

Farmer Crisis

Assignment 2

Computer Programming

Due date: 12 October, 2018

Problem Statement: Meghalaya is a NE State of India. Farmers there are quite poor as the living cost is high in hilly areas.

There is a rich guy named Shukla Ji who has hired N farmers who are equal in their working capacity, i.e., each farmer can plough 1 unit of land in 1 unit time. Meghalaya, being hilly region fields are broken up as M parts rather than being contiguous.

Deshmukh Ji, a neighbour, wants to test Shukla Ji's intelligence. He wants to know what is the minimum time in which those N farmers can plough the fields.

Since Shukla Ji is busy working for Felicity, can you do that for him?

Note: Farmers are quite egoistical, so they would not share the field they are ploughing with other farmer and each farmer would only plough contiguous fields.

You will be given 3 numbers a , b , and mod from which you can generate the area of the field using the formula:

$$F[1] = 1$$

$$F[2] = 2$$

$$F[i] = (F[i-1] * a + a * b + F[i-2] * b) \% mod + b$$

where, $F[i]$ is the i^{th} field

Constraints:

$$1 \leq T \leq 2.2 * 10^3$$

$$1 \leq N \leq 10^3$$

$$1 \leq M \leq 10^3$$

$$1 \leq a, b \leq 10^3$$

$$2 \leq mod \leq 10^5$$

INPUT: T is the number of test cases in the first line. T lines following them will contain 5 space separated integers. N , M , a , b , mod as space separated integers.

OUTPUT: Single integer which denotes minimum time required for each test case.

Time Limit: 1 sec

Memory Limit: 256 MB

Sample Test Case

Input	Output
3	2
2 2 3 2 100000	3
1 2 3 2 100000	220
4 5 3 2 100000	

Explanation

Case#1: 2 fields are there of area: 1, 2 and two farmers are hired. Each farmer will work concurrently on one field. Hence the minimum time required is 2.

Case#2: 2 fields are there of area: 1, 2 but there is only one hired farmer. So he works on first field and then moves on to another. Hence the total time required is 3.