3081. Replace Question Marks in String to Minimize Its Value

Description

You are given a string `s`. `s[i]` is either a lowercase English letter or `'?'`.

For a string `t` having length `m` containing **only** lowercase English letters, we define the function `cost(i)` for an index `i` as the number of characters **equal** to `t[i]` that appeared before it, i.e. in the range `[0, i - 1]`.

The **value** of `t` is the **sum** of `cost(i)` for all indices `i`.

For example, for the string `t = "aab"`:

- `cost(0) = 0`
- `cost(1) = 1`
- `cost(2) = 0`
- Hence, the value of `"aab"` is `0 + 1 + 0 = 1`.

Your task is to **replace all** occurrences of `'?'` in `s` with any lowercase English letter so that the **value** of `s` is **minimized**.

Return *a string denoting the modified string with replaced occurrences of* `'?'`. *If there are multiple strings resulting in the* ***minimum value****, return the lexicographically smallest one.*

Example 1:

Input: `s = "???"`

Output: `"abc"`

Explanation: In this example, we can replace the occurrences of `'?'` to make `s` equal to `"abc"`.

For `"abc"`, `cost(0) = 0`, `cost(1) = 0`, and `cost(2) = 0`.

The value of `"abc"` is `0`.

Some other modifications of `s` that have a value of `0` are `"cba"`, `"abz"`, and, `"hey"`.

Among all of them, we choose the lexicographically smallest.

Example 2:

Input: `s = "a?a?"`

Output: `"abac"`

Explanation: In this example, the occurrences of `'?'` can be replaced to make `s` equal to `"abac"`.

For `"abac"`, `cost(0) = 0`, `cost(1) = 0`, `cost(2) = 1`, and `cost(3) = 0`.

The value of `"abac"` is `1`.

Constraints:

- `1 <= s.length <= 10^5`
- `s[i]` is either a lowercase English letter or `'?'`.