

2025 FAST FOOD

Over the years the villagers of *The Endians* have used tubes to deliver their news and tea. They've now discovered a miracle of rare device — they can do both simultaneously by banging on the tubes to transmit news of their latest tea recipes.

There are h houses (numbered 1 to h), there are currently $h-1$ tubes connecting pairs of houses and it is possible for news to be sent between any two houses by a series of tubes. The residents of houses 1 and h have spent many months of research and development working together, and they are now ready to reveal their new recipe to the rest of the village.

It takes one cuppa (the standard unit of tea time) for a villager who knows the new recipe to transmit it along a tube to a directly connected house. Different villagers can communicate the recipe simultaneously. Villagers can only communicate with at most one other villager each cuppa. It's a great recipe and our mixologists are keen that everyone learns it as soon as possible.

For example, suppose the tubes connect 1-2, 2-3, 1-4, 1-5, 5-6 and 5-7:

- Initially, 1 and 7 know the recipe;
- After 1 cuppa, if tubes 1-4 and 5-7 were used: 1, 4, 5 and 7 would know the recipe. The villagers could then use tubes 1-2 and 5-6 simultaneously, followed by 2-3. 3 cuppas in total;
- Alternatively, 1-2 & 5-7, followed by 2-3, 1-4 and 5-6 is just 2 cuppas.

SAMPLE INPUT

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

The first line of input will consist of a single integer, h ($2 \leq h \leq 2^{20}$), indicating the number of houses. This will be followed by $h-1$ lines, each giving a pair of integers indicating a pair of houses that are directly connected by a tube. No pair of houses will be repeated.

You should output a single integer, the minimum number of cuppas required to communicate the recipe to all houses.

SAMPLE OUTPUT

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2
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