

January 2023 CSE106

Online Assignment on Graph Traversal

Section: A1 + A2

Marks: 10

Time: **20** Minutes

Some of our k-riders are very lazy and they are not willing to give more than **h** moves (h may be different for different riders).

In such a scenario, return the minimum total moves that are needed to move them all to the same square.

Input:

The first line of input contains three integers n, m and q ($1 \leq n \leq 100$, $1 \leq m \leq 100$, $1 \leq q \leq n*m$) — the number of rows, the number of columns and the number of k-rider on the chessboard.

The following q line each has **four** integers x, y k and h — (x,y) the coordinates of the rider, k is the number of maximum jumps this k-rider can make in a single move, and h is the maximum number of times it wants to move.

Here (x,y) are 0-indexed. Please refer to the sample IO for a better understanding of the input.

Output:

Output the total minimal number of moves, if we can move all the k-riders to the same square. Else print -1.

Sample I/O:

Input	Output
3 4 3 0 0 1 1 0 1 3 1 1 1 2 2	3
3 4 3 0 0 1 3 0 1 3 1 1 1 2 1	4
3 4 3 0 0 1 1 0 1 3 1 1 1 2 1	-1