Lucky Fuv and his favourite restaurant

CP- 1

May 21, 2017

Problem

Lucky Fuv had gone to his favourite restaurant. Since Lucky Fuv visited this restaurant every week, he had tasted all the dishes provided by the restaurant. There are n dishes numbered 1 to n. He had given ratings to all the dishes in the menu.

There were n other people in the restaurant. Every person orders exactly one dish. However, every dish is made exactly once in the restaurant (strange restaurant, eh?) So once a dish has been ordered, it is unavailable. For every person after he/she orders, Lucky Fuv was interested in finding the segment of the menu with available items having the maximum sum so that he could read just that segment. A segment with no available dish has sum 0. However, Lucky Fuv is not good at math, he wants you to do his job.

Note: Lucky Fuv doesn't order, he just observes.

Input

First line contains an integer T : the number of testcases.
Second line contains an integer n: the number of dishes in the menu and the number of people in the restaurant.
The third line contains n integers a_i - the ratings given to the dishes.
The fourth line contains n integers: o_i - the dish ordered by person i.

Output

Print n integers x_i where x_i gives the maximum sum of the segment with available items after the i_th person has ordered.

Constraints

$1 \leq T \leq 20$
$1 \leq n \leq 10^5$
$1 \leq a_i \leq 10^9$
$1 \leq o_i \leq n$

Sample

INPUT
10
3 3 3 5 6 9 3 1 7 3
3 4 6 7 5 1 10 9 2 8

OUTPUT
34
29
14
11
11
11
8
3
1
0