Practice Problem PD

Sum of Three Cubes

Recently, a mathematician has just found three cube numbers that sum up to 42 using over a million hours of computing time. With this breakthrough, we have found three cube numbers that sum up to all non-negative integers less than 100 if it is possible to do so. In other words, for every $0 \leq N < 100$, we have found the triples (X, Y, Z) such that $X^3 + Y^3 + Z^3 = N$, or we have proved that no such triplet exists.

The following is a table of (X, Y, Z) that satisfies $X^3 + Y^3 + Z^3 = N$ for $0 \leq N < 50$.

N	X	Y	Z
0	0	0	0
1	0	0	1
2	0	1	1
3	1	1	1
4	No solution		
5	No solution		
6	-1	-1	2
7	0	-1	2
8	0	0	2
9	0	1	2
10	1	1	2
11	-2	-2	3
12	7	10	-11
13	No solution		
14	No solution		
15	-1	2	2
16	-511	-1609	1626
17	1	2	2
18	-1	-2	3
19	0	-2	3
20	1	-2	3
21	-11	-14	16
22	No solution		
23	No solution		
24	-2901096694	-15550555555	15584139827
25	-1	-1	3
26	0	-1	3
27	0	0	3
28	0	1	3
29	1	1	3
30	-283059965	-2218888517	2220422932
31	No solution		
32	No solution		
33	8866128975287528	-8778405442862239	-2736111468807040
34	-1	2	3
35	0	2	3
36	1	2	3
37	0	-3	4
38	1	-3	4

39	117367	134476	-159380
40	No solution		
41	No solution		
42	-80538738812075974	80435758145817515	12602123297335631
43	2	2	3
44	-5	-7	8
45	2	-3	4
46	-2	3	3
47	6	7	-8
48	-23	-26	31
49	No solution		

Reading a long table is a tedious job, so you would like to create a program that takes N as an input, and produce X, Y, Z as the output. The value of X, Y, and Z must be an integer not less than -10^{18} and not more than 10^{18}.

Input

Input begins with a line containing an integer: N ($0 \leq N < 50$).

Output

Output in a line three integers (separated by a single space): X Y Z that satisfies the condition given in the problem statement. If there is more than one solution, you can output any of them. If there is no solution, output `0` instead.

Sample Input #1

```
2
```

Sample Output #1

```
3737830626090 1490220318001 -3815176160999
```

Explanation for the sample input/output #1

Other answers such as $X = 1214928$, $Y = 3480205$, and $Z = -3528875$ are also accepted.

Sample Input #2

```
5
```

Sample Output #2

```
0
```