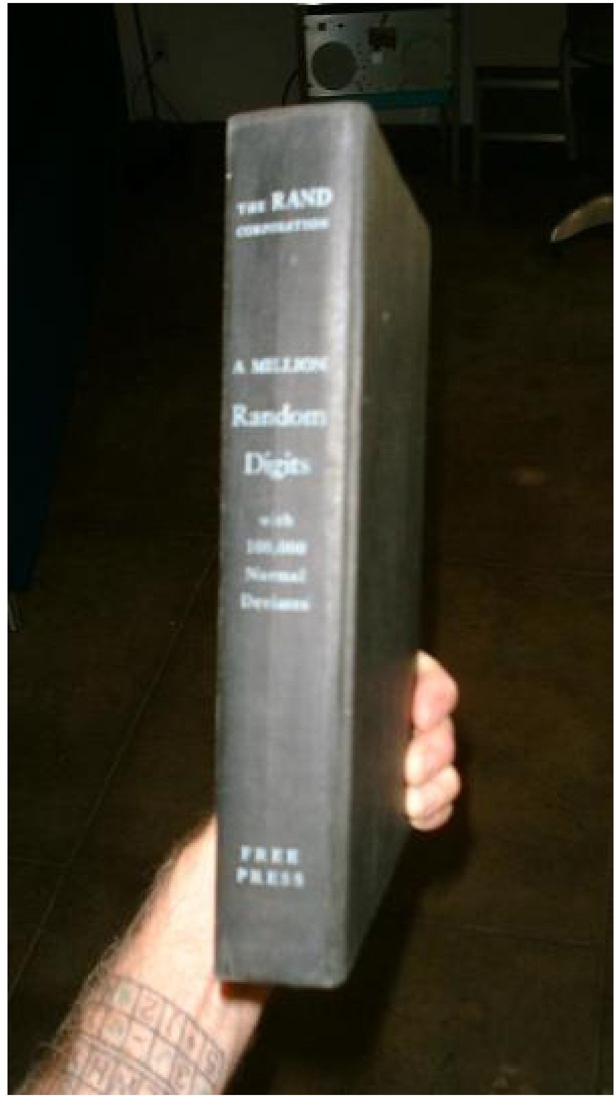
For a positive integer n, let $f(n)$ denote the sum of the digits of n when represented in base 10. It is easy to see that the sequence of numbers $n, f(n), f(f(n)), f(f(f(n))), \ldots$ eventually becomes a single digit number that repeats forever. Let this single digit be denoted $g(n)$.

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

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

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

Sample Input

```
2
11
47
1234567892
0
```

Sample Output

```
2
2
2
2
```