

Density Of A Tree

Given a Tree of **N** nodes numbered from 0 to N-1 rooted at **0th** node, Find density of it upto exactly six decimal places.

Density of the Tree = Size of the tree / Height of the tree.

You are given array **par[]** where **par[i]** is the parent of **ith** node. As **0th** node is the root, so **par[0] = -1**.

Example 1:

Input:

N = 3

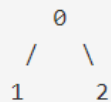
par[] = {-1, 0, 0}

Output:

1.500000

Explanation:

Given tree:



Size of the tree = 3

Height of the tree = 2

Density of the tree = $3/2 = 1.5$

Example 2:

Input:

N = 2

par[] = {-1, 0}

Output:

1.000000

Explanation:

Given tree:



Size of the tree = 2

Height of the tree = 2

Density of the tree = $2/2 = 1$

Your Task:

You don't need to read input or print anything. Your task is to complete the function **density()** which takes number of nodes **N** and array **par[]** as input parameters and returns the density of the tree upto six decimal places.

Constraints:

$1 \leq N \leq 2 \cdot 10^5$

par[0] = -1

$0 \leq \text{par}[i] < N$ and $0 < i < N$