Random Sum

Input file:	*standard input*
Output file:	*standard output*
Time limit:	14 seconds
Memory limit:	1024 mebibytes

You have a number x, initially equal to 0, as well as a **prime** number p. Next, for $i = 1, 2, \ldots, m$, you increase x by a_i with probability q_i. What is the probability that x will be divisible by p at the end of the process?

The probability can be represented as a rational number. Output it modulo 998 244 353.

Input

The first input line contains two integers, p and m ($2 < p < 30\,000$; $1 \le m \le 10^6$; p is prime).

Each of the next m lines contains two integers, a_i and r_i ($0 \le a_i < p$; $0 \le r_i \le 10^8$). The actual probability q_i is equal to $r_i/10^8$.

Output

Output a single integer: the answer modulo 998 244 353.

Formally, if the answer is a rational number x/y, print the integer $x \cdot y^{-1} \bmod 998\,244\,353$. Here, y^{-1} is an integer such that $y \cdot y^{-1} \bmod 998\,244\,353 = 1$.

Example

standard input	*standard output*
2 3 0 100000000 1 100000000 1 50000000	499122177