Alien Languages

Sophia has discovered several alien languages. Suprisingly, all of these languages have an alphabet, and each of them may contain thousands of characters! Also, all the words in a language have the same number of characters in it.

However, the aliens like their words to be aesthetically pleasing, which for them means that for the ith letter of an n-letter alphabet (letters are indexed $1 \ldots n$):

- if $2i > n$, then the ith letter may be the last letter of a word, or it may be immediately followed by any letter, including itself.

- if $2i \leq n$, then the ith letter can not be the last letter of a word and also can only be immediately followed by j^{th} letter if and only if $j \geq 2i$.

Sophia wants to know how many different words exist in this language. Since the result may be large, she wants to know this number, modulo $100000007(10^8 + 7)$.

Input Format

The first line contains t, the number of test cases. The first line is followed by t lines, each line denoting a test case. Each test case will have two space-separated integers n, m which denote the number of letters in the language and the length of words in this language respectively.
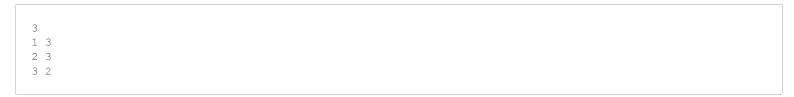
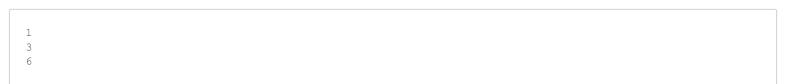**Constraints**

- $1 \leq t \leq 5$
- $1 \leq n \leq 10^5$
- $1 \leq m \leq 5 \cdot 10^5$

Output Format

For each test case, output the number of possible words modulo $100000007(10^8 + 7)$.

Sample Input

```
3
1 3
2 3
3 2
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Sample Output

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1
3
6
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Explanation

For the first test case, there's one letter ('a') and all the words consist of 3 letters. There's only one possibility which is "aaa".

For the second test case, there are two letters ('a' and 'b') and all the words are of 3 letters. The possible strings are "abb", "bab", & "bbb". The words can end only with 'b' because $2 \cdot \text{index}(b) = 2 \cdot 2 > 2$ and for 'a', it's $2 \cdot \text{index}(a) = 2 \cdot 1 \le 2$. "aab" is not allowed because 'a' can not be followed immediately by 'a'. For a word of length 4 and alphabet of size 2, "abab" would be allowed.

For the third test case, there are three letters ('a', 'b' and 'c') and all of the words are 2 letters. The words can only end with 'b' or 'c'. The possible words are "ab", "ac", "bb", "cc", "bc", "cb".