2338 Parencodings

Let $S = s_1 s_2 \ldots s_{2n}$ be a well-formed string of parentheses. S can be encoded in two different ways:

1. By an integer sequence $P = p_1 p_2 \ldots p_n$ where p_i is the number of left parentheses before the i-th right parenthesis in S (P-sequence).

2. By an integer sequence $W = w_1 w_2 \ w_n$ 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 file contains a single integer t ($1 \leq t \leq 10$), 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 ($1 \leq n \leq 20$), 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 6 8 9 9 9
```

Sample Output

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