DSUBSEQ - Distinct Subsequences

[#dynamic-programming](http://www.spoj.com/problems/tag/dynamic-programming)

Given a string, count the number of distinct subsequences of it ( including empty subsequence ). For the uninformed, A subsequence of a string is a new string which is formed from the original string by deleting some of the characters without disturbing the relative positions of the remaining characters.   
For example, "AGH" is a subsequence of "ABCDEFGH" while "AHG" is not.

Input

First line of input contains an integer T which is equal to the number of test cases. You are required to process all test cases. Each of next T lines contains a string s.

Output

Output consists of T lines. Ith line in the output corresponds to the number of distinct subsequences of ith input string. Since, this number could be very large, you need to output ans%1000000007 where ans is the number of distinct subsequences.

Example

**Input:**

3

AAA

ABCDEFG

CODECRAFT

**Output:**

4

128

496

Constraints and Limits

T ≤ 100, length(S) ≤ 100000  
All input strings shall contain only uppercase letters.

BAT3 - BATMAN3

[#dynamic-programming](http://www.spoj.com/problems/tag/dynamic-programming)

"

Bruce Wayne: I do fear death. I fear dying in here while my city burns.

Blind Prisoner: Then make the climb.

Bruce Wayne: How?

Blind Prisoner: As the child did. Without the rope. Then fear will find you again.

"

" Bruce Wayne: *I do fear death. I fear dying in here while my city burns.*   
 Blind Prisoner: *Then make the climb.*  
 Bruce Wayne: *How?*  
 Blind Prisoner: *As the child did. Without the rope. Then fear will find you again*. "

The Epic fight between BANE and BATMAN saw BATMAN on the losing side .Bane delivers a crippling blow to Batman's back, then takes him to a foreign, well-like prison where escape is virtually impossible .

The prison as we know is a place from where no man ever escaped , except for the child of Ra's al Ghul himself .

The heroics of BATMAN saw him escape the prison , however after the prison came the Valleys . To reach the city , He needed to cross these valleys . Meanwhile , BANE's army has surrounded the city and trapped all the policemen underground . Each of these peaks contain exactly one policeman held captive by Bane's men. Since, BATMAN needs to build his own army , he decides to free some of the policemen on his way .

Also BATMAN needed to save his energy before his battle with Bane ,so he decided to take only downhill (strictly) jumps .Detective John Blake ( now called as ROBIN ) is standing in one of these peaks with a mini-BAT . This will allow BATMAN to take a maximum one jump uphill ahead . BATMAN can choose to flee ROBIN and use the BAT or rather cross over without his help .

The task in hand is to maximize the army strength to face BANE as BATMAN crosses over.  
(BATMAN can take his first jump on any of these peaks)

**" Bane**: So, you came back to die with your city.   
**Batman**: No. I came back to stop you. "

Input

t , number of testcases  
n : number of peaks ,  m : (zero based)index of the peak where ROBIN is standing   
n intergers denoting the height of the peaks

Output

The maximum strength of the army

**Constraints :**

1<=n<=1000

Example

**Input:**

1

6 4

6 3 5 2 4 5

**Output:**

4

## CRSCNTRY - Cross-country

[#dynamic-programming](http://www.spoj.com/problems/tag/dynamic-programming)

Agness, a student of computer science, is very keen on cross­country running, and she participates in races organised every Saturday in a big park. Each of the participants obtains a route card, which specifies a sequence of checkpoints, which they need to visit in the given order. Agness is a very atractive girl, and a number of male runners have asked her for a date. She would like to choose one of them during the race. Thus she invited all her admirers to the park on Saturday and let the race decide. The winner would be the one, who scores the maximum number of points. Agnes came up with the following rules:

* a runner scores one point if he meets Agnes at the checkpoint,
* if a runner scored a point at the checkpoint, then he cannot get another point unless he and Agnes move to the next checkpoints specified in their cards.
* route specified by the card may cross the same checkpoint more than once,
* each competitor must strictly follow race instructions written on his card.

Between two consecutive meetings, the girl and the competitors may visit any number of checkpoints. The boys will be really doing their best, so you may assume, that each of them will be able to visit any number of checkpoints whilst Agnes runs between two consecutive ones on her route.

### Task

Write a program which for each data set from a sequence of several data sets:

* reads in the contents of Agnes' race card and contents of race cards presented to Tom,
* computes the greatest number of times Tom is able to meet Agnes during the race,
* writes it to output.

### Input

There is one integer d in the first line of the input file, 1 <= d <= 10. This is the number of data sets. The data sets follow. Each data set consists of a number of lines, with the first one specifying the route in Agnes' race card. Consecutive lines contain routes on cards presented to Tom. At least one route is presented to Tom. The route is given as a sequence of integers from interval [1, 1000] separated by single spaces. Number 0 stands for the end of the route, though when it is placed at the beginning of the line it means the end of data set. There are at least two and at most 2000 checkpoints in a race card.

### Output

The i-th line of the output file should contain one integer. That integer should equal the greatest number of times Tom is able to meet with Agnes for race cards given in the i-th data set.

### Example

Sample input:

3

1 2 3 4 5 6 7 8 9 0

1 3 8 2 0

2 5 7 8 9 0

1 1 1 1 1 1 2 3 0

1 3 1 3 5 7 8 9 3 4 0

1 2 35 0

0

1 3 5 7 0

3 7 5 1 0

0

1 2 1 1 0

1 1 1 0

0

Sample output:

6

2

3