Beautiful 3 Set

by lifting

Problem Submissions Leaderboard Discussions Editorial

You are given an integer n. A set, S, of triples (x_i, y_i, z_i) is *beautiful* if and only if:

- $0 \leq x_i, y_i, z_i$
- $x_i + y_i + z_i = n, \forall i : 1 \leq i \leq |S|$
- Let X be the set of different x_i's in S, Y be the set of different y_i's in S, and Z be the set of different z_i in S. Then $|X| = |Y| = |Z| = |S|$.

The third condition means that all x_i's are pairwise distinct. The same goes for y_i and z_i.

Given n, find any *beautiful* set having a maximum number of elements. Then print the cardinality of S (i.e., $|S|$) on a new line, followed by $|S|$ lines where each line contains 3 space-separated integers describing the respective values of x_i, y_i, and z_i.

Input Format

A single integer, n.

Constraints

- $1 \leq n \leq 300$

Output Format

On the first line, print the cardinality of S (i.e., $|S|$).
For each of the $|S|$ subsequent lines, print three space-separated numbers per line describing the respective values of x_i, y_i, and z_i for triple i in S.

Sample Input

```
3
```

Sample Output

```
3
0 1 2
2 0 1
1 2 0
```

Explanation

In this case, $n = 3$. We need to construct a set, S, of non-negative integer triples (x_i, y_i, z_i) where $x_i + y_i + z_i = n$. S has the following triples:

1. $(x_1, y_1, z_1) = (0, 1, 2)$
2. $(x_2, y_2, z_2) = (2, 0, 1)$
3. $(z_3, y_3, z_3) = (1, 2, 0)$

We then print the cardinality of this set, $|S| = 3$, on a new line, followed by 3 lines where each line contains three space-separated values describing a triple in S.

Solved score: 30.00pts

Submissions: 626
Max Score: 60
Difficulty: Hard

Rate This Challenge:

More

Current Buffer (saved locally, editable)

Java 8

```
1  import java.io.*;
2  import java.util.*;
3
4  public class Solution {
5
6      public static void main(String[] args) {
7          /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named
   Solution. */
8      }
9  }
```

Line: 1 Col: 1

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

Processed

✔ Test Case #0	✘ Test Case #1	✔ Test Case #2
✔ Test Case #3	✘ Test Case #4	✘ Test Case #5
✘ Test Case #6	✘ Test Case #7	✘ Test Case #8
✘ Test Case #9	✘ Test Case #10	✘ Test Case #11
✘ Test Case #12	✘ Test Case #13	✘ Test Case #14
✘ Test Case #15	✘ Test Case #16	✘ Test Case #17
✘ Test Case #18	✘ Test Case #19	✘ Test Case #20
✘ Test Case #21	✘ Test Case #22	✘ Test Case #23
✘ Test Case #24	✘ Test Case #25	✘ Test Case #26
✘ Test Case #27	✘ Test Case #28	✘ Test Case #29
✘ Test Case #30	✘ Test Case #31	✘ Test Case #32
✘ Test Case #33	✘ Test Case #34	✘ Test Case #35
✘ Test Case #36	✘ Test Case #37	✘ Test Case #38
✘ Test Case #39	✘ Test Case #40	✘ Test Case #41
✘ Test Case #42	✘ Test Case #43	✘ Test Case #44
✘ Test Case #45	✘ Test Case #46	✘ Test Case #47
✘ Test Case #48	✘ Test Case #49	