

# Multiplication Madness

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**Time limit:** 2.0s    **Memory limit:** 256M

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Nugget has failed his most recent math test on multiplication. To help him improve, Bruce has given Nugget  $N$  queries about multiplication. Each query comes in the form: `x y`, where  $x$  and  $y$  are non-negative integers. To solve the query, you must print out the product of all the integers between  $x$  and  $y$  (inclusive) modulo  $10^9 + 7$ . Being a very **lazy** busy boy, Nugget asks you to build a program that can do this for him. As a reward, he offers you 7 points.

**Note: If you are using Python 2/3, you should submit using PyPy 2/3 with fast I/O.**

## Input Specification

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The first line will contain a positive integer  $N$  representing the number of queries.

The next  $N$  lines will contain non-negative integers  $x$  and  $y$  separated by a space.

## Output Specification

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On the  $i^{\text{th}}$  line, output the product of the integers between  $x$  and  $y$  modulo  $10^9 + 7$  of the  $i^{\text{th}}$  query.

## Constraints

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For all subtasks:

$$1 \leq N \leq 10^6$$

$$0 \leq x \leq y \leq 10^6$$

### Subtask 1 [15%]

$$1 \leq N \leq 10$$

### Subtask 2 [85%]

No additional constraints.

## Sample Input 1

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```
4
1 4
2 4
3 4
4 4
```

## Sample Output 1

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```
24
24
12
4
```

## Sample Input 2

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```
3
10 999
17 1910
500000 505000
```

## Sample Output 2

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```
66208545
58404876
841914375
```