Give you a integer number N ($1 \le n \le 2 * 10^{100}$). Please compute

$$S = 1^1 + 2^2 + 3^3 + \ldots + N^N$$

Give the last digit of S to me.

Input

Input file consists of several N's, each N a line. It is ended with $N = 0$.

Output

For each N give a line containing only one digit, which is the last digit of S.

Sample Input

```
1
2
3
0
```

Sample Output

```
1
5
2
```