# Project Euler #160: Factorial trailing digits



This problem is a programming version of Problem 160 from projecteuler.net

For any n, let  $f_b(n)$  be the last five digits before the trailing zeroes in n! written in base b.

For example,

```
9! = 362880 so f_{10}(9) = 36288

10! = 3628800 so f_{10}(10) = 36288

20! = 2432902008176640000 so f_{10}(20) = 17664
```

Find  $f_b(n)$  for multiple values of n.

## **Input Format**

First line of each file contains two numbers: b (base) and q (number of queries). q lines follow, each with an integer n written in base b.

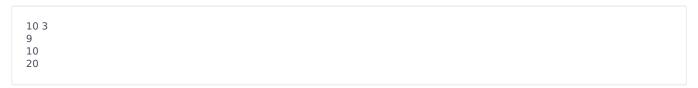
### **Constraints**

- $2 \leqslant b \leqslant 36$
- $1 \leqslant q \leqslant 10^5$
- $0 \le n \le 10^{18}$
- Every character in n is a valid digit in base b ('0'-'9','A'-'Z' for values > 9)

# **Output Format**

Output q lines. On each line print exactly  $\mathbf{5}$  digits in base b - the answer to the q-th query. If for some n n! contains less than  $\mathbf{5}$  digits, put the corresponding number of leading zeroes before answer.

# **Sample Input**



# **Sample Output**

```
36288
36288
17664
```