

Password

Lili slept overnight at Bibi's house. In a very early morning, Lili wants to borrow Bibi's computer. The thing is, Bibi is still in a sleep. Lili doesn't want to bother and wake Bibi up, she proceed to turn on her computer. As soon as the computer turned on, it requires password to get in. Lili just randomly input a string of password that might make sense. She typed "Bibi123", "Bibi09062002", and so on... . After the fifth try, Lili hasn't figured out the password yet, the operating system gives a hint. The hint says: "The password is longest common prefix followed by longest common suffix of all the name of Bibi family members".

A prefix is a contiguous sequence of characters within a string started from the first characters. For example, "L", "LO", "LOV", and "LOVE" is a prefix of string "LOVE". While suffix is a contiguous sequence of characters within a string that ends on the last characters. For example, "E", "VE", "OVE", "LOVE" is a suffix of string "LOVE". Longest common prefix of strings means the same longest prefix of all strings. Longest common suffix of strings mean the same longest suffix of all strings. For example, string "LOVE" and string "LOTTE", the longest common prefix is "LO", and the longest common suffix is "E". So, if "LOVE" and "LOTTE" is all the name of Bibi family members, the password to the computer is "LOE". In this case, each character is case sensitive.

Right beside the computer, Lili found Bibi family book that contains all the name of Bibi family members. all the name of Bibi family members consist of exactly one word and each characters can be both lowercase or uppercase alphabet letters. Help Lili to figure out what is the password to the computer.

Format Input

The input consists of several lines of input in "testdata.in" file. The first line consists of an integer T indicates the number of testcases. Each testcase consists of one integers N which indicates the numbers of Bibi family members. The next N lines consist of a string S_i which indicates the name of i-th Bibi family member for each line.

Format Output

Output T line with format "Case #X:", where X indicates the testcase number and then followed by a string which is the password to Bibi computer. It's guaranteed that the password will consists of minimum one character.

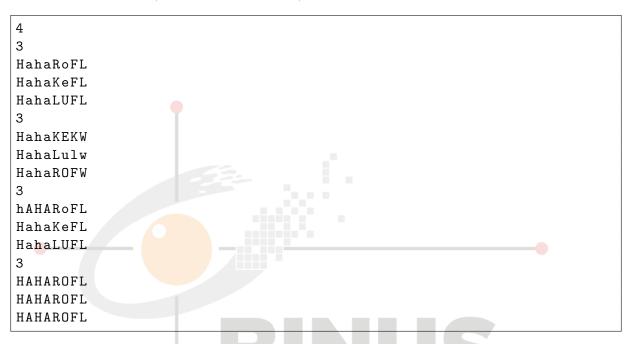
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Constraints

- $1 \le T \le 5$
- $\bullet \ 1 \le N \le 1000$
- $1 \le |S_i| \le 1000$

Sample Input (standard input)



Sample Output (standard output)

Case #1: HahaFL
Case #2: Haha
Case #3: FL
Case #4: HAHAROFLHAHAROFL

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Password

Lili menginap di rumah Bibi. Suatu pagi, Lili ingin meminjam komputer Bibi. Masalahnya, Bibi masih tidur. Lili tidak ingin membangunkan Bibi. Dia memutuskan untuk menyalakan komputer Bibi. Sewaktu setelah menyala, komputer meminta password. Lili mencoba-coba mengetikkan password yang mungkin masuk akal. Lili mengetikkan "Bibi123", "Bibi09062002", dan seterusnya... . Setelah percobaan kelima, Lili masih belum bisa menebak password yang benar, namun operating system memberikan petunjuk. Petunjuknya mengatakan: "Passwordnya adalah prefix terpanjang yang sama (longest common prefix) dilanjutkan dengan suffix terpanjang yang sama (longest common suffix) dari semua nama-nama anggota keluarga Bibi".

Prefix adalah urutan karakter yang bersebelahan (contiguous sequence) dari sebuah string yang dimulai dari karakter pertama dari string tersebut. Contoh, "L", "LO", "LOV", and "LOVE" adalah prefix dari string "LOVE". Sedangkan suffix adalah urutan karakter yang bersebelahan (contiguous sequence) dari sebuah string yang diakhiri dengan karakter terakhir dari string tersebut. Contoh, "E", "VE", "OVE", "LOVE" adalah suffix dari string "LOVE". Prefix terpanjang yang sama dari kumpulan string berarti sebuah string prefix terpanjang yang dimiliki oleh seluruh string yang ada pada kumpulan string tersebut. Suffix terpanjang yang sama dari kumpulan string berarti sebuah string suffix terpanjang yang dimiliki oleh seluruh string yang ada pada kumpulan string tersebut. Contoh, string "LOVE" dan string "LOTTE", prefix terpanjang yang sama adalah "LO", dan suffix terpanjang yang sama adalah "E". Jadi, jika "LOVE" dan "LOTTE" adalah semua nama-nama anggota keluarga Bibi, maka password komputer Bibi adalah "LOE". Dalam kasus ini, semua karakter case sensitive.

Tepat disebelah komputer, Lili menemukan buku keluarga Bibi yang berisi semua namanama anggota keluarga Bibi. Seluruh nama hanya mengandung tepat satu kata, dan setiap karakternya bisa berupa huruf kecil maupun huruf besar dari huruf alfabet. Bantu Lili untuk mencari tau password komputer.

Format Input

Input akan mengandung beberapa baris input dari file "testdata.in". Baris pertama mengandung bilangan bulat T yang menunjukkan banyaknya testcase. Setiap testcase berisi sebuah angka N yang merupakan banyak anggota keluarga Bibi. N baris berikutnya berisi string S_i yang mendeskrispikan nama anggota keluarga Bibi ke-i untuk setiap baris.

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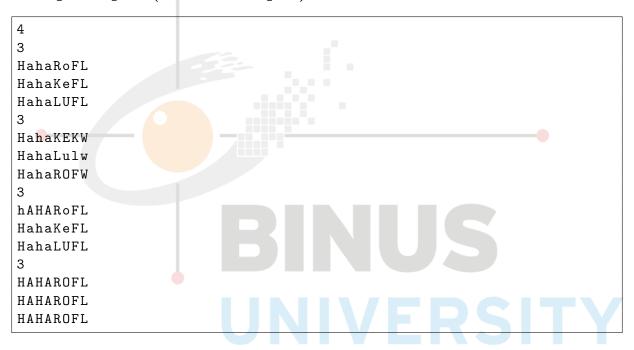
Format Output

Keluarkan T baris dengan format "Case~#X:", dimana X menandakan nomor testcase, kemudian diikuti sebuah string yang merupakan password komputer Bibi. Dijamin password terdiri dari minimal satu karakter.

Constraints

- 1 < T < 5
- $1 \le N \le 1000$
- $1 \le |S_i| \le 1000$

Sample Input (standard input)



Sample Output (standard output)

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Case #1: HahaFL
Case #2: Haha
Case #3: FL
Case #4: HAHAROFLHAHAROFL
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