



# Problem B

## Connect3

Time Limit: 0.5 Seconds

Connect3 is a simplified version of a well-known Connect4 game. Connect3 is a game for two players, black and white, who take turns placing their colored stones in a 4 x 4 grid board shown in Fig.B.1. Each square (or box) in the grid is represented by a pair of numbers  $(a, b)$  where  $a$  is for a row and  $b$  is for a column. The lower left corner of the board is  $(1, 1)$ , and the upper right corner is  $(4, 4)$ . Each player selects a column to place a stone which is then placed on the lowest empty square in the column. For example, square  $(3, 1)$  is to be taken only when squares  $(2, 1)$  and  $(1, 1)$  are occupied beforehand. The game ends if three stones with the same color connect in either horizontally, diagonally, or vertically in a row and the player of the color wins.

$(4, 1)$	$(4, 2)$	$(4, 3)$	$(4, 4)$
$(3, 1)$	$(3, 2)$	$(3, 3)$	$(3, 4)$
$(2, 1)$	$(2, 2)$	$(2, 3)$	$(2, 4)$
$(1, 1)$	$(1, 2)$	$(1, 3)$	$(1, 4)$

Fig.B.1. Board of Connect3. Each grid square is represented by  $(a, b)$  where  $a$  is for a row and  $b$  is for a column.

The game starts by a player placing a black stone on square  $(1, x)$ . If the game ends by the white player placing a stone on square  $(a, b)$ , let the final state of the board be  $s$ . You are to write a program to find the number of all possible unique states of  $s$ . Note that the order of stones placed is irrelevant.

### Input

Your program is to read from standard input. The input starts with a line containing an integer  $x$  ( $1 \leq x \leq 4$ ), representing the column of the first stone placed on the board. The next line of input shows two integers,  $a$  and  $b$  for square  $(a, b)$  which is the position of the last stone placed on the board.

### Output

Your program is to write to standard output. Print exactly one number that corresponds to the answer.

The following shows sample input and output for two test cases.

Sample Input 1	Output for the Sample Input 1
2 2 3	516

Sample Input 2	Output for the Sample Input 2
3 4 4	177