

Iris

Iris, the goddess of rainbow, has requested you to paint a landscape as a sacrifice to her. You have decided to paint n water droplets and connecting every pair of them using a "rainbow platform". Also, you would like to paint the water droplets and the rainbow platforms with colours. However, since Iris is the goddess of rainbow, she refuses to see a monochromatic landscape. If she receives such painting, she will burn your irises.

Iris has also some conditions for the landscape you are going to draw.

1. No two water droplets are assigned the same colour.
2. No water droplet is assigned the same colour as a rainbow platform joining it to another droplet.
3. No two rainbow platforms joined to a common water droplet are assigned the same colour.

You suddenly realised you have very few drachmas left. Since bottles of paint are quite expensive nowadays, you would to use as few unique paints as possible while saving your irises at the same time.

Input

The first and only line of the input contains an integer n , the number of water droplets you decided to draw.

Output

If you are unable to save your irises, output -1. Otherwise, the first line of output contains an integer k , the minimum number of unique colors required for you to satisfy the conditions above.

The next line should contain n integers c_0, c_1, \dots, c_{n-1} where c_i denotes the colour used to colour the i^{th} water droplet. ($c_i < k$)

The next $\frac{n(n-1)}{2}$ lines of output contain three integers a, b and c which should mean that the colour c ($c < k$) is used to draw an edge between water droplets a and b .

Subtasks

Subtask 1 (10 marks) : $n \leq 9$

Subtask 2 (20 marks): n odd, $n \leq 999$

Subtask 3 (70 marks) : $n \leq 999$

Sample Input 1:

3

Sample Output 1:

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

Sample Input 2:

5

Sample Output 2:

```
5
0 1 2 3 4
0 1 4
0 2 1
0 3 2
0 4 3
1 2 3
1 3 0
1 4 2
2 3 4
2 4 0
3 4 1
```

(refer to diagram on the next page for explanation)

