Problem F
Greedy Prices

Time limit: 2 seconds
Memory limit: 1 GB

Problem Description

There are N items for sale at an auction. However, the auction is greedy and has made the prices variable depending on how much it perceives you will be able to pay. If you have already spent some amount of money, then it will increase the cost proportionally, as you are more likely to be willing to buy the item even at a higher price.

Formally, the i-th item has 2 parameters M_i and C_i, and the cost of the item is $M_i \cdot X + C_i$, where X is the **amount of money** you have already spent.
Each item can be bought at most once. You can decide the order of buying items.

You have to answer Q queries of the following form:

- If you had a budget of P_i, what is the maximum number of items you can buy?

Input Format

- The first line of input contains a single integer T, denoting the number of test cases.
- Each test case consists of multiple lines of input.
  - The first line of each test case contains 2 integers — N and Q, the number of items and the number of queries.
  - The second line contains N integers — $M_1, M_2, \ldots, M_N$, the linear coefficients of the items.
  - The third line contains N integers — $C_1, C_2, \ldots, C_N$, the constant coefficients of the items.
  - The next Q lines each contain 1 integer — P_i, representing a budget query.

Output Format

For each test case, output Q integers - the answer to the queries in order.

Constraints

- $1 \leq T \leq 10^4$
- $1 \leq N, Q \leq 2 \cdot 10^5$
- $0 \leq M_i, C_i, P_i \leq 10^9$
- The sum of N and the sum of Q both do not exceed $2 \cdot 10^5$ over all test cases.

Samples

Sample Input 1

```
2
3 4
1 1000 0
3 6 4
2
6
7
19
6 6
0 0 1 1 2 3
0 1 0 2 3 4
0
1
8
15
3
10000
```

Sample Output 1

```
0 1 2 3
2 3 4 5 4 6
```

Sample Explanation

Test Case 1: Here are the answers to the respective queries:

- Budget 2: Impossible to buy any item.
- Budget 6: We can buy any of the 3 items for the prices $3, 6, 4$ respectively. However, we cannot buy more than 1 item.
- Budget 7: First, buy the 1^{st} item for a cost of 3, and then buy the 2^{nd} item for 4.
- Budget 19: Buy all 3 of the items in the following order:
  - $X = 0$, Buy item 2 for a cost of 6.
  - $X = 6$, Buy item 1 for a cost of $1 \cdot 6 + 3 = 9$.
  - $X = 15$, Buy item 3 for a cost of $0 \cdot 15 + 4$.
  - We bought all 3 items spending exactly 19.