CODECHEF
A *Directi* Educational Initiative

Hello **alok_shakya** ▾

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Eugene and big number ▤
Problem code: KBIGNUMB

ALL SUBMISSIONS   MY SUBMISSIONS   SUBMIT

Read problems statements in **Mandarin Chinese**, **Russian** and **Vietnamese** as well.

Eugene has to do his homework. But today, he is feeling very lazy and wants to you do his homework. His homework has the following given maths problem.

You are given three integers: **A**, **N**, **M**. You write the number **A** appended to itself **N** times in a row. Let's call the resulting big number **X**. For example, if **A = 120, N = 3**, then **X** will be **120120120**. Find out the value of **X** modulo **M**.

Input

The first line of the input contains an integer **T** denoting the number of test cases. The description of **T** test cases follow.

Each test case is described in one line containing three integers: **A**, **N** and **M** as described in the problem statement.

Output

For each test case, output a single line containing an integer denoting the value of **X** modulo **M**.

Constraints

- $1 \le T \le 10^5$
- $0 \le A \le 10^9$
- $1 \le N \le 10^{12}$
- $2 \le M \le 10^9$

Subtasks

Subtask #1 (15 points):

- $0 \le A \le 100$
- $1 \le N \le 10^5$

Subtask #2 (25 points):

- $1 \le N \le 10^9$

Subtask #3 (60 points):

- Original constraints

Example

Input:
```
2
12 2 17
523 3 11
```

Output:
```
5
6
```

Explanation

Example 1: As **A = 12, N = 2**, **X = 1212**, 1212 modulo 17 = 5

Example 2. As **A = 523, N = 3**, **X = 523523523**, 523523523 modulo 11 = 6

Author:	aangairbender
Tester:	mgch
Date Added:	5-04-2016
Time Limit:	4 sec
Source Limit:	50000 Bytes
Languages:	ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.9.2, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYPY, PYTH, PYTH 3.4, RUBY, SCALA, SCM chicken, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

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Your IP: 47.8.15.4

CodeChef - A Platform for Aspiring Programmers

CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms, binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

Practice Section - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in a language of your choice. Our **programming contest** judge accepts solutions in over 35+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete - Monthly Programming Contests and Cook-offs

Here is where you can show off your **computer programming** skills. Take part in our 10 day long monthly **coding contest** and the shorter format Cook-off **coding contest**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), $700 (for Global Community) and lots more CodeChef goodies up for grabs.

Programming Tools	**Practice Problems**	**Initiatives**
Online IDE	Easy	Go for Gold
Upcoming Coding Contests	Medium	CodeChef for Schools
Contest Hosting	Hard	Campus Chapters
Problem Setting	Challenge	
CodeChef Tutorials	Peer	
CodeChef Wiki	School	
	FAQ's	