

Three Powers

by Piotr Rudnicki

Consider the set $S = \{1, 3, 9, 27, 81, \dots\}$ of all non-negative integer powers of 3. Let P_1, P_2, \dots be the sequence of all the subsets of S ordered by the value of the sum of their elements. Thus $P_1 = \{\}$, $P_2 = \{1\}$, $P_3 = \{3\}$, $P_4 = \{1, 3\}$, $P_5 = \{9\}$, $P_6 = \{1, 9\}$, \dots . Your task is simple: given a positive integer n , find the set P_n and print it in increasing order of its elements.

Input

Each line of input contains a number n , which is a positive integer with no more than 19 digits. The last line of input contains 0 and it should not be processed. There are at most 100 test cases.

Output

For each line of input ($n > 0$), output a single line displaying the set P_n in the format used in the sample output below.

Sample input 1

```
1
7
14
783
1125900981634049
0
```

Sample output 1

```
{ }
{ 3, 9 }
{ 1, 9, 27 }
{ 3, 9, 27, 6561, 19683 }
{ 59049, 3486784401, 205891132094649, 717897987691852588770249 }
```

Limits

Time limit is 1 seconds.

Memory limit is 256 megabytes.