

Following recent security breaches, your security champion has engineered the highest level of physical gatekeeping that was definitely not copied or stolen from the renowned game: Keep Talking and Nobody Explodes.

In order to enter the work site, you need to recall a brand new 5 number pin that is formed by a sequence of numbers that follow a pre-conditional pattern. Each singular pin digit is formulated against the given index you are on and the number displayed on a prompt. After long reverse-engineering you found the following sequence rules applied:

Stage 1:

If the prompt is 1, press the button in the second position.

If the prompt is 2, press the button in the second position.

If the prompt is 3, press the button in the third position.

If the prompt is 4, press the button in the fourth position.

Stage 2:

If the prompt is 1, press the button labeled '4'.

If the prompt is 2, press the button in the same position as you pressed in stage 1.

If the prompt is 3, press the button in the first position.

If the prompt is 4, press the button in the same position as you pressed in stage 1.

Stage 3:

If the prompt is 1, press the button with the same label you pressed in stage 2.

If the prompt is 2, press the button with the same label you pressed in stage 1.

If the prompt is 3, press the button in the third position.

If the prompt is 4, press the button labeled '4'.

Stage 4:

If the prompt is 1, press the button in the same position as you pressed in stage 1.

If the prompt is 2, press the button in the first position.

If the prompt is 3, press the button in the same position as you pressed in stage 2.

If the prompt is 4, press the button in the same position as you pressed in stage 2.

Stage 5:

If the prompt is 1, press the button in the same position as you pressed in stage 1.

If the prompt is 2, press the button in the same position as you pressed in stage 2.

If the prompt is 3, press the button in the same position as you pressed in stage 3.

If the prompt is 4, press the button in the same position as you pressed in stage 4.

Each day a new pin is set and you've tasked yourself to build a decipherer to help decode the pin for the day.

Input Format

The input will be in the format of a 2D array. Each array represents a single stage. The first four numbers within an array represent the available buttons to press. The last fifth number indicates the number presented on the prompt.

Output Format

Output the 5 pin sequence (no delimiters or spaces).

Sample Input

[[1,3,2,4,1],

[3,1,2,4,3],

[2,3,4,1,2],

[2,1,4,3,1],

[4,1,2,3,4]]

Sample Output

33311

Explanation

First number: The prompt says 1, you should pick the button in the second position, which is 3.

Second number: The prompt says 3, you should pick the button in the first position, which is 3.

Third number: The prompt says 2, you should pick the button with the same label you pressed in stage 1, which is 3.

Fourth number: The prompt says 1, you should pick the button in the same position as you pressed in stage 1, which is 1.

Fifth number: The prompt says 4, you should pick the button in the same position as you pressed in stage 4, which is 1.

The 5 digit pin is: 33311

Good luck!