Birds, Cats, and Dogs

by Godmar Back

Since entering elementary school, Ada has daily math homework sheets. The problems on her worksheet usually go like this: "There is a certain number of birds, dogs, and cats on a farm. Together they have 14 legs. How many birds, dogs, and cats could there be? Write down as many answers as you can!"

It is always the same problem, just written in different ways: sometimes with horses, cows, sheep, goats, chickens, beetles, or even spiders—but never with snakes or fishes!

You must help Ada solve those problems.

Input

The input consists of a single line with 4 integers: b, c, d, and ℓ, where $0 \leq \ell \leq 250$ is the total number of legs, and where b, c, and d represent the number of legs of the first, second, and third type of animal, with $0 < b, c, d \leq 100$ since some farm animals in these math problems may be centipedes.

Output

Output all possible answers, each on a separate line, in lexicographical order so that they are sorted by the number of the first animal, ties broken by the second and third animal numbers, respectively. Separate the number of the first, second, and third animal with single spaces. If there are no possible solutions, output `impossible` on a single line.

Sample input 1

```
2 4 4 14
```

Sample output 1

```
1 0 3
1 1 2
1 2 1
1 3 0
3 0 2
3 1 1
3 2 0
5 0 1
5 1 0
7 0 0
```

Limits

Time limit is 1 second.

Memory limit is 256 megabytes.