Problem F

Summing Digits

Time limit: 1 second
Memory limit: 1024 megabytes

Problem Description

For a positive integer n, let $f(n)$ denote the sum of the digits of n when represented in base 10. It is easy to see that the sequence of numbers $n, f(n), f(f(n)), f(f(f(n))), \ldots$ eventually becomes a single digit number that repeats forever. Let this single digit be denoted $g(n)$.

For example, consider $n = 1234567892$. Then:

$f(n) = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 2 = 47$

$f(f(n)) = 4 + 7 = 11$

$f(f(f(n))) = 1 + 1 = 2$

Therefore, $g(1234567892) = 2$.

Input Format

Each line of input contains a single positive integer n at most 2,000,000,000. Input is terminated by $n = 0$ which should not be processed.

Output Format

For each such integer, you are to output a single line containing $g(n)$.

Sample Input 1

```
2
11
47
1234567892
0
```

Sample Output 1

```
2
2
2
2
```