BST maintenance

Consider a binary search tree T which is initially empty. Also, consider the first `N` positive integers {1, 2, 3, 4, 5, ..., N} and its permutation P {a_1, a_2, ..., a_N}.

If we start adding these numbers to the binary search tree T, starting from a_1, continuing with a_2, ... (and so on) ..., ending with a_N. After every addition we ask you to output the sum of distances between every pair of T's nodes.

Input Format
The first line of the input consists of the single integer **N**, the size of the list.
The second line of the input contains **N** single space separated numbers the permutation a_1, a_2, ..., a_N itself.

Constraints
$1 \leq N \leq 250000$

Output Format
Output N lines.
On the i^{th} line output the sum of distances between every pair of nodes after adding the first i numbers from the permutation to the binary search tree T

Sample Input #00

```
8
4 7 3 1 8 2 6 5
```

Sample Output #00

```
0
1
4
10
20
35
52
76
```

Explanation #00

After adding the first element, the distance is `0` as there is only 1 element

```
4
```

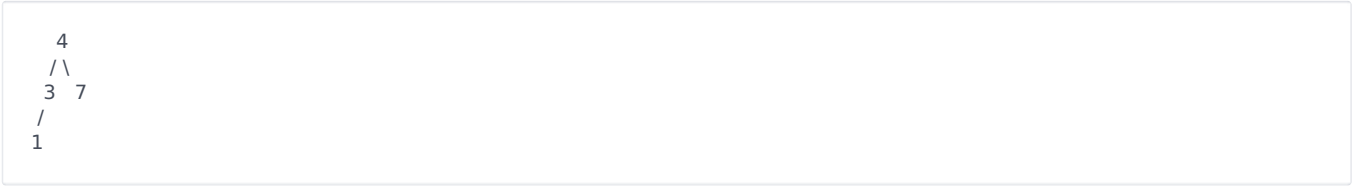
After adding the second element, the distance between 2 nodes is `1`.

```
4
 \
  7
```

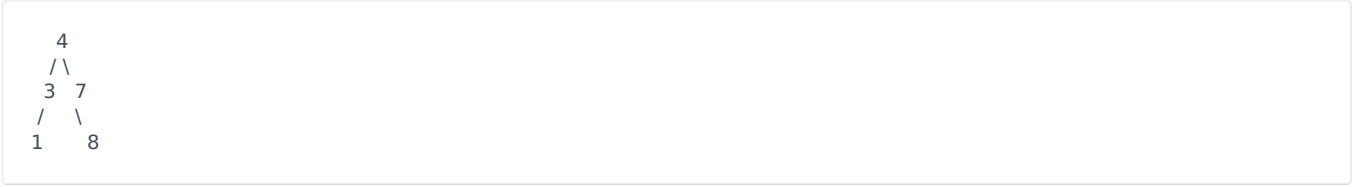
After adding the third element, the distance between every pair of elements is `2+1+1=4`

```
  4
 / \
3   7
```

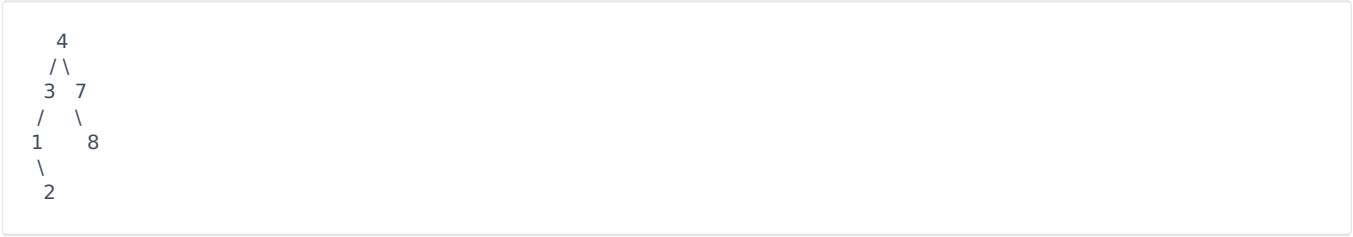
After adding the fourth element, the distance between every pair of elements is `3 + 2 + 1 + 2 + 1 + 1 = 10`



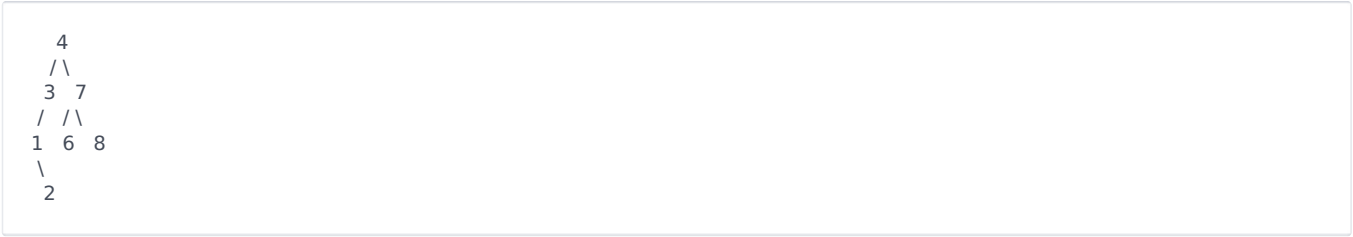
After adding the fifth element, the distance between every pair of elements is `4 + 3 + 2 + 1 + 3 + 2 + 1 + 2 + 1 + 1 = 20`



After adding the sixth element, the distance between every pair of elements is `5 + 4 + 3 + 2 + 1 + 4 + 3 + 2 + 1 + 3 + 2 + 1 + 2 + 1 + 1 = 35`



After adding the seventh element, the distance between every pair of elements is `5+5+4+3+2+1+4+4+3+2+1+3+3+2+1+2+2+1+1+1+2=52`



After adding the final element, the distance between every pair of elements is `6+5+5+4+3+2+1+5+4+4+3+2+1+4+3+3+2+1+3+2+2+1+2+1+1+2+1+3=76`