CODEFORCES
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HOME   TOP   CATALOG   CONTESTS   GYM   PROBLEMSET   GROUPS   RATING   EDU   API   CALENDAR   HELP
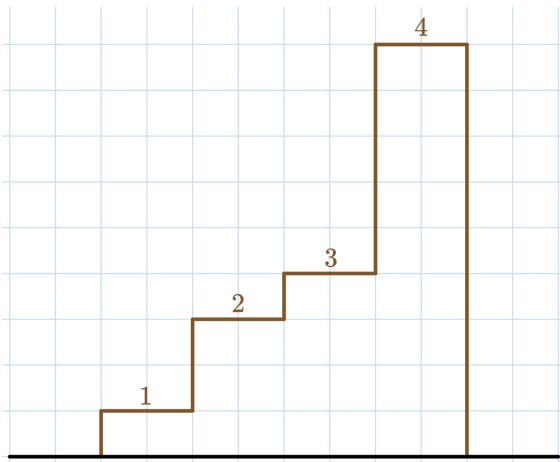
PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   STANDINGS   CUSTOM INVOCATION

E. Scuza

time limit per test: 3 seconds

memory limit per test: 256 megabytes

Timur has a stairway with n steps. The i-th step is a_i meters higher than its predecessor. The first step is a_1 meters higher than the ground, and the ground starts at 0 meters.

The stairs for the first test case.

Timur has q questions, each denoted by an integer $k_1, \ldots, k_q$. For each question k_i, you have to print the maximum possible height Timur can achieve by climbing the steps if his legs are of length k_i. Timur can only climb the j-th step if his legs are of length at least a_j. In other words, $k_i \geq a_j$ for each step j climbed.

Note that you should answer each question independently.

Input

The first line contains a single integer t ($1 \leq t \leq 100$) — the number of test cases.

The first line of each test case contains two integers n, q ($1 \leq n, q \leq 2 \cdot 10^5$) — the number of steps and the number of questions, respectively.

The second line of each test case contains n integers ($1 \leq a_i \leq 10^9$) — the height of the steps.

The third line of each test case contains q integers ($0 \leq k_i \leq 10^9$) — the numbers for each question.

It is guaranteed that the sum of n does not exceed $2 \cdot 10^5$, and the sum of q does not exceed $2 \cdot 10^5$.

Output

For each test case, output a single line containing q integers, the answer for each question.

Please note, that the answer for some questions won't fit into 32-bit integer type, so you should use at least 64-bit integer type in your programming language (like `long long` for C++).

Example

input	Copy

```
3
4 5
1 2 1 5
1 2 4 9 10
2 2
1 1
0 1
3 1
1000000000 1000000000 1000000000
1000000000
```

output	Copy

```
1 4 4 9 9
0 2
3000000000
```

Note

Consider the first test case, pictured in the statement.

- If Timur's legs have length 1, then he can only climb stair 1, so the highest he can reach is 1 meter.
- If Timur's legs have length 2 or 4, then he can only climb stairs 1, 2, and 3, so the highest he can reach is $1 + 2 + 1 = 4$ meters.
- If Timur's legs have length 9 or 10, then he can climb the whole staircase, so the highest he can reach is $1 + 2 + 1 + 5 = 9$ meters.

In the first question of the second test case, Timur has no legs, so he cannot go up even a single step. : (