Problem B - Winner of Best-of Series?

Time Limit	Memory Limit
0.5 seconds (See Below)	512 MB

Description

Albert and Bob often play board games, and they play a series of games.

The Win-X-first format is: With at most $2X-1$ games being played as a series, whoever wins X games first will win the series. Assume that there are no ties in this game played by the two kids. For instance, if $X=3$, there can be multiple scenarios as shown below (for brevity, let A denote the games won by Albert and B by Bob):

- AAA: In this scenario, Albert wins the series. Games 4 and 5 will not be played (as they are not necessary).
- BAAA, ABAA, AABA: In any of these scenarios, Albert wins the series after winning 3 games. Game 5 will not be played as it is not necessary.
- BBAAA, BAABA, BABAA, ABBAA, ABABA, AABBA: In any of these scenarios, Albert wins the series after winning 3 games.
- In addition to the 10 scenarios above, if we flip A and B, we can obtain another 10 scenarios in which Bob wins the series.

After the two kids played a series, they got you puzzled by saying: "Bob is the winner of the Win-M-first series by winning M games first, but Albert would have been the winner had we played a Win-N-first series instead. That is, Albert won N games first, but Bob won M games first. Of course, $N<M$."

After hearing this, you are curious about exactly how the series played out, and how many different scenarios would be consistent with what they said to you.

For instance, if $M=2$ and $N=1$, the unique scenario is: "ABB" where Albert wins 1 game and Bob wins the next two games.

In a different example, suppose $M=3$, and $N=2$. Then, we have the following 3 scenarios:

- AABBB: Albert would have won the best-of-3 series, but Bob is the winner of the best-of-5 series.
- ABABB: Albert would have won the best-of-3 series, but Bob is the winner of the best-of-5 series.
- BAABB: Albert would have won the best-of-3 series, but Bob is the winner of the best-of-5 series.

Given N and M as input, output the number of scenarios in which Albert wins N games first but Bob wins M games first. This number may be very large, so output the answer modulo 10^9+7.

Input

The first line will contain T, the number of test cases.

Each test case's input will be given in a single line containing two integers N and M, separated by whitespace.

Output

For each test case, output the answer in a single line.

Limit

- $1 \le T \le 10$
- $1 \le N < M \le 10^5$

Sample Input 1 Copy

```
5
1 2
2 3
1 3
2 4
500 1000
```

Sample Output 1 Copy

```
1
3
4
13
886458341
```

Case 1: Described in the problem statement.

Case 2: Described in the problem statement.

Case 3: There are four scenarios: "ABBB", "AABBB" "ABABB", "ABBAB"

Case 4: No explanation provided.

Case 5: Output the answer modulo 10^9+7.

Time Limit

- Java 8: 1 second

- PyPy3: 1.5 seconds