
Trees — Height**P61120_en**

Write a program that reads the shape of various binary trees, and prints the height of each one. We define the height of a tree as the maximal number of nodes of the paths that go from the root to each leaf (or zero, if the tree is empty).

Input

Input starts with m , the number of trees that must be treated. The description of the m trees follow as explained at problem "Trees — Recursive traversal", with an exception: All the values are 0, because the content of the nodes here is not important.

Output

Your program must print the height of each given tree.

Sample input

```
2
0 0 0 -1 0 -1 -1 0 -1 -1 0 0 -1 -1 0 0 -1 0 -1 -1 -1
0 -1 0 -1 0 -1 -1
```

Sample output

```
5
3
```

Problem information

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