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D. Flowers

time limit per test: 1.5 seconds
 memory limit per test: 256 megabytes
 input: standard input
 output: standard output

We saw the little game Marmot made for Mole's lunch. Now it's Marmot's dinner time and, as we all know, Marmot eats flowers. At every dinner he eats some red and white flowers. Therefore a dinner can be represented as a sequence of several flowers, some of them white and some of them red.

But, for a dinner to be tasty, there is a rule: Marmot wants to eat white flowers only in groups of size k .

Now Marmot wonders in how many ways he can eat between a and b flowers. As the number of ways could be very large, print it modulo $1000000007 (10^9 + 7)$.

Input

Input contains several test cases.

The first line contains two integers t and k ($1 \leq t, k \leq 10^5$), where t represents the number of test cases.

The next t lines contain two integers a_i and b_i ($1 \leq a_i \leq b_i \leq 10^5$), describing the i -th test.

Output

Print t lines to the standard output. The i -th line should contain the number of ways in which Marmot can eat between a_i and b_i flowers at dinner modulo $1000000007 (10^9 + 7)$.

Examples

input	Copy
3 2 1 3 2 3 4 4	
output	Copy
6 5 5	

Note

- For $K = 2$ and length 1 Marmot can eat (R) .
- For $K = 2$ and length 2 Marmot can eat (RR) and (WW) .
- For $K = 2$ and length 3 Marmot can eat (RRR) , (RWW) and (WWR) .
- For $K = 2$ and length 4 Marmot can eat, for example, $(WWWW)$ or $(RWWR)$, but for example he can't eat $(WWWR)$.

Codeforces Round #271 (Div. 2)

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→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest](#)

→ Clone Contest to Mashup

You can clone this contest to a mashup.

[Clone Contest](#)

→ Submit?

Language: GNU G++14 6.4.0 ▼

Choose file: [Choose File](#) No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

[Submit](#)

→ Last submissions


Submission	Time	Verdict
64785023	Nov/13/2019 11:47	Accepted
64784720	Nov/13/2019 11:41	Wrong answer on test 34

→ Problem tags

[dp](#) [*1700](#)

No tag edit access

→ Contest materials

- Announcement (en) 
- Tutorial (en) 