3009   Monks

The order of Avidly Calculating Monks have their ashram high in the Sierra Nevada mountains east of Silicon Valley. After many years of training, each novice is faced with a final test before he can become a full member of the ACM.

In this test, the novice is led into a room containing three large urns, each containing a number of delicate glass beads. His task is to completely empty one of the urns using the following special procedure. Each day, the novice must select two of the urns, the source, and the destination. He must then carefully move beads from the source urn to the destination urn, never breaking one, until the original contents of the destination urn are doubled. No other beads may be moved.

So for example, if the number of beads in the three urns were respectively

115, 200 and 256 beads

then the novice might choose the second urn as the source and the first as the destination which would result in new contents of

230, 85 and 256 beads

at the end of the first day. Then on the second day the novice might choose the urn with 256 beads as the source, and that with 85 as the destination leaving

230, 170 and 171 beads

at the end of the second day.

If the original contents were 12, 30, and 12 beads, then choosing the first as source and the third as destination would result in 0, 30, and 24 beads and completion of the task.

The chief guru of the ACM always likes to have available a crib sheet indicating how many days the novices should take if they use as few transfers as possible to empty one of the urns. Your task is to provide this crib sheet.

Given a sequence of scenarios, each with a triple of non-negative integers representing the urn contents, determine for each scenario the smallest possible number of days required to empty one of the urns. This problem is guaranteed to have a solution in each case.

Input

Input will consist of a sequence of lines, each line representing a scenario. Each line consists of three integers in the range from 0 to 500 representing the initial urn contents, separated by single spaces.

Input is terminated by the line '0 0 0', which is not processed.

Output

For each scenario 'a b c', output a line of the form

a b c d

where d is the smallest possible number of days required to empty an urn beginning from contents a, b, and c.

Sample Input

```
0 3 5
5 0 3
1 1 1
2 3 4
12 3 8
0 0 0
```

Sample Output

```
0 3 5 0
5 0 3 0
1 1 1 1
2 3 4 2
12 3 8 5
```