

List Comprehensions | HackerRank

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Problem

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Tutorial

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 . You have to 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, $0 \leq i \leq X; 0 \leq j \leq Y; 0 \leq k \leq Z$

Input Format

Author

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Difficulty

Easy

Max Score

10

Submitted By

110031

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Four integers X, Y, Z and N each on four separate lines, respectively.

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

Concept

You have already used lists in previous hacks. List comprehensions are an elegant way to build a list without having to use different for loops to append values one by one. This example might help.

Example: You are given two integers x and y . You need to find out the ordered pairs (i, j) , such that $(i + j)$ is not equal to n and print them in lexicographic order. ($0 \leq i \leq x$) and $(0 \leq j \leq y)$ This is the code if ***we dont use list comprehensions in Python.***

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```
python x = int (
raw_input()) y = int (
raw_input()) n = int (
raw_input()) ar = [] p = 0
for i in range ( x + 1 ) :
for j in range( y + 1): if
i+j != n: ar.append([])
ar[p] = [ i , j ] p+=1 print
ar
```

Other smaller codes may also exist, but using list comprehensions is always a good option. **Code**

using list comprehensions:

```
python x = int (
raw_input()) y = int (
raw_input()) n = int (
raw_input()) print [ [ i, j]
for i in range( x + 1) for j
in range( y + 1) if ( ( i + j
) != n )]
```

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, 2]]
```

Python 3



```
1  if __name__ == '__main__':  
2      x = int(input())  
3      y = int(input())  
4      z = int(input())  
5      n = int(input())  
6  
7  print([[a,b,c] for a in range(x+1) for b in range (y+1) for c  
8  )
```

Line: 8 Col: 1

Test against custom input



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Test case 0 

Test case 1 

Test case 2 

Test case 3 

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