



## 1065 - Number Sequence

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Time Limit: <b>2 second(s)</b>		Memory Limit: <b>32 MB</b>	

Let's define another number sequence, given by the following function:

$$f(0) = a$$

$$f(1) = b$$

$$f(n) = f(n-1) + f(n-2), n > 1$$

When **a = 0** and **b = 1**, this sequence gives the Fibonacci sequence. Changing the values of **a** and **b**, you can get many different sequences. Given the values of **a**, **b**, you have to find the last **m** digits of **f(n)**.

### Input

Input starts with an integer **T** ( $\leq 10000$ ), denoting the number of test cases.

Each test case consists of a single line containing four integers **a b n m**. The values of **a** and **b** range in  $[0, 100]$ , value of **n** ranges in  $[0, 10^9]$  and value of **m** ranges in  $[1, 4]$ .

### Output

For each case, print the case number and the last **m** digits of **f(n)**. However, do **NOT** print any leading zero.

Sample Input	Output for Sample Input
4	Case 1: 89
0 1 11 3	Case 2: 4296
0 1 42 4	Case 3: 7711
0 1 22 4	Case 4: 946
0 1 21 4	

SPECIAL THANKS: JANE ALAM JAN (SOLUTION, DATASET)