Pan African Olympiad in Informatics Team Selection Test 2025

A difficult purchase

Time limit: 2 seconds **Memory limit: 512 MB**

On their way to the 2025 International Olympiad in Informatics set in Sucre, Bolivia, Raouf and Red1 stopped at Adolfo Suarez International Airport in Madrid, Spain, for an 11-hour layover flight to Santa Cruz. Given that it was Red1's first time overseas, he felt pressed to bring as many souvenirs as he could to properly remember and retell the journey to his family back in Tiaret.

There was one issue however: Red1 had gotten so carried away that he bought a tad bit more than he could stuff in his carry-on, and thus had nowhere to keep the extra stuff he purchased. Raouf, having too little time to think of a cheaper solution, offered to just buy him an additional suitcase. The duo moved along to the conveniently located *Suitcase store*™, where they found M types of suitcases, with the ith $(0 \leq i < M)$ type of suitcase having a capacity of $P[i]$ grams. Red1 has bought T diffent types of souvenirs, each labeled based on their weight: souvenirs of type j $(0 \leq j < T)$ weigh j grams, and the amount of souvenirs Red1 has purchased of them is given by $S[j]$.

To figure out which suitcase (or suitcases) to buy, Raouf has enlisted your help: determine, for each suitcase, the most of Red1's souvenirs it can carry.

Problem Description

You are given an array S of T integers, and an array P of M integers. Output an array O where $O[i]$ $(0 \leq i < M)$ is the maximum amount of souvenirs you can fit in a suitcase of capacity $P[i]$ from a list S where each entry $S[j]$ $(0 \leq j < T)$ denotes the quantity of souvenirs of weight j purchased by Red1.

Input

Input is formatted as follows:

```
T M
S[0] S[1] S[2] ...  S[T-1]
P[0] P[1] P[2] ...  P[M-1]
```

Output

Output is expected as follows:

```
O[0] O[1] O[2] ...  O[M-1]
```

Constraints

- $1 \leq T, M \leq 10^5$
- $1 \leq S[i] \leq 10^8$ $(0 \leq i < T)$
- $1 \leq P[i] \leq 10^{18}$ $(0 \leq i < M)$

Subtasks

Subtask	Points	Constraints
1	32	$T \leq 100, M = 1, S[i] \leq 100, P[i] \leq 100$
2	26	$M = 1$
3	42	No additional constraints

Examples

Example 1

```
5 5
3 2 7 8 6
9 54 1 100 40
```

Output:

```
8 23 4 26 20
```

Example 2

```
10 5
0 3 2 7 8 6 95419852 14736461 0 2
1 6 5040 675674438 32786954198521
```

Output:

```
1 4 851 110156340 110156341
```

Explanation

In the first example:

- The first suitcase of capacity 9 grams can carry at most 8 souvenirs: 3 souvenirs of weight 0, 2 souvenirs of weight 1, 2 souvenirs of weight 2 and 1 souvenir of weight 3. Their weight sums up to 3*0 + 2*1 + 2*2 + 1*3 = 0 + 2 + 4 + 3 = 9, which is the most that the suitcase can hold.
- The second suitcase of capacity 54 grams can carry at most 23 souvenirs: 3 souvenirs of weight 0, 2 souvenirs of weight 1, 7 souvenirs of weight 2, 8 souvenirs of weight 3, 3 souvenirs of weight 4. Their weight sums up to 3*0 + 2*1 + 7*2 + 8*3 + 3*4 = 0 + 2 + 14 + 24 + 12 = 52, which does not exceed the capacity of the suitcase.