

Problem D. Berland Regional

Time limit 2000 ms

Mem limit 262144 kB

Polycarp is an organizer of a Berland ICPC regional event. There are n universities in Berland numbered from 1 to n . Polycarp knows all competitive programmers in the region. There are n students: the i -th student is enrolled at a university u_i and has a programming skill s_i .

Polycarp has to decide on the rules now. In particular, the number of members in the team.

Polycarp knows that if he chooses the size of the team to be some integer k , each university will send their k strongest (with the highest programming skill s) students in the first team, the next k strongest students in the second team and so on. If there are fewer than k students left, then the team can't be formed. Note that there might be universities that send zero teams.

The strength of the region is the total skill of the members of all present teams. If there are no teams present, then the strength is 0.

Help Polycarp to find the strength of the region for each choice of k from 1 to n .

Input

The first line contains a single integer t ($1 \leq t \leq 1000$) — the number of testcases.

The first line of each testcase contains a single integer n ($1 \leq n \leq 2 \cdot 10^5$) — the number of universities and the number of students.

The second line of each testcase contains n integers u_1, u_2, \dots, u_n ($1 \leq u_i \leq n$) — the university the i -th student is enrolled at.

The third line of each testcase contains n integers s_1, s_2, \dots, s_n ($1 \leq s_i \leq 10^9$) — the programming skill of the i -th student.

The sum of n over all testcases doesn't exceed $2 \cdot 10^5$.

Output

For each testcase print n integers: the strength of the region — the total skill of the members of the present teams — for each choice of team size k .

Sample 1

Input	Output
4 7 1 2 1 2 1 2 1 6 8 3 1 5 1 5 10 1 1 1 2 2 2 2 3 3 3 3435 3014 2241 2233 2893 2102 2286 2175 1961 2567 6 3 3 3 3 3 3 5 9 6 7 9 7 1 1 3083	29 28 26 19 0 0 0 24907 20705 22805 9514 0 0 0 0 0 0 43 43 43 32 38 43 3083

Note

In the first testcase the teams from each university for each k are:

- $k = 1$:
 - university 1: [6], [5], [5], [3];
 - university 2: [8], [1], [1];
- $k = 2$:
 - university 1: [6, 5], [5, 3];
 - university 2: [8, 1];
- $k = 3$:
 - university 1: [6, 5, 5];
 - university 2: [8, 1, 1];
- $k = 4$:
 - university 1: [6, 5, 5, 3];