Problem J. Jumping Frog

Source file name:	`J.c, J.cpp, J.java`
Input:	Standard
Output:	Standard
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On Chapala lake there are N stones numbered from 1 to N, there is a male frog resting on stone X and a female frog resting on stone Y. Some research has shown that the frogs in Chapala are smarter than an average frog, and these studies have shown they have knowledge on some of the math areas. A female frog can only be impressed by a male frog that show knowledge on the most math areas in the lake, this is why male frogs in Chapala lake do a strange ritual to impress females, this ritual is as follows:

- To show numbers knowledge the male frog sits on a stone and selects a prime number p and jump p stones at a time until it reaches the female frog, then the frog will return to the stone where it started jumping and select another prime number that allows it to reach the female, if such number does not exist the male stops.

- To show sets theory knowledge, the male frog will take a subset of the stones that are in the range that goes from X to $Y - 1$ and show his number knowledge from each of the stones in the subset.

- To show combinatorics knowledge, the male frog will do the previous for all the different subsets it can take in the range X to $Y - 1$.

As you can see the male frog will reach the female several times during the ritual.

Can you help researchers to determine the number of times the male frog will reach the female knowing the stones where both frogs are resting before the male starts the ritual?

Input

The input contains several test cases, each test case contains three numbers separated by a space N, X, Y. The end of input is given in a case where all values are equal to 0, and should not be processed

- $2 \leq N \leq 10^6$

- $1 \leq X < Y \leq N$

Output

For each test case your program must output a line with a single number, the number of times the male frog will reach the female frog. As this number can be large print it modulo $10^9 + 7$

Example

Input	Output
5 1 3	2
0 0 0	

Explanation

There is only one test case in the input. There are 5 stones in the lake, the male frog rests at stone 1 and the female frog rests at stone 3. There are a total of 3 different subsets the male frog will select to impress the female frog : $\{\{1\}, \{2\}, \{1, 2\}\}$. In the first set the male frog can reach the female frog jumping from stone 1 to 3 using the prime number 2, in the second subset the male frog can not select a prime to reach the female frog, in the third subset the male frog can reach the female frog only from stone 1 using the prime number 2. In total the male frog will reach only 2 times the female frog.