ACSL
American Computer Science League

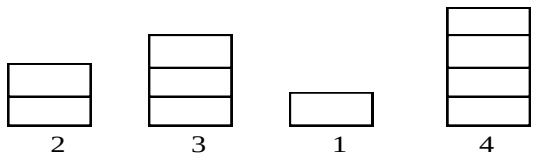
2016 - 2017 **Contest #4**

ACSL Skyscraper
SENIOR DIVISION

PROBLEM: Descended from other Latin square puzzle types, Skyscrapers is a Japanese creation. It received its first broad exposure at the 1st World Puzzle Championship in NYC in 1992 when publisher Sekai Bunka-sha presented a 20 page English edition of their Puzzler magazine to the competitors. In the USA it has been enhanced by Kevin Stone.

Each puzzle consists of an N x N grid with clues along its sides. This program will use a 4 x 4 for the first 3 inputs as shown below and a 5 x 5 grid for the last 2 inputs. The object is to place a skyscraper in each square, with a height from 1 to N, so that no two skyscrapers in a row or column have the same height. In addition clues are given. The clues are the numbers outside of the grid. The number of visible skyscrapers when looking up, as viewed from the direction of each clue, is equal to the value of the clue.

	3	2	2	1	
4	1	2	3	4	1
2	2	4	1	3	2
1	4	3	2	1	4
2	3	1	4	2	2
	2	3	1	3	



In the example above with the stacked rectangles representing the skyscrapers, looking up from the left you can see the #2, #3 and #4 skyscrapers. The #1 skyscraper is blocked by the number #3 skyscraper. Looking up from the right, the #4 skyscraper blocks all the others. Therefore the clue numbers would be 3 and 1.

INPUT: There will be 5 lines of input. For the first 3 lines each line will contain 6 numeric character strings giving the data for the clues. The first and last strings will have 4 characters giving the values for top and bottom clues. The 2nd, 3rd, 4th and 5th strings will be 2-character strings giving the clue numbers for the rows. Sample Input #1 gives the data for the table above. In the grid above location 11 is a 1. For that last 2 inputs there will be 7 strings of appropriate length to give the clue numbers.

OUTPUT: For each input line print the correct grid row values as 4 4-character or 5 5-character numeric strings on one line.

SAMPLE INPUT	**SAMPLE OUTPUT**
1. 3221, 41, 22, 14, 22, 2313	1. 1234, 2413, 4321, 3142
2. 2124, 23, 13, 22, 41, 3321	2. 3421, 4312, 2143, 1234
3. 1233, 14, 22, 41, 22, 2312	3. 4321, 2413, 1234, 3142
4. 33213, 42, 23, 15, 22, 21, 22341	4. 12453, 31542, 54321, 25134, 43215
5. 23312, 22, 15, 33, 41, 23, 21332	5. 31254, 54321, 12543, 23415, 45132

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TEST DATA

TEST INPUT	TEST OUTPUT
1, 1332, 12, 41, 22, 32, 3213	1. 4123, 1234, 3412, 2341
2. 1232, 12, 23, 32, 31, 3321	2. 4213, 3421, 1342, 2134
3. 1223, 14, 22, 21, 23, 3122	3. 4321, 2143, 3214, 1432
4. 22124, 23, 23, 42, 31, 14, 12532	4. 43521, 25413, 12354, 31245, 54132
5. 14332, 12, 51, 33, 23, 22, 22313	5. 51234, 12345, 34521, 25413, 43152