

Problem 4: Divisibility Rules

10 minutes, 100 points

Filename: prob04 (e.g. *prob04.c*, *prob04.cpp*, *prob04.java*, *prob04.py2*, *prob04.py3*)

Description

Determine if the given positive integer is divisible by 3 using the following divisibility rule.

Sum each digit of the integer. Determine if the sum of digits is a multiple of 3. If so, the original positive integer is divisible by 3. (e.g. Given 12345, sum of digits would be $1+2+3+4+5=15$. Since 15 is a multiple of 3, we know 12345 is divisible by 3).

The first line of input will include a single integer that indicates how many additional lines of input need to be read. Each additional line of input will contain a single positive integer.

Output the original integer, the sum of the digits, and whether or not the integer is divisible by 3. Be sure to return "YES" or "NO" in uppercase.

Sample Input

```
4
123
12345
1234567
12345678
```

Sample Output

```
123 6 YES
12345 15 YES
1234567 28 NO
12345678 36 YES
```

Learn More

A divisibility rule is a heuristic for determining whether a positive integer can be evenly divided by another (i.e. there is no remainder left over). For example, determining if a number is even is as simple as checking to see if its last digit is 2, 4, 6, 8 or 0. Multiple divisibility rules applied to the same number in this way can help quickly determine its prime factorization without having to guess at its prime factors.

<https://brilliant.org/wiki/divisibility-rules/>

Prepared by Jason Klein