

## 7190 Partial Tree

In mathematics, and more specifically in graph theory, a tree is an undirected graph in which any two nodes are connected by exactly one path. In other words, any connected graph without simple cycles is a tree.

You find a partial tree on the way home. This tree has  $n$  nodes but lacks of  $n - 1$  edges. You want to complete this tree by adding  $n - 1$  edges. There must be exactly one path between any two nodes after adding. As you know, there are  $n^{n-2}$  ways to complete this tree, and you want to make the completed tree as cool as possible. The coolness of a tree is the sum of coolness of its nodes. The coolness of a node is  $f(d)$ , where  $f$  is a predefined function and  $d$  is the degree of this node. What's the maximum coolness of the completed tree?

### Input

The first line contains an integer  $T$  indicating the total number of test cases. Each test case starts with an integer  $n$  in one line, then one line with  $n - 1$  integers  $f(1), f(2), \dots, f(n - 1)$ .

- $1 \leq T \leq 2015$
- $2 \leq n \leq 2015$
- $0 \leq f(i) \leq 10000$
- There are at most 10 test cases with  $n > 100$ .

### Output

For each test case, please output the maximum coolness of the completed tree in one line.

### Sample Input

```
2
3
2 1
4
5 1 4
```

### Sample Output

```
5
19
```