H Function

The issue of this problem is to find out the value for H(N), where H(N) is the sum of all digits of N, but if H(N) > 9 then H(N) = H(H(N)). Rather it is want that you find H(N!).

1 <= T <= 300000

0 <= N <= 1000000

Input

T
N1
N2
...
NT

Output

H(N1!)
H(N2!)
...
H(NT!)

Example

Input:
2
1
5

Output:
1
3