30 Circle of primes

28 points

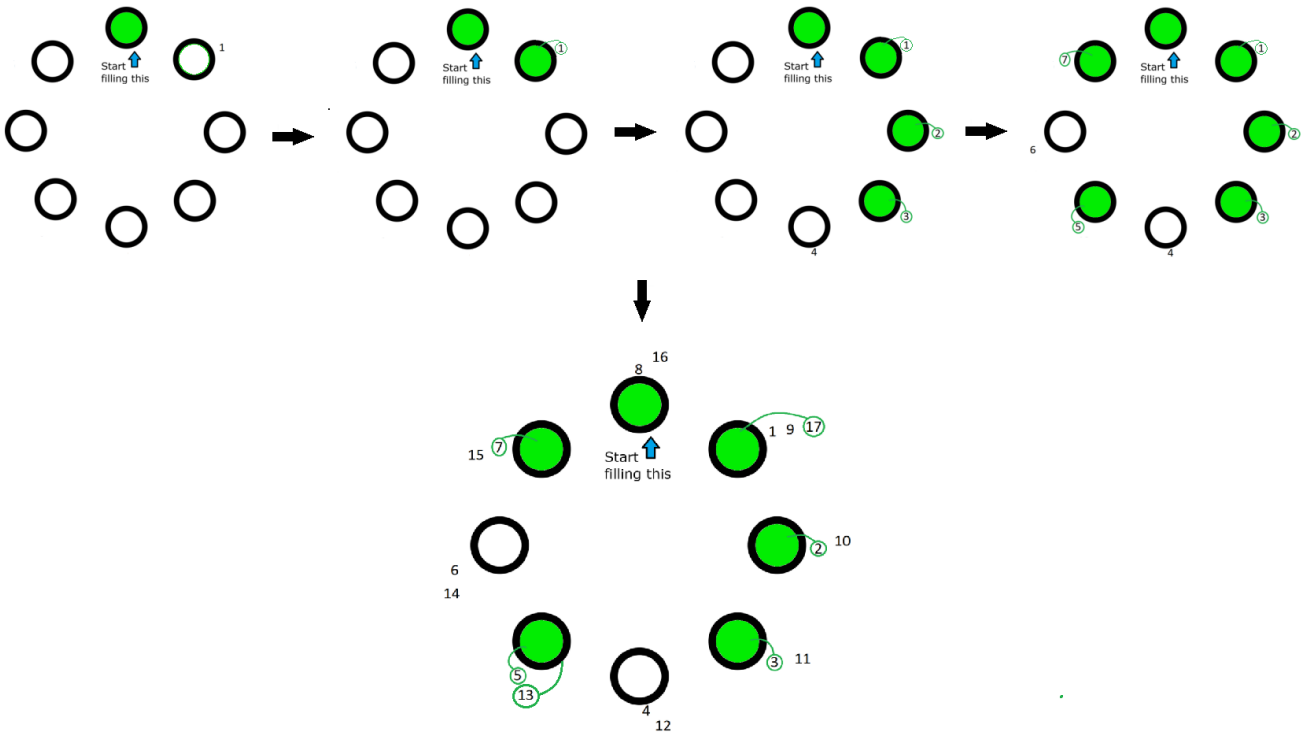
Introduction

Pol works in a chemical factory and these days he is in charge of preparing the containers to be filled by the centrifuges. The number of containers to be prepared for a given centrifuge is determined by its size and the product inside.

But since preparing those containers is a monotonous, boring task, Pol thought of a game to entertain himself while doing the work:

For a given centrifuge he takes the necessary number of containers and arranges them in a circle. He then begins preparing one of them. Once finished, he starts counting the containers beginning with the first, advancing one container at a time, clockwise. When the count arrives to a prime number, he prepares that container (if it is not prepared already) and continues counting. That way, he goes in circles around the arranged wheel of containers until he prepares them all.

Note that containers already prepared are included in the count.



When playing this game, Pol observed that, depending on the number of containers forming the circle, some of them wouldn't be prepared no matter how many times he went around the circle. If the number of containers in the circle is not prime then not all of the containers will be filled.

Pol would like to know beforehand if a given circle of containers could be completed using the game. And, in case it couldn't, which containers would be left unprepared, so that he could prepare them in advance. Can you write a program to help him figure it out?

Note: Pol needs to do his job, so the program can't take a long time to compute the solution.

Input

The input consists of two lines. The first line will be the number of centrifuges that need to be emptied.

The second line will have as many numbers as centrifuges indicated in the first line. The numbers in the second line will be the number of containers needed for each centrifuge (so the number of elements in the circle when playing the game).

Output

The output should be a line for each centrifuge indicating whether all the containers in the circle will be prepared or not. And, in the latter case, a sentence indicating the positions of the containers that won't be prepared.

If the circle can be filled the line will state: "The circle can be completed".

If the circle cannot be filled the line will state: "The circle cannot be completed. Container/s X,Y,Z, won't be prepared.", being X,Y,Z,A,B... the positions of the containers that will be never be filled.

Example 1

Input

```
3
5 9 17
```

Output

```
The circle can be completed.
The circle cannot be completed. Container/s 6, won't be prepared.
The circle can be completed.
```

Example 2

Input

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2
22 23
```

Output

```
The circle cannot be completed. Container/s 4, 6, 8, 10, 12, 14, 16, 18, 20,
won't be prepared.
The circle can be completed.
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