

2024 STORM IN A TEACUP

Residents of *The Endians* are accustomed to receiving their tea via a complicated system of tubes connecting their houses. Demand is great and competition has reared its ugly head. Beware! Beware! The franchisee cometh.

There are h houses (numbered 1 to h), $h-1$ tubes connecting pairs of houses and it is possible for tea to flow between any two houses by a series of tubes. There are f franchisees competing to deliver tea, so $f-1$ of the existing tubes are to be removed, which will break the network into f sections (each of which will be supplied by a unique franchisee).

Each house has a requirement for tea. The tubes are efficient, so the requirement for a section of the network is the sum of the requirements for its connected houses. To avoid protracted disputes between franchisees, due to a franchisee having an egregiously small requirement for its section, the network will be split so that the smallest section requirement is as large as possible.

For example, suppose the houses are currently connected 1–2–3, where each house number matches its requirement:

- If there were two franchisees and the network was split into 1 and 2–3, the two section requirements would be 1 and 5. The smallest section requirement is 1.
- If the network was split into 1–2 and 3, the two section requirements would be 3 and 3. This would be the chosen split.

SAMPLE INPUT

```
3 2
1
2
3
3 2
1 2
```

The first line of the input will contain a pair of integers, h ($1 \leq h \leq 2^{20}$) giving the number of houses, followed by f ($1 \leq f \leq h$) giving the number of franchisees. This will be followed by h lines, the i^{th} of which will contain r_i ($1 \leq r_i \leq 2^{20}$) giving the requirement for the i^{th} house. 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 largest possible requirement for the smallest section in the network.

SAMPLE OUTPUT

```
3
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