

Lexicographically Smallest

Taplu and Abhishar loved playing scrabble. One day they thought of inventing a new game using alphabet tiles. Abhishar wrote a string using tiles and gave a set of pairs (i,j) to Taplu. Pair "i, j" (0 based indexing) means that Taplu can swap the i'th and j'th tile in the string any number of times. He then asks Taplu to give the lexicographically smallest string that can be produced by doing any number of swaps on the original string.

Input

First line contains $T(1 \leq T \leq 10)$, the number of testcases.

First line of each test case contains the initial string S . Length of S is $len(1 \leq len \leq 100000)$.

Next line contains the number of pairs $M(1 \leq M \leq 100000)$.

Next M lines contains pairs $i j$ that means i th character can be swapped with j th character.

Note - i and j can be same and same i,j pair can occur twice.

Output

For each testcase output the lexicographically smallest string that can be made from the initial string.

Example

Input:

```
1
lmaf
3
0 1
1 2
2 3
```

Output:

```
aflm
```