Problem C. Sum of Suffix Sums

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

Given an array which is initially empty, you need to perform q operations:

- Given two non-negative integers t and v, take out the element from the end of the array for t times and then append v to the end of the array. It is guaranteed that t does not exceed the length of the array before this operation.

After each operation, let $a_1, a_2, \ldots, a_n$ be the current array, find the **sum** of $s_1, s_2, \ldots, s_n$, where $s_i = a_i + a_{i+1} + \ldots + a_n$ is the sum of the suffix starting from position i.

Since the answers may be very large, output them modulo $1\,000\,000\,007$.

Input

The first line contains an integer q ($1 \le q \le 5 \times 10^5$), denoting the number of operations.

Each of the following q lines contains two non-negative integers t and v ($0 \le v \le 10^9$), describing an operation, where t does not exceed the length of the array before this operation.

Output

Output q lines, each of which contains an integer, denoting the answer.

Examples

standard input	standard output
5 0 1 0 2 1 3 0 6 2 100000	1 5 7 25 200001
1 0 1000000000	1000000000

Note

After the first operation, the current array is [1], the suffix sum array is [1], and the sum of the suffix sums is 1.

After the second operation, the current array is $[1, 2]$, the suffix sum array is $[3, 2]$, and the sum of the suffix sums is 5.

After the third operation, the current array is $[1, 3]$, the suffix sum array is $[4, 3]$, and the sum of the suffix sums is 7.

After the fourth operation, the current array is $[1, 3, 6]$, the suffix sum array is $[10, 9, 6]$, and the sum of the suffix sums is 25.

After the fifth operation, the current array is $[1, 100\,000]$, the suffix sum array is $[100\,001, 100\,000]$, and the sum of the suffix sums is $200\,001$.