Problem I. Square Grid

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4 seconds
Memory limit:	512 megabytes

Given a square grid, its lattice points labeled from $(0, 0)$ to (n, n), and a number t.

You need to answer q queries in this format: given $A = (x_0, y_0)$ and $B = (x_1, y_1)$, how many ways are there to move from A to B in exactly t steps so that in each step you move from a lattice point to one of its neighbors (up, down, left, right). Calculate the answer modulo 998 244 353.

Input

The first line contains three integers n ($1 \le n \le 10^5$), t ($1 \le t \le 10^9$) and q ($1 \le q \le 3 \times 10^5$).

Each of the following q lines contains four integers x_0, y_0, x_1 and y_1 ($0 \le x_0, y_0, x_1, y_1 \le n$), representing a query.

Output

For each query, output a line containing one integer, representing the answer to the query modulo 998 244 353.

Examples

standard input	standard output
2 5 3 0 0 1 2 1 1 2 1 0 0 2 2	30 64 0
5 20 5 0 0 5 5 1 1 4 4 2 2 3 3 2 3 2 3 1 2 5 2	615136704 443203969 899931333 464755094 679729107