Divisible by 6 and 9

Let num (> 0) be n (> 0) digit(s) positive integer. num is represented as $N_1N_2N_3N_4.....N_{n-2}N_{n-1}N_n$, where N_i is the i^{th} digit of num from left (0 < i < n+1). Digits of num are sorted in descending and ascending order respectively and this sorting generates two new positive integers num_{dsc} and num_{asc}. The difference between the numbers is $diff_{num}$ = num_{dsc} - num_{asc} , if $diff_{num}$ is divisible by both 6 and 9, then we say that num is a magic number. Let sum_{digits} is defined as following

number = $diff_{num}$
do {
number = sum of digits of number
} while (number > 10)

sum_{digits} = number

Input

First line of input is t (< 101), total number of test cases. Each test case has n (< 10001) as its first input and next n lines contains num (< 10^{100}).

Output

For each test case, write exactly n lines containing two/three specifications without space :
(i) **Y** if num is magic number otherwise **N**.
(ii) Let sum_{digits} = c, **ZER** if c is 0 (zero), **ONE** if c is 1 (one) if c > 1, **EP** if c is even and prime, **ENP** if c is even but not prime, **OP** if c is odd and prime or **ONP** if c is odd but not prime.
(iii) Let $diff_{num}$ = d, If num is not a magic number then print **EQL** if d is not divisible by both 6 and 9, **LTN** if d is not divisible by 6 only, **GTN** if d is not divisible by 9 only.

Example

Input:
1
2
31
100

Output:
YONP
NONPLTN

0 is divisible by 6 and 9 :)