

Problem 3. Heart Delivery

*Valentine's Day is coming, and Cupid has very limited time to spread some love across the neighborhood.
Help him with his mission!*

You will receive a **string** with **even integers**, separated by a "@". This is our neighborhood. After that a series of **Jump** commands will follow, until you receive "**Love!**" Every house in the neighborhood needs a certain number of **hearts** delivered by Cupid, in order to be able to celebrate Valentine's Day. Those needed hearts are indicated by the integers in the neighborhood.

Cupid starts at the position of the **first house** (index 0) and must jump by a **given length**. The jump commands will be in this format: "**Jump {length}**".

Every time he jumps from one house to another, the needed hearts for the visited house are **decreased by 2**. If the needed hearts for a certain house become **equal to 0**, print on the console "**Place {houseIndex} has Valentine's day.**" If **Cupid** jumps to a house where the needed hearts are **already 0**, print on the console "**Place {houseIndex} already had Valentine's day.**".

Keep in mind that **Cupid** can have a **bigger jump length** than the **size of the neighborhood** and if he does jump **outside** of it, he should **start** from the **first house** again.

For example, we are given this neighborhood: 6@6@6. Cupid is at the start and jumps with a length of 2. He will end up at index 2 and decrease the needed hearts there by 2: [6, 6, 4]. Next he jumps again with a length of 2 and goes outside the neighborhood, so he goes back to the first house (index 0) and again decreases the needed hearts there: [4, 6, 4].

Input

- On the first line you will receive a **string** with **even integers** separated by "@" – the neighborhood and the number of hearts for each house.
- On the next lines, until "**Love!**" is received, you will be getting jump commands in this format: "**Jump {length}**".

Output

At the end print **Cupid's last position** and whether his mission was successful or not:

- "**Cupid's last position was {lastPositionIndex}.**"
- If **each house** has had a Valentine's day, print:
 - "**Mission was successful.**"
- If **not**, print the **count** of all houses that **didn't** celebrate a Valentine's Day:
 - "**Cupid has failed {houseCount} places.**"

Constraints

- The **neighborhood's** size will be in the range [1...20]
- Each **house** will need an **even number** of hearts in the range [2 ... 10]
- Each **jump length** will be an integer in the range [1 ... 20]

Examples

Input	Output	Comments
10@10@10@2 Jump 1 Jump 2 Love!	Place 3 has Valentine's day. Cupid's last position was 3. Cupid has failed 3 places.	Jump 1 ->> [10, 8, 10, 2] Jump 2 ->> [10, 8, 10, 0] so we print "Place 3 has Valentine's day." Next command is "Love!", so we print Cupid's last position and the outcome of his mission.
2@4@2 Jump 2 Jump 2 Jump 8 Jump 3 Jump 1 Love!	Place 2 has Valentine's day. Place 0 has Valentine's day. Place 0 already had Valentine's day. Place 0 already had Valentine's day. Cupid's last position was 1. Cupid has failed 1 places.	