List Comprehensions ★

15/115 challenges solved

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Let's learn about list comprehensions! You are given three integers x, y and z representing the dimensions of a cuboid along with an integer n. Print a list of all possible coordinates given by (i, j, k) on a 3D grid where the sum of $i + j + k$ is not equal to n. Here, $0 \leq i \leq x; 0 \leq j \leq y; 0 \leq k \leq z$. Please use list comprehensions rather than multiple loops, as a learning exercise.

Example

$x = 1$

$y = 1$

$z = 2$

$n = 3$

All permutations of $[i, j, k]$ are:

$[[0, 0, 0], [0, 0, 1], [0, 0, 2], [0, 1, 0], [0, 1, 1], [0, 1, 2], [1, 0, 0], [1, 0, 1], [1, 0, 2], [1, 1, 0], [1, 1, 1], [1, 1, 2]]$.

Print an array of the elements that do not sum to $n = 3$.

$[[0, 0, 0], [0, 0, 1], [0, 0, 2], [0, 1, 0], [0, 1, 1], [1, 0, 0], [1, 0, 1], [1, 1, 0], [1, 1, 2]]$

Input Format

Four integers x, y, z and n, each on a separate line.

Constraints

Print the list in lexicographic increasing order.

Sample Input 0

```
1
1
1
2
```

Sample Output 0

```
[[0, 0, 0], [0, 0, 1], [0, 1, 0], [1, 0, 0], [1, 1, 1]]
```

Explanation 0

Each variable x, y and z will have values of 0 or 1. All permutations of lists in the form $[i, j, k] = [[0, 0, 0], [0, 0, 1], [0, 1, 0], [0, 1, 1], [1, 0, 0], [1, 0, 1], [1, 1, 0], [1, 1, 1]]$.

Remove all arrays that sum to $n = 2$ to leave only the valid permutations.

Sample Input 1

```
2
2
2
2
```

Sample Output 1

```
[[0, 0, 0], [0, 0, 1], [0, 1, 0], [0, 1, 2], [0, 2, 1], [0, 2, 2], [1, 0, 0], [1, 0, 2], [1, 1, 1], [1, 1, 2], [1, 2, 0],
```

Change Theme Language Python 3

```
1
2  x,y,z,n = [int(input()) for i in range(4)]
3  print([[i,j,k] for i in range(x+1) for j in range(y+1) for k in range(z+1) if ((i+j+k)
   != n)])
4
```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code

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13%

Congratulations

You solved this challenge. Would you like to challenge your friends?

Next Challenge

Test case 0

Test case 1

Test case 2

Test case 3

Compiler Message

Success

Input (stdin) Download

```
1
1
```

Test case 4

Test case 5

Test case 6

```
1
2
```

Expected Output Download

```
[[0, 0, 0], [0, 0, 1], [0, 1, 0], [1, 0, 0], [1, 1, 1]]
```