

Project Euler #55: Lychrel numbers

This problem is a programming version of [Problem 55](#) from [projecteuler.net](#)

If we take **47**, reverse and add, $47 + 74 = 121$, which is palindromic.

Not all numbers produce palindromes so quickly. For example,

$$\begin{aligned}349 + 943 &= 1292 \\1292 + 2921 &= 4213 \\4213 + 3124 &= 7337\end{aligned}$$

That is, **349** took three iterations to arrive at a palindrome.

Although no one has proved it yet, it is thought that some numbers, like **196**, never produce a palindrome. A number that never forms a palindrome through the reverse and add process is called a Lychrel number. Due to the theoretical nature of these numbers, and for the purpose of this problem, we shall assume that a number is Lychrel until proven otherwise. In addition you are given that for every number below 10^5 , it will either

- (i) become a palindrome in less than **60** iterations, or,
- (ii) no one, with all the computing power that exists, has managed so far to map it to a palindrome.

Now we see that a lot of numbers converge to the same palindrome, for example **[19, 28, 29, 37, 38, 46, 47, 56, 64, 65, 73, 74, 82, 83, 91, 92, 110, 121]** all converge to 121, a total of 18 numbers.

Note: For this problem we have assumed palindrome numbers like **55, 121** to be non-lychrel in 0^{th} iteration.

Given N , find the palindrome to which maximum numbers $\in [1, N]$ converge. Print the palindrome and the count.

Input Format

Input contains an integer N

Constraints

$$100 \leq N \leq 10^5$$

Output Format

Print the answer corresponding to the test case.

Sample Input

130

Sample Output

121 18