CODEFORCES
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HOME   TOP   CATALOG   **CONTESTS**   GYM   PROBLEMSET   GROUPS   RATING   EDU   API   CALENDAR   HELP

PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   STANDINGS   CUSTOM INVOCATION

C. Update Queries

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Let's consider the following simple problem. You are given a string s of length n, consisting of lowercase Latin letters, as well as an array of indices ind of length m ($1 \leq ind_i \leq n$) and a string c of length m, consisting of lowercase Latin letters. Then, in order, you perform the update operations, namely, during the i-th operation, you set $s_{ind_i} = c_i$. Note that you perform all m operations from the first to the last.

Of course, if you change the order of indices in the array ind and/or the order of letters in the string c, you can get different results. Find the lexicographically smallest string s that can be obtained after m update operations, if you can rearrange the indices in the array ind and the letters in the string c as you like.

A string a is lexicographically less than a string b if and only if one of the following conditions is met:

- a is a prefix of b, but $a \neq b$;
- in the first position where a and b differ, the symbol in string a is earlier in the alphabet than the corresponding symbol in string b.

Input

Each test consists of several sets of input data. The first line contains a single integer t ($1 \leq t \leq 10^4$) — the number of sets of input data. Then follows their description.

The first line of each set of input data contains two integers n and m ($1 \leq n, m \leq 10^5$) — the length of the string s and the number of updates.

The second line of each set of input data contains a string s of length n, consisting of lowercase Latin letters.

The third line of each set of input data contains m integers $ind_1, ind_2, \ldots, ind_m$ ($1 \leq ind_i \leq n$) — the array of indices ind.

The fourth line of each set of input data contains a string c of length m, consisting of lowercase Latin letters.

It is guaranteed that the sum of n over all sets of input data does not exceed $2 \cdot 10^5$. Similarly, the sum of m over all sets of input data does not exceed $2 \cdot 10^5$.

Output

For each set of input data, output the lexicographically smallest string s that can be obtained by rearranging the indices in the array ind and the letters in the string c as you like.
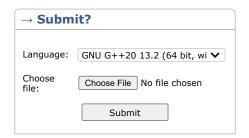
Example

input   Copy

```
4
1 2
a
1 1
cb
4 4
```

Codeforces Round 954 (Div. 3)
Finished

Practice

⭐

→ **Virtual participation**   ⌄

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ **Clone Contest to Mashup**   ⌄

You can clone this contest to a mashup.

Clone Contest

→ **Submit?**

Language: GNU G++20 13.2 (64 bit, wi ⌄
Choose file: Choose File   No file chosen
Submit

→ **Last submissions**

Submission	Time	Verdict
267058947	Jun/23/2024 19:31	Accepted

→ **Problem tags**

data structures   greedy   sortings
No tag edit access

→ **Contest materials**

- Announcement   ✕

```
meow
1 2 1 4
zcwz
7 4
abacaba
1 3 5 7
damn
7 10
traktor
7 6 5 4 3 2 1 6 4 2
codeforces
```

output   Copy

```
b
cwoz
abdcmbn
ccdeefo
```

Note

In the first set of input data, you can leave the array ind and the string c unchanged and simply perform all operations in that order.

In the second set of input data, you can set the array $ind = [1, 1, 4, 2]$ and $c = $ "zczw". Then the string s will change as follows: $meow \rightarrow zeow \rightarrow ceow \rightarrow ceoz \rightarrow cwoz$.

In the third set of input data, you can leave the array ind unchanged and set $c = $ "admn". Then the string s will change as follows:
$abacaba \rightarrow abacaba \rightarrow abdcaba \rightarrow abdcmba \rightarrow abdcmbn$.