

B. Move to the End

time limit per test: 2 seconds
 memory limit per test: 512 megabytes

You are given an array a consisting of n integers.

For every integer k from 1 to n , you have to do the following:

1. choose an arbitrary element of a and move it to the right end of the array (you can choose the last element, then the array won't change);
2. print the sum of k last elements of a ;
3. move the element you've chosen on the first step to its original position (restore the original array a).

For every k , you choose the element which you move so that the value you print is **the maximum possible**.

Calculate the value you print for every k .

Input

The first line contains one integer t ($1 \leq t \leq 10^4$) — the number of test cases.

Each test case consists of two lines:

- the first line contains one integer n ($1 \leq n \leq 2 \cdot 10^5$);
- the second line contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^9$).

Additional constraint on the input: the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, print n integers. The i -th of these integers should be equal to the maximum value you can print if $k = i$.

Example

input	Copy
4	
7	
13 5 10 14 8 15 13	
6	
1000000000 1000000000 1000000000 1000000000 1000000000 1000000000	
1	
42	
2	
7 5	
output	Copy
15 28 42 50 63 73 78	
1000000000 2000000000 3000000000 4000000000 5000000000 6000000000	
42	
7 12	

Note

Let's consider the first test case from the statement:

- when $k = 1$, you can move the 6-th element to the end, the array becomes $[13, 5, 10, 14, 8, 13, 15]$, and the value you print is 15;
- when $k = 2$, you can move the 6-th element to the end, the array becomes $[13, 5, 10, 14, 8, 13, 15]$, and the value you print is $13 + 15 = 28$;
- when $k = 3$, you can move the 4-th element to the end, the array becomes $[13, 5, 10, 8, 15, 13, 14]$, and the value you print is $15 + 13 + 14 = 42$;
- when $k = 4$, you can move the 5-th element to the end, the array becomes $[13, 5, 10, 14, 15, 13, 8]$, and the value you print is $14 + 15 + 13 + 8 = 50$;
- when $k = 5$, you can move the 1-st element to the end, the array becomes $[5, 10, 14, 8, 15, 13, 13]$, and the value you print is $14 + 8 + 15 + 13 + 13 = 63$;

Educational Codeforces Round 178 (Rated for Div. 2)

Contest is running

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Contestant



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Language: GNU G++23 14.2 (64 bit, ms) ▼

Choose file: No file chosen

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Submission	Time	Verdict
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- when $k = 6$, you can move the 1-st element to the end, the array becomes $[5, 10, 14, 8, 15, 13, 13]$, and the value you print is $10 + 14 + 8 + 15 + 13 + 13 = 73$;
- when $k = 7$, you can move the 6-th element to the end, the array becomes $[13, 5, 10, 14, 8, 13, 15]$, and the value you print is $13 + 5 + 10 + 14 + 8 + 13 + 15 = 78$.

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