H Function

H(x) equals to sum of all digits of **x**. Moreover, if **H(x)**>9 then **H(x)**=**H(H(x))**.

Input

The first line of the standard input contains one integer **t** (t<100001) - the number of test cases.

In each of the next **t** lines there is one number **x** (x<10^6).

Output

For each test You have to print **H(x!)**.

Example

Input:
2
1
5

Output:
1
3