Problem B

Yet another Number Sequence

Input: standard input
Output: standard output
Time Limit: 3 seconds

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

The first line gives the number of test cases, which is less than **10001**. Each test case consists of a single line containing the integers **a b n m**. The values of **a** and **b** range in **[0,100]**, value of **n** ranges in **[0, 1000000000]** and value of **m** ranges in **[1, 4]**.

Output

For each test case, print the last **m** digits of **f(n)**. However, you should **NOT** print any leading zero.

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

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