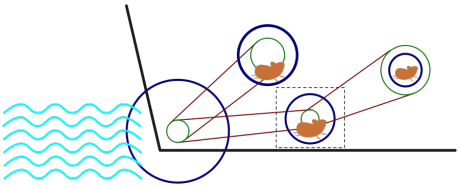
Galley Pigs P13333_en

Contact with the Americas revolutionized many aspects of life in Europe. Time-honoured traditions and practices that had held for centuries were dramatically changed as new materials, skills, and even vegetables and animals were sailed across the ocean and introduced into societies that had never seen change of that magnitude until then.

And the art of sailing was one which experienced such an unprecedented revolution after guinea pigs were first encountered by Europeans exploring the Andean region. On their trip back, captains realized that with an ingenious assembly of wheels, axles, and belts, they could propel their galleys in a much more efficient way than with human rowers. Guinea pigs ate in smaller quantities, grain for feeding them was easier to transport, and they were much less likely to organize mutinies that would end with the captain's head at the end of an oar...



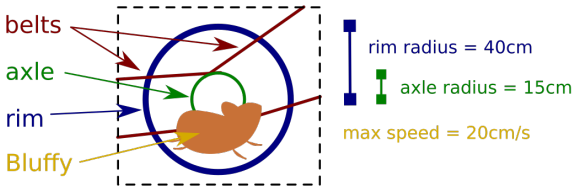
The system consisted of a propeller wheel, which moved the ship, together with a series of auxiliary wheels, on which guinea pigs ran to provide the propulsion force. Each wheel had an axle, where one or more transmission belts connected it to other wheels.

In their race for sailing advantage, seafarers quickly learned to identify the sturdiest and fastest of the rodents, fighting for them in auctions or even resorting to burglary in order to steal them from vessels moored at neighbouring piers. However, greed for speed remained as dangerous as it was with human propulsion: if at any point one of the pigs was pushed to run beyond their maximum natural speed, the poor animal would perish in an ear-piercing squeak of death.

Can you help these optimizing navigators determine if their furry crew will be able to propel their boat without any casualties?

Input

Input consists of several cases. Each case starts with the number of wheels $2 \leq W \leq 10^4$ and the number of belts $1 \leq B \leq 2 \cdot 10^4$.



After that come W lines, one for each wheel. The line for a wheel $0 \leq w < W$ contains the name of the guinea pig that will be on it, the axle and rim radii, both between 1 and 1000, and the maximum speed, between 1 and 10^4, that the animal can run at.

The first wheel corresponds to the propeller: it will have a single dash "–" as name, and its speed s indicates the maximum speed that the captain wants the ship to sail at. All names are "short" and different. All radius and speed values are integers.

Finally come B pairs $x\ y$, with $x \neq y$, one for each belt, which are the indices of the wheels it connects, both between 0 and $W-1$. Belts are always attached to the axle of the wheels they connect, never to the rim.

Output

For each input case, verify the linear speed of each wheel as the propeller's speed increases from 0 to s_0. If all guinea pigs can stand their wheel's speed, print "`Steady as she goes!`". Otherwise, print the name of the first pig that will be crushed by the non-existent centrifugal force followed by "` is no more.`".

There will always be at least one guinea pig moving the ship's wheel, and there will never be two animals tied in first position. The input cases have no precission issues.

Sample input

```
2 1
- 1 100 200
Fluffy 20 50 10
0 1

2 1
- 1 100 500
Fluffy 20 50 10
1 0

4 3
- 1 100 200
Fluffy 20 50 10
Bluffy 15 40 20
Puffy 20 40 5
0 1  0 2  2 3

4 4
- 1 100 200
Fluffy 20 50 10
Bluffy 15 40 20
Puffy 20 40 5
0 1  0 2  1 3  2 3

4 3
- 1 100 200
Fluffy 20 50 10
Bluffy 15 40 20
Puffy 10 40 5
2 0  0 1  3 2

4 2
- 1 100 200
Fluffy 20 50 10
Bluffy 15 40 20
Puffy 10 40 5
3 2  1 0
```

Sample output

```
Steady as she goes!
Fluffy is no more.
Steady as she goes!
Steady as she goes!
Puffy is no more.
Steady as she goes!
```

Problem information

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Event: Vint-i-quatrè Concurs de Programació de la UPC - Semifinal
Date: 2026-06-18

Generation: 2026-06-17T18:36:13.505Z