List Comprehensions ★

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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.
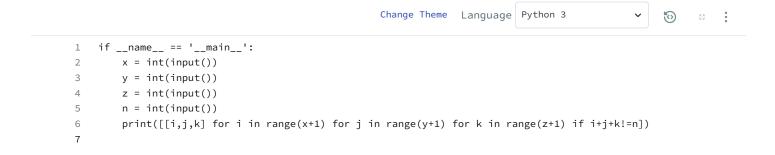
Sample Input 1

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

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```python
if __name__ == '__main__':
    x = int(input())
    y = int(input())
    z = int(input())
    n = int(input())
    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])
```

Line: 7 Col: 1

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

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38%   85/110

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 🔒

✓ Test case 4 🔒

✓ Test case 5 🔒

✓ Test case 6 🔒

Compiler Message

Success

Input (stdin)   Download

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

Expected Output   Download

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

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