Project Euler #145: How many reversible numbers are there below one-billion?

HackerRank

This problem is a programming version of Problem 145 from projecteuler.net

Some positive integers n have the property that the sum $[n + \text{reverse}(n)]$ consists entirely of odd (decimal) digits. For instance, $36 + 63 = 99$ and $409 + 904 = 1313$. We will call such numbers *reversible*; so 36, 63, 409, and 904 are reversible. Leading zeroes are not allowed in either n or $\text{reverse}(n)$.

There are 120 reversible numbers below one-thousand.

Given N, how many reversible numbers are there below N?

Input Format

The first line of input contains T, the number of test cases.

Each test case consists of one line containing a single integer, N.

Constraints

$1 \le T \le 10^5$

In test file #1: $1 \le N \le 10^6$
In test file #2: $1 \le N \le 10^{12}$
In test file #3: $1 \le N \le 10^{18}$

Output Format

For each test case, output a single line containing a single integer, the number of reversible numbers below N.

Sample Input

```
2
1000
948
```

Sample Output

```
120
119
```

Explanation

As mentioned in the problem statement, there are 120 reversible numbers below 1000, the largest of which is 948.