Goldbach's Conjecture

Goldbach's conjecture is a mathematical conjecture (that means, it is not yet proven but believed to be correct) that states the following:

Every even integer greater than 2 can be expressed as the sum of two primes.

Every odd integer greater than 5 can be expressed as the sum of three primes.

Lea is not quite convinced that this is true and asks you to prove it (and just like most computer scientists, this proof will be by example): She gives you a number and expects you to find two or three primes (depending on whether her number is even or odd) that sum up to her number.

Input

The first line of the input contains an integer t. t test cases follow.

Each test case consists of a single line containing one integer n, Lea's number.

Output

For each test case, output one line containing "Case #i: x" where i is its number, starting at 1, and x is a space separated list of two or three primes that sum up to Lea's number. If there are multiple solutions, give the lexicographically smallest one. (I.e. if your solution is $x_1 x_2 x_3$ minimize x_1, then x_2. This in particular implies $x_1 \leq x_2 \leq x_3$.) Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 20$
- $n \leq 10^8$
- n is either even and greater than 2 or odd and greater than 5

Sample Input 1

```
3
6
18
41
```

Sample Output 1

```
Case #1: 3 3
Case #2: 5 13
Case #3: 2 2 37
```

Sample Input 2

```
13
77
98
55
42
48
76
11
7
14
18
68
25
89
```

Sample Output 2

```
Case #1: 2 2 73
Case #2: 19 79
Case #3: 3 5 47
Case #4: 5 37
Case #5: 5 43
Case #6: 3 73
Case #7: 2 2 7
Case #8: 2 2 3
Case #9: 3 11
Case #10: 5 13
Case #11: 7 61
Case #12: 3 3 19
Case #13: 3 3 83
```