
Problem A. Mr. Panda and Kakin

Input file: **standard input**
Output file: **standard output**
Time limit: **2 seconds**
Memory limit: **256 megabytes**

Mr. Panda and Mr.Sheep want to hack into the system of a famous mobile game. They have already dumped the resource code as following and intercepted the encrypted message n and c outputted from this encryption pseudo code.

```
1: function GETKAKINENTRYPOINT(FLAG)
2:    $x \leftarrow$  a uniformly random integer in range  $[10^5, 10^9]$ 
3:    $p \leftarrow$  the largest prime less than  $x$ 
4:    $q \leftarrow$  the smallest prime not less than  $x$ 
5:    $n \leftarrow p \cdot q$ 
6:    $c \leftarrow \text{FLAG}^{(2^{30}+3)} \bmod n$ 
```

The most important thing is the variable **FLAG**. If they get its value, they can get infinite magic stones as the common currency in this mobile game. So this is the reason they come to you, the master of cryptography. You need to help them to get the value of **FLAG**, to be more accurate, the remainder of dividing **FLAG** by n .

Input

The first line of the input gives the number of test cases, T ($1 \leq T \leq 10^5$). T test cases follow.

Each test case contains two integer n and c ($10^{10} \leq n \leq 10^{18}$, $0 < c < n$), indicating the output of the encrypting code. It is guaranteed that these numbers are valid and are suitable for only one value of **FLAG**.

Output

For each test case, output “Case x : y ”, where x is the test case number (starting from 1), and y is the value of **FLAG**.

Example

standard input	standard output
3	Case 1: 175267324024
181857896263 167005790444	Case 2: 209603568635
218128229323 156323229335	Case 3: 282077284785
352308724847 218566715941	