



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]
```

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Language

Python 3



```
1
2  x = int(input())
3  y = int(input())
4  z = int(input())
5  n = int(input())
6  L=[]
7  for i in range(x+1):
8      for j in range(y+1):
9          for k in range(z+1):
10             if i + j + k != n:
11                 L.append([i,j,k])
12
13  print(L)
14
15
16
17
18
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20
21
22
23
24
25
```

Line: 25 Col: 1

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