



```

3 2 2 2 2 2
0 0 0
10 5 4 4 4 4 4 4 4 4

```

**Note**

In the first test case there are  $n = 6$  balls. The colors of the balls from left to right are  $[2, 3, 1, 4, 6, 5]$ .

Let's suppose  $k = 1$ . One of the ways to reorder the balls in the required way for 3 coins:

$$[2, 3, 1, 4, 6, 5] \xrightarrow{1} [2, 3, 1, 4, \textcolor{red}{0}, 6, 5] \xrightarrow{2} [2, 3, \textcolor{blue}{4}, 1, 0, 6, 5] \xrightarrow{2} [\textcolor{blue}{1}, 2, 3, 4, 0, 6, 5] \xrightarrow{2} [1, 2, 3, 4, 0, 5, \textcolor{blue}{6}]$$

The number above the arrow is the operation type. Balls inserted on the operations of the first type are highlighted red; balls moved on the operations of second type are highlighted blue.

It can be shown that for  $k = 1$  it is impossible to rearrange balls in correct order for less than 3 coins.

Let's suppose  $k = 2$ . One of the ways to reorder the balls in the required way for 2 coins:

$$[2, 3, 1, 4, 6, 5] \xrightarrow{1} [2, 3, 1, 4, 6, \textcolor{red}{0}, 5] \xrightarrow{2} [2, 3, 1, 4, 0, 5, \textcolor{blue}{6}] \xrightarrow{1} [2, 3, \textcolor{red}{0}, 1, 4, 0, 5, 6] \xrightarrow{2} [\textcolor{blue}{1}, 2, 3, 0, 4, 0, 5, 6]$$

Note that this sequence of operations is also correct for  $k$  greater than 2.

It can be shown that for  $k$  from 2 to 6 it is impossible to rearrange balls in correct order for less than 2 coins.

In the second test case the balls are already placed in the correct order, so answers for all  $k$  are equal to 0.

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