It was rumored that the first person who solves the Mystical Matrix will get a free Mystical Chicken dinner from the Mystical Restaurant. Of course, Jack is eager to get that Mystical Chicken dinner.

The Mystical Matrix is a matrix with 3 rows and N columns, with $1, 2, \ldots, 3N$ each occupying one cell. Furthermore, all rows have the same sum and all columns have the same sum. Help Jack construct such a Mystical Matrix.

Input

The input contains several lines. Each line contains a single positive integer N. You may assume N is a multiple of 3 and it is less than 1000. The input is terminated by a single integer '0'.

Output

Output a valid Mystical Matrix. If non-exists, output 'IMPOSSIBLE' (without quotes). A valid Mystical Matrix should take 3 lines, with each line consisting of N integers separated by spaces. For example, a 3×9 matrix should look like:

$$A1 \quad A2 \quad A3 \quad A4 \quad A5 \quad A6 \quad A7 \quad A8 \quad A9$$
$$B1 \quad B2 \quad B3 \quad B4 \quad B5 \quad B6 \quad B7 \quad B8 \quad B9$$
$$C1 \quad C2 \quad C3 \quad C4 \quad C5 \quad C6 \quad C7 \quad C8 \quad C9$$

Sample Input

```
3
0
```

Sample Output

```
8 1 6
3 5 7
4 9 2
```