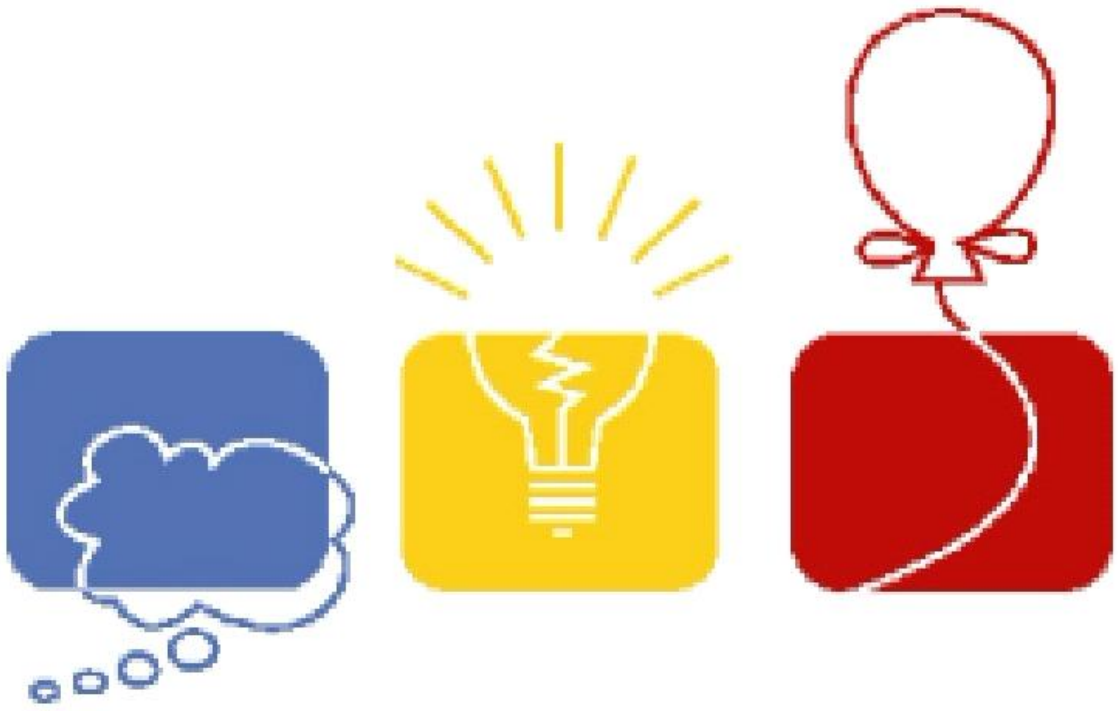

2015 ACM South China Normal University Collegiate Programming Contest

Problem A. Destroyer

There are n villages(numbered from 1 to n) and m undirected roads connect them. You can go from any villages to any other villages through these roads.
Today a destroyer want to break some roads, but he doesnt want to make that anyone cant go from an village to another village through the rest roads.
Do you know how many roads can the destroyer break at most?

Input

The first line is a positive integer $T(T \leq 20)$, represents the number of case. The next T blocks follow each indicates a case.

Each case starts with two positive integers n and m.

In the next m lines, each line contain two integers x and y indicates that there is a road between village x and village y.

For 100% of cases, $n \leq 1000$ and $m \leq 10000$, $1 \leq x,y \leq n$, $x \neq y$.

Output

For each case, output one line contains the answer of the problem.

Sample input and output

Sample Input	Sample Output
1 3 1 2 2 3 3 1	1

Problem B. Divisor

Give you an positive integer n.
Please calculate how many positive integers x satisfy : x is a prime number and x is a divisor of n.

Input

The first line is a integer $T(1 \leq T \leq 20)$, represents the number of case.

The next T blocks follow each indicates a case.
Each case contains a line with a positive integer n.

For 80% of cases, $n \leq 100000$.
For 100% of cases, $n \leq 1000000000$.

Output

For each case, output one line contains the answer.

Sample input and output

Sample Input	Sample Output
2 5 223092870	1 9

Problem C. Editing Distance

Give you two strings x and y. In one step, you can do one of operator below:

1.Remove one letter in x.
2.Add one letter in x.
3.Change one letter in x to another letter.

Now you need to translate x to y. How many steps do you need at least?

You can assume that all of char in x and y are lower-case letters.

Input

The first line is a postive integer $T(T \leq 20)$, represents the number of case. The next T blocks follow each indicates a case.

Each case contains two lines. The first is string x and the second line is string y.

For 100% of cases, the length of x and y are both small than 1000.

Output

For each case, output one line contains the answer of the problem.

Sample input and output

Sample Input	Sample Output
2 abcd abdd ddddd dddcdd	1 1

Problem D. Exchange coins

In the beginning, *Yuki* has N coins. If and only if *Yuki* gives *Great Master* two coins that have same size or same color, *Great Master* will give *Yuki* one yuan. Now give you the size and color of all the coins that *Yuki* has. Do you know how many yuan *Yuki* can get at most?

Input

The first line is a positive integer $T(1 \leq T \leq 30)$, represents the number of case. The next T blocks follow each indicates a case.

Each case starts with a positive integer N, which indicates how many coins *Yuki* has.
In next N lines each line contains two integers s and c, which indicates the *size* and *color* of all *Yuki's* coins respectively.

For 75% of cases, $N \leq 10000$.
For 100% of cases, $N \leq 100000$, $0 < s, c \leq N$.

Output

For each case, output one line contains the number of money that *Yuki* can get at most.

Sample input and output

Sample Input	Sample Output
2 4 1 2 2 1 3 3 4 3 4 4 1 4 2 4 3 2 1	1 2

Problem E. Foodie

As a foodie, *Yuki* select N kinds of food to taste. Sadly, *Yuki* has only M units of money, so she may not be able to taste all the food.
Now you know every food's price. Can you tell her how many food can *Yuki* taste at most.

Input

The first line is a positive integer $T(T \leq 20)$, represents the number of case. The next T blocks follow each indicates a case.

Each case starts with two positive integers N and M. Their meaning is the same as problem description.
In the next line, there are N positive integers p, the i^{th} integer indicates how many unit of money that the i^{th} food cost.

For 75% of cases, $N \leq 1000$. For 100% of cases, $N \leq 100000$, $M \leq 10000000$, $p \leq 100000$.

Output

For each case, output the number of food that *Yuki* can taste at most in a line.

Sample input and output

Sample Input	Sample Output
2 5 10 1 2 3 4 5 10 5 1 1 1 1 1 1 1 1 1 1	4 5

Problem F. Matrix

Give you a number matrix A with n rows and m columns.
And then q query. Each query contains four integer x_1, y_1, x_2, y_2.
Please calculate $Answer = \sum_{i=x_1}^{x_2} \sum_{j=y_1}^{y_2} A_{ij}$

Input

The first line is a positive integer $T(T \leq 20)$, represents the number of case. The next T blocks follow each indicates a case.

Each case contains a line with three positive integers n, m and q.
In the next n lines, each line contains m integers indicates the matrix A. The j^{th} number in the i^{th} line is A_{ij}.
In the next q lines, each line contains a query with four integers x_1, y_1, x_2, y_2.

For 80% of cases, $n, m, q \leq 100$.
For 100% of cases, $n, m, q \leq 500$, $0 \leq A_{ij} \leq 1000$, $0 \leq x_1 \leq x_2 \leq n$, $0 \leq y_1 \leq y_2 \leq m$.

Output

For each query, output one line contains the answer of the query.

Sample input and output

Sample Input	Sample Output
1 3 5 2 4 5 6 7 1 8 1 5 6 2 1 2 3 4 5 1 1 3 5 2 1 2 5	60 22

Problem G. Polynomial

Give you a huge problem. You need to take polynomial $ax + b$, then calculate its k^{th} power and evaluate the sum of its coefficients.

Because the answer may be so large, you should only output the answer mod 10007.

Input

The first line is a integer $T(1 \leq T \leq 100)$, represents the number of case. The next T blocks follow each indicates a case.

Each case contains a line with three positive integers a, b, k.

For 100% of cases, $1 \leq a, b, k \leq 1000000000$

Output

For each case, output one line contains the answer of the problem.

Sample input and output

Sample Input	Sample Output
2 1 2 2 8 8 8888	9 6768

Problem H. Recursion

We define a function $f(n)$ as follow:

$$f(x) = \begin{pmatrix} 1, n = 1 \\ 2, n = 2 \\ (a \cdot f(n-1) + b \cdot f(n-2)) mod\ 1000000007, n \geq 3 \end{pmatrix}$$

Now give you a, b, n. You should calculate $f(n)$.

Input

The first line is a positive integer $T(T \leq 50)$, represents the number of case. The next T blocks follow each indicates a case.
Each case contains one line with three integers a, b, n.

For 100% of cases, $0 \leq a, b < 1000000007$, $1 \leq n \leq 100000$.

Output

For each case, output $f(n)$.

Sample input and output

Sample Input	Sample Output
3 5 6 7 55 66 77 555 666 777	19996 743763904 154906645

Problem I. Inversions

Now there is a sequence a_1,a_2,,a_n. Please calculate how many inversions in the sequences.

Note: The number of inversions is the number of pair (i, j) where $1 \leq i < j \leq n$ and $a_i > a_j$.

Input

The first line is a positive integer $T(T \leq 20)$, represents the number of case. The next T blocks follow each indicates a case.

Each case starts with a positive integer n.
In the next line, there are n integers. The i^{th} number mean a_i.

For 80% of cases, $n \leq 1000$.
For 100% of cases, $n \leq 100000$, $-1000000000 \leq a_i \leq 1000000000$.

Output

For each case, output one line contains the number of inversions .

Sample input and output

Sample Input	Sample Output
2 5 5 4 3 2 1 5 1 2 3 4 5	10 0

Problem J. Coins Change Again

Zeek has 10 kinds of special coins , which value 1 , 2 , 3 , ... , 10 . *Zeek* wants to pay exact prices(without change) *Zeek* ask you to help him to calculate how many prices below N which he can pay.

Input

There are multiple test cases.The first line is an integer T. T means the number of the test cases.

In each test case, the first line is 10 integers $(A_1, A_2, A_3, A_4, A_5, A_6, A_7, A_8, A_9, A_{10})$. A_i is the number of the coin which values i. The second line is an integer N. ($T \leq 20$, $Ai \leq 100000$, $N \leq 100000$)

Output

For each test case , output an integer describes the number (below N) of the prices that *Zeek* can pay.

Sample input and output

Sample Input	Sample Output
2 0 40 0 0 60 0 0 0 0 0 1000 3 1000 0 0 0 0 0 0 110 0 10000	376 2993