Parencodings

Description

Let S = s1 s2...s2n be a well-formed string of parentheses. S can be encoded in two different ways:

q By an integer sequence P = p1 p2...pn where pi is the number of left parentheses before the ith right parenthesis in S (P-sequence).

q By an integer sequence W = w1 w2...wn where for each right parenthesis, say a in S, we associate an integer which is the number of right parentheses counting from the matched left parenthesis of a up to a. (W-sequence).

Following is an example of the above encodings:

S	(((()())))
P-sequence	4 5 6666
W-sequence	1 1 1456

Write a program to **convert P-sequence of a well-formed string to the W-sequence of the same string**.

Input

The first line of the input contains a single integer t (1 <= t <= 10), the number of test cases, followed by the input data for each test case. The first line of each test case is an integer n (1 <= n <= 20), and the second line is the P-sequence of a well-formed string. It contains n positive integers, separated with blanks, representing the P-sequence.

Output

The output file consists of exactly t lines corresponding to test cases. For each test case, the output line should contain n integers describing the W-sequence of the string corresponding to its given P-sequence.

Sample Input

2
6
4 5 6 6 6 6
9
4 6 6 6 8 9 9 9

Sample Output

1 1 1 4 5 6
1 1 2 4 5 1 1 3 9