

Problem: Name Tag

Filename: nametag

You've noticed that your teacher always gives a couple extra points to the person in the class with the first last name, alphabetically. You're a bit peeved, since your last name starts with X! However, you realize that your teacher doesn't know everyone's names and relies on the nametags that everyone wears. This gives you a clever idea. You will pick a spot on your nametag and split it into two pieces, a left piece with the first several letters of your last name and a right piece, with the rest of the letters of your last name. Then, you'll swap the order of the two pieces and carefully tape the edges back together! For example, if for the last name XENAZ, you could make the following cut:

XEN | AZ

and when you retape your nametag with the order of the pieces swapped, your teacher will think your last name is AZXEN. (Surprisingly, your teacher is very adept at pronouncing some of the ridiculous names this process creates.)

Write a program so that any student can figure out the first name alphabetically that they could create on their adjusted nametag using this process. Note that in some cases, it might be best to make no cut at all and leave your nametag with your correct last name.

Input

The first line will contain a single positive integer, t , ($t \leq 50$), specifying the number of input cases.

Each test case will be a single string of in between 1 and 1000 uppercase alphabetic characters, inclusive.

Output

For each input case, on a line by itself, output the first name alphabetically that could be created on their adjusted nametag using this process.

Samples

Input	Output
3 GUHA ADAMS MISSISSIPPI	AGUH ADAMS IMISSISSIPP