

3803 Mahabharat — A Story in disguise

One of the greatest epics in Indian history is Mahabharat. In this epic, Shakuni plays a key role by intimidating Dhuryodhana to go against the Pandavas resulting in the Great War. The story that still remains hidden is what causes Shakuni to intimidate Dhuryodhana resulting the down fall of Dhuryodhana. Shakuni himself unfolds the story for us:

I was born along with one hundred brothers and enjoyed a huge amount of wealth. Dhuryodhana had an eye over my wealth and wanted to capture it, so he imprisoned me and my brothers. He provided food and water sufficient for only one person. Since, I was the most intelligent of the lot and was keen to take revenge on him, I decided to make sure that I got the food needed to survive. So I framed an idea to get the food.

The idea was to form a circle consisting of me and my brothers and then eliminating the m -th person from the circle stating he will not be eligible for the food. The last person still left in the circle would get the food and water. I always made sure that I got the food and water. Also, I wanted to make sure that none of my brothers recognize the pattern of elimination, so I kept changing the value of m every day.

Assume yourself to be the modern-world Shakuni equipped with computers, write a program to obtain the food for yourself given the number of brothers (n) and the elimination number (m).

Input

The standard input consists of k (at most 5) test cases. First line of the input is the number of test cases. The next k lines each has two numbers n ($0 \leq 32000$) and m ($0 \leq 32000$) separated by a space, each corresponding to a single test case. n is the number of brothers and m is the elimination value. The first position is numbered "1".

Output

For each test case, print the position you should take to obtain the food. E.g. for the 23-rd position, output the number 23. You should have k lines of output, and no blank lines.

Sample Input

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2
41 3
1000 55
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Sample Output

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31
63
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