WaterFlow

Input file:	*standard input*
Output file:	*standard output*
Time limit:	5 seconds
Memory limit:	2048 megabytes

You are given a rectangular terrain divided into $N \times M$ square cells. Each cell has an integer height $h_{r,c}$.

Water can flow freely between cells that share a side. The terrain is surrounded by an infinitely high wall, so water can never leave the grid.

Consider pouring water onto one of the cells. The water flows downhill and spreads to neighboring cells whenever possible. Eventually, it reaches a stable state: all cells belonging to the same connected body of water have the same water surface level, while water cannot flow into a cell whose terrain is higher than that level.

For each query, you are given a cell (r, c) and a volume V. Initially the terrain is completely dry. Exactly V units of water are poured onto cell (r, c), and you must determine the final water surface level at that cell.

Each query is an independent experiment; the water is removed before the next query.

Input

The first line contains two integers N and M ($1 \leq N, M \leq 350$).

The next N lines contain M integers $h_{r,c}$ ($0 \leq h_{r,c} \leq 10^9$), describing the terrain heights.

The next line contains an integer Q ($1 \leq Q \leq 10^5$).

Each of the following Q lines contains three integers r, c, and V ($1 \leq r \leq N$, $1 \leq c \leq M$, $0 \leq V \leq 10^9$), describing one experiment.

Output

For each query, output the final water surface level at cell (r, c). Your answer is considered correct if its absolute error does not exceed 10^{-5}.

Example

standard input	standard output
1 3 2 1 3 8 1 2 0 1 2 1 1 2 2 1 2 3 1 2 4 1 3 1 1 1 1 1 1 2	1.0000000 2.0000000 2.5000000 3.0000000 3.3333333 3.0000000 2.0000000 2.5000000