

## Problem J – Jaime and the coins

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Jaime, the good looking, smart, and lazy guinea pig that you can see in above picture, loves tossing coins and odd numbers. He tosses his lucky coin over and over again and feels lucky if after flipping his coin  $a$  times through the air, he gets an odd number of consecutive tails.

Jaime wants to push his luck before hanging out with his friends. Of all possible results after flipping the coin  $a$  times, what is the quantity of results Jaime will feel lucky with? what if he tosses it  $a + 1$  times? what if it is  $b$  times?

### Input

The first line of the input contains one integer  $T$  ( $1 \leq T \leq 10000$ ), the number of test cases. The next  $T$  lines contain 2 integers each  $a, b$  ( $1 \leq a \leq b \leq 10^{14}$ ), representing Jaime wants to toss his coin  $a$  times,  $a + 1$  times, ...,  $b$  times.

### Output

For each case, output one number: the number of possible results in which Jaime would feel lucky if he tossed the coin between  $a$  and  $b$  times. Given that this number could be big, output it modulus 700666007.

Sample input 1	Sample output 1
2	1
1 1	11
4 4	