You will be given an integer n, and you will have to express as summation of four square-numbers.

For example 30 can be written as summation of four squares in the following way:

$$30 = 4 * 4 + 3 * 3 + 2 * 2 + 1 * 1$$

If a number can be expressed as summation of four squares in more than one ways, any one of them will do. A square is a number whose square root is also an integer.

Input

Input starts with an integer T (≤ 120000), denoting the number of test cases. Each case contains an integer n ($0 \leq n < 10^{17}$) in a line.

Note: As the size of the input file is large, so use faster I/O functions like `scanf()`, `printf()`.

Output

For each case, print a line containing four integer numbers a, b, c, d such that

$$n = a^2 + b^2 + c^2 + d^2$$

If the number cannot be expressed as summation of four squares then you should print '`Impossible.`' instead.

Sample Input

```
3
30
2
0
```

Sample Output

```
5 2 0 1
1 0 0 1
0 0 0 0
```