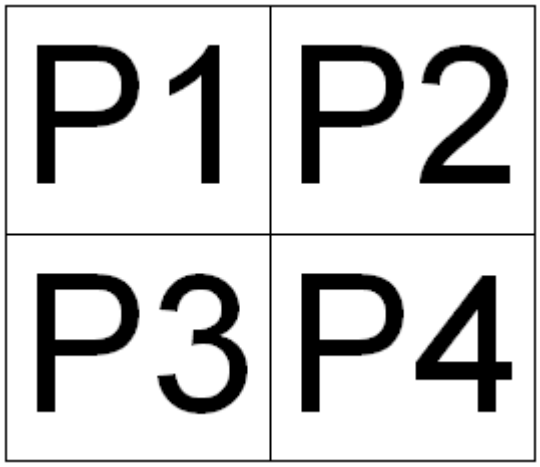
Painting

SEASON 9 – SECOND ROUND

Name is making a series of square paintings, that could be represented by a colored grid. The cells' rows and columns are numbered, with the top left corner being (0,0). Name starts with a particular painting. Each consequent painting is made out of 4 rotated copies of the previous one in the following arrangement:



Each of the copies is rotated by 90 degrees clockwise up to 3 times. Because the last painting would be very large, Name has asked some helpers to start drawing it early. Your task is to write a program, which determines what color a given cell in the last painting should be.

Input

From the first line of the input file `painting.in` N and M are entered - the size of the first painting and the number of subsequent ones.

On the next N lines N numbers are entered - the colors of the first painting.

On the next line 4 numbers R_i are entered - how many times P_i (from the diagram in the statement) is rotated.

On the last line X and Y are entered - the number of the column and row of the cell from the last painting you are looking for.

Output

In the output file `painting.out` print one number - the color of the cell with coordinates (X,Y) from the last painting.

Constraints

$2 \leq N \leq 20, 1 \leq M \leq 50$

$0 \leq the\ colors\ of\ the\ first\ painting \leq 100$

$0 \leq R_i \leq 3, 0 \leq X, Y < N * 2^M$

Time limit: 0.2 seconds
Memory limit: 256 MB

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Example

Input (painting.in)	Output (painting.out)	Explanation
2 2 1 2 3 4 2 1 3 0 5 4	3	Name needs to make 2 new paintings. The first one should look like this: 4 3 3 1 2 1 4 2 2 4 1 2 1 3 3 4 And the second one like this: 4 3 3 1 1 2 2 4 2 1 4 2 3 4 1 3 2 4 1 2 3 1 4 3 1 3 3 4 4 2 2 1 1 2 2 4 4 3 3 1 3 4 1 3 2 1 4 2 3 1 4 3 2 4 1 2 4 2 2 1 1 3 3 4 The cell with coordinates (5,4) from the last painting has color 3