

Greatest String

You are given a string S and an integer Q . You are allowed to perform **at most** Q operations on the string. In one operation, you can change any **vowel** to it's next character (e.g., 'a'->'b', 'e'->'f', 'i'->'j', 'o'->'p', 'u'->'v'). Generate the lexicographically greatest string by performing **at most** Q operations on string S .

Note- Vowels in English alphabet are- 'a','e','i','o','u'.

Input Format:

First line contains an integer T denoting the number of test cases .
For each test case,in first line you will be given the string S and in second line an integer Q (maximum number of operations allowed).

Output Format:

For each test case , print the lexicographically greatest string that can be formed after applying **at most** Q operations on the given string.
Answer for each test case should come in a new line.

Constraints:

$1 \leq T \leq 10$
 $1 \leq |S| \leq 10^5$
 $0 \leq Q \leq 10^5$

String will consist of only **lowercase English** alphabets.

Sample Input

```
2
abcde
3
xyzwu
0
```

Sample Output

```
bbcdf
xyzwu
```

Explanation

For case 1:
We have string "abcde" and we are allowed to perform at max 3 operations, we can form lexicographically greatest string by applying the operation on first and last character of string by changing the string to "bbcdf",which is lexicographically greatest.

For Case 2:
We are not allowed to do any operations, so the answer will be the string itself.

Question 1

Three Equal parts

You will be given a binary array A of length N . (Array filled with 0s and/or 1s)
You need to divide the array in **three parts** (that is , three subarrays) in such a way that all these parts represent **same value** in decimal.
If it is possible to divide the array, output the **common decimal value** modulo **100000007** else output -1.
See Sample test-case for better understanding.
Note - Here binary to decimal conversion is done using standard conversion method, i.e., right to left(Example - 1010 is 10 not 5).

Input format:

First line represents the number of test-cases T .
For each case:
First line represent the number N , size of the array.
Next line consists of N numbers either 0 or 1.

Output format:

For each case, output the required answer in new line.

Constraints:

$1 \leq T \leq 10$
 $3 \leq N \leq 10^5$
 $0 \leq A[i] \leq 1$

Hint: Think greedily.

Sample Input

```
2
5
1 0 1 0 1
5
1 1 0 1 1
```

Sample Output

```
1
-1
```

Explanation

In first case: array can be divided as: [1], [0 1], [0 1]. All these 3 parts represent common value '1' in decimal. Output 1
In second case: array cannot be divided in 3 parts such that they can have common value in decimal. Output -1.
Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time limit: 1.0 sec(s) for each input file