5. Palindromic Square

Program Name: Palindromic.java **Input File: palindromic.dat**

A palindromic integer reads the same forwards or backwards. All single digit integers are palindromic. But some palindromic integers are more interesting than others. For example, the palindromic integer 595 can be expressed as the sum of the squares of consecutive integers: $595 = 6^2 + 7^2 + 8^2 + 9^2 + 10^2 + 11^2 + 12^2$. We will call an integer a palindromic square if it is a palindromic integer that can be expressed as the sum of the squares of two or more consecutive positive integers.

You will be given a set of integers to determine whether each integer is first a palindromic integer, and if so, whether the integer is also a palindromic square.

Input

The first line will contain a single integer `n` that indicates the number of lines to follow. Each of the next `n` lines will contain a single integer to be tested.

Output

Print each integer followed by a space, whether the integer is `PALINDROMIC` or `NOT PALINDROMIC` followed by a space, and finally, for palindromic integers only, whether the palindromic integer is `SQUARE` or `NOT SQUARE`.

Example Input File

```
4
5
121
595
818
```

Example Output to Screen

```
5 PALINDROMIC SQUARE
121 PALINDROMIC NOT SQUARE
595 PALINDROMIC SQUARE
818 PALINDROMIC SQUARE
```