6th South African Regional
ACM Collegiate Programming Competition

Sponsored by IBM

Problem E – White balloon
Powers

Compute the first digit of B^N, given $1 \leq B < 10$, $1 \leq N \leq 1000000$.

The input consists of multiple data sets. Each data set is a line containing two integers, *B* and *N*, separated by a single space. The data sets are followed by a line '*0 0*'. There will be no more than *10* data sets of input.

You must output one line for each line of input (other than the terminating line). The line consists of a single digit, which is the leading digit of B^N for the corresponding line of input.

Sample Input

```
1 1
2 4
7 8
9 13
0 0
```

Sample Output

```
1
1
5
2
```