

Bunny business



SEASON 6 – ROUND FOUR – 50 points

Zayo the rabbit wants to dig a new tunnel in the fields. But he doesn't want to dig just any old tunnel – he wants an optimal tunnel! Since Zayo has studied grasslands for a long time, he can quickly evaluate every square meter, depending on the temperature, moisture, sea level, average daylight hours, proximity to carrots, abundance of petrol deposits, pH level, political pressures, etc. (for simplicity though, we will use the numbers from -1000 to 1000). Now Zayo wants to dig a tunnel from one block of the field to another, such that the sum of their ratings is maximal. Zayo has other concerns though – he sometimes has to run from predators, and needs his tunnels to be an adequate distance from one another, to provide a quick escape. Help Zayo, by calculating the rating of the optimal tunnel.

Note: We define the distance between the squares $(i1, j1)$ and $(i2, j2)$ as $|i1-i2| + |j1-j2|$.

Input

The first row of the file `rabbits.in` contains 3 positive integers **N**, **M** and **D** – the number of rows and columns in the field and the exact distance Zayo wants his two tunnel entrances to be from each other.

The next **N** rows contain **M** integers each – the ratings of each square of the field.

Output

In the output file `rabbits.out` print a single integer, denoting the highest rated tunnel Zayo can dig. If the conditions are unfavorable and the highest possible rating is negative, print "-1".

Constraints

$$1 \leq N, M, D \leq 50$$

$$-1000 \leq \text{Rating of square} \leq 1000$$

Time limit: 0.5 sec

Memory limit: 256 MB

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Example test

Input (rabbits.in)	Output (rabbits.out)
3 3 2 -3 -3 4 -4 -9 0 -10 -4 -3	1
4 3 1 -1 0 -2 -1 -2 -7 -8 -2 -1 -9 -1 -9	-1

Clarifications

Example 1: Zayo digs a tunnel from the square (0,2) to either the square (0,0) or (2,2), which are at distance 2 from it.

Example 2: The highest rated tunnel Zayo can dig is from (0,0) to (0,1) with a rating of -1.