Consider a tuple $P_1, P_2, P_3, \ldots, P_n$. Now consider the following recurrence function.

- $F(P_1, P_2, P_3, \ldots, P_n) = 0$ if any of the P_i is negative or the tuple P is not sorted in non-increasing order.
- $F(P_1, P_2, P_3, \ldots, P_n) = 1$ if all of the P_is is zero.
- $F(P_1, P_2, P_3, \ldots, P_n) = F(P_1 - 1, P_2, P_3, \ldots, P_n) + F(P_1, P_2 - 1, P_3, \ldots, P_n) + F(P_1, P_2, P_3 - 1, \ldots, P_n) + F(P_1, P_2, P_3, \ldots, P_n - 1)$ otherwise.

For example if n is 4 then the value
$F(4, 3, 2, -1)$ is 0 because the last parameter is negative.
$F(4, 3, 2, 5)$ is 0 because the tuple is not sorted from the largest to smallest.
$F(3, 3, 2, 1) = F(3, 3, 2, 1) + F(4, 2, 2, 1) + F(4, 3, 1, 1) + F(4, 3, 2, 0)$
$F(1, 1, 0, 0) = F(0, 1, 0, 0) + F(1, 0, 0, 0) + F(1, 1, -1, 0) + F(1, 1, 0, -1) = 2$
Given the tuple P your task is to calculate the value of $F(P_1, P_2, P_3, \ldots, P_n)$. The result can be very big so output the result $\bmod 1,000,000,009$ (this is a prime number).

Input

Input starts with an integer T ($T \leq 50$), denoting the number of test cases.

Each test case consists of two lines. First line contains n. Second line contains n integers separated by a single space. These are the tuple P. n is between 1 and 1000 inclusive. Each of the numbers in tuple P is between 1 and 1000 inclusive. P will be sorted in non-increasing order.

Output

For each test case output contains a line in the format '`Case` x`:` R' where x is the case number (starting from 1) and R is the value of $F(P_1, P_2, P_3, \ldots, P_n) \bmod 1,000,000,009$.

Sample Input

```
8
3
7 5 4
6
7 7 5 3 2 1
2
4 2
3
7 4 4
4
8 7 5 5
5
7 7 6 5 5
2
8 7
3
6 3 1
```

Sample Output

```
Case 1: 100100
Case 2: 398009117
Case 3: 9
Case 4: 25025
Case 5: 923714728
Case 6: 311516464
Case 7: 1430
Case 8: 315
```