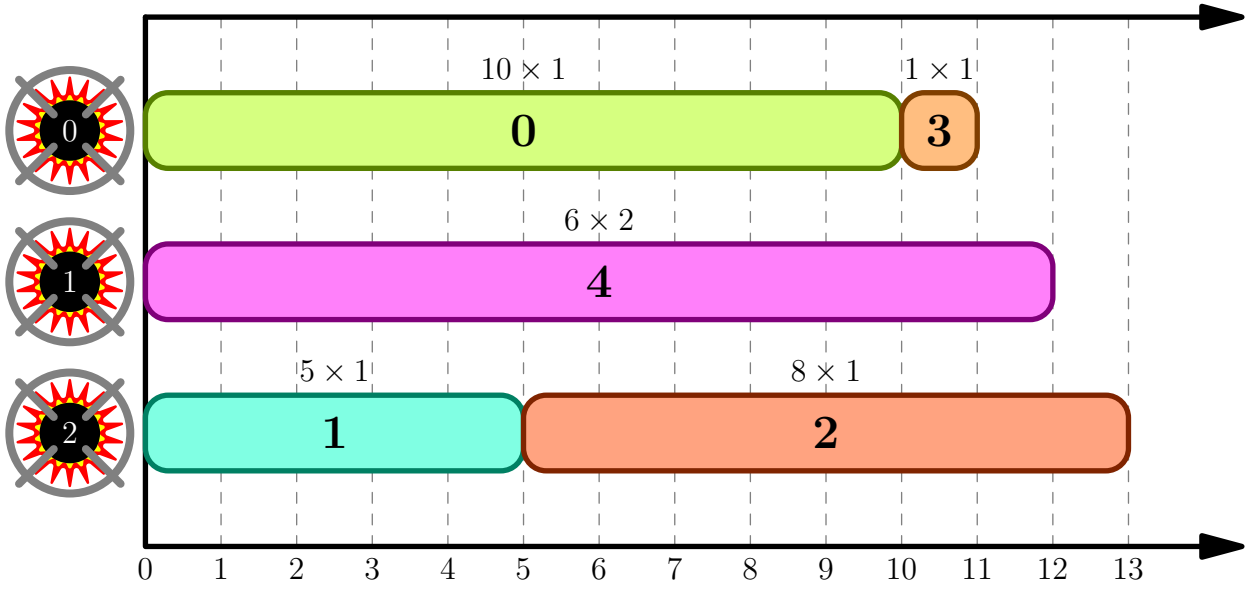
– **Subtask 6** (30 points) No additional limitations.

Examples

input	output
5 3 10 5 8 1 6 1 2 1	13 0 2 2 0 1
5 2 4 2 3 1 5 1 1	8 1 0 1 0 0

Explanation

In the **first sample case**, a possible plan is the following.



In the **second sample case**, a possible plan is the following: