Question 1 :

Moist has a hobby -- collecting figure skating trading cards.Moist needs to sort the cards in alphabetical order.To facilitate the sorting, Moist has convinced Dr. Horrible to build him a sorting robot. However, in his rather horrible style, Dr. Horrible has decided to make the sorting robot charge Moist a fee of $1 whenever it has to move a trading card during the sorting process.
Moist has figured out that the robot's sorting mechanism is very primitive. It scans the deck of cards from top to bottom. Whenever it finds a card that is lexicographically smaller than the previous card, it moves that card to its correct place in the stack above. This operation costs $1, and the robot resumes scanning down towards the bottom of the deck, moving cards one by one until the entire deck is sorted in lexicographical order from top to bottom. He needs to know how much it would cost him to use the robot to sort his deck of cards.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each one starts with a line containing a single integer, **N**. The next **N** lines each contain the name of a figure skater, in order from the top of the deck to the bottom.

Output

For each test case, output one line containing "Case #x: y", where x is the case number (starting from 1) and y is the number of dollars it would cost Moist to use the robot to sort his deck of trading cards.

Limits

1 ≤ **T** ≤ 100.
Each name will consist of only letters and the space character.
Each name will contain at most 100 characters.
No name with start or end with a space.
No name will appear more than once in the same test case.
Lexicographically, the space character comes first, then come the upper case letters, then the lower case letters.
1 ≤ **N** ≤ 10.

Sample

Input	Output
2 2 Oksana Baiul Michelle Kwan 3 Elvis Stojko Evgeni Plushenko Kristi Yamaguchi	Case #1: 1 Case #2: 0

Question 2:
You are given a word W as a query. Your answer word A is acceptable if it is the same length as the query, and the i-th letter of A is either the i-th, (i-1)th, or (i+1)th letter of W, for all i in the range of the length of A. (The first letter of A must match either the first or second letter of W, since the 0th letter of W doesn't exist. Similarly, the last letter of A must match either the last or next-to-last letter of W.) Note that the target word itself is always an acceptable answer word.Find out how many distinct acceptable answer words there are.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow; each consists of one line with a string consisting only of lowercase English letters (a through z).

Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1) and y is the number of distinct acceptable answer words, modulo $10^9 + 7$.

Limits

$1 \leq \mathbf{T} \leq 100$.
1 ≤ length of each string ≤ 5.

Sample

Input	Output
4 ag aa abcde x	Case #1: 4 Case #2: 1 Case #3: 108 Case #4: 1

In sample case #1, the acceptable answer words are aa, ag, ga, and gg.
In sample case #2, the only acceptable answer word is aa.

Question 3:
Christy is interning at Fenixwork Solutions. One day she has to distribute some chocolates to her colleagues. She may have distributed the chocolates unequally. One of the program managers gets to know this and orders Christy to make sure everyone gets equal number of chocolates.
But to make things difficult for the intern, she is ordered to equalize the number of chocolates for every colleague in the following manner,

For every operation, she can choose one of her colleagues and can do one of the three things.

1. She can give one chocolate to every colleague other than chosen one.
2. She can give two chocolates to every colleague other than chosen one.
3. She can give five chocolates to every colleague other than chosen one.

Calculate minimum number of such operations needed to ensure that every colleague has the same number of chocolates.

Input

First line contains an integer denoting the number of testcases. testcases follow.
Each test case has lines. First line of each testcase contains an integer denoting the number of colleagues. Second line contains **N** space separated integers denoting the current number of chocolates each colleague has.

Output

lines, each containing the minimum number of operations needed to make sure all colleagues have the same number of chocolates.

Limits

1<=T<=100
1<=N<=10000

Sample Input

1
4
2 2 3 7

Sample Output

2

Explanation

1st operation: Christy increases all elements by 1 except 3rd one
2 2 3 7 -> 3 3 3 8
2nd operation: Christy increases all element by 5 except last one
3 3 3 8 -> 8 8 8 8