A. Lanran's another infinite string

Description

Lanran has another infinite string only contains 'L' and 'R' and 'N'. The string is built in the following rule:

lanran(1) = LR

lanran(2) = LRRN

lanran(3) = LRRNRNNL

...

lanran(n) = lanran(n−1)+switch(lanran(n-1))

where switch(s) means changing all 'L' to 'R', all 'R' to 'N', and all 'N' to 'L' in string s.

Given an integer , please output how many 'L', 'R', and 'N' are there in the string from the first position to the nth position.

Input format

The first line contains one integer T, which indicates the number of test cases.

Following T lines contain one integer each line.

Output format

Output three integers, indicating the number of 'L', 'R', 'N' respectively for each test cases.

Samples

Sample input

```
3
2
5
7
```

Sample output

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

Limitations & Hints

1 second for each test case. The memory limit is 256MB.

For 50% of the test cases, $T \leq 1000, 1 \leq n \leq 10^6$.

For 100% of the test cases, $T \leq 1000, 1 \leq n \leq 10^{18}$.