Incantations-E

http://weijing-z.comp.nus.edu.sg/downloads/incantation_e.pdf

Description

“bomibolomi…”, Master Lotus defeated the Ben priests with his sophisticated and powerful incantations. The story happened hundreds of years ago in Tibet, when Master Lotus was invited by the Tsenpo to preach Buddhism but was opposed by the Bens.

Many Tibetans admired Master Lotus’ powerfulness, but few knew the difficulties he had faced.

That was a war between two parties of incantators: Lotus and the Bens. The Ben priests, like Lotus, were also sophisticated in cursing (i.e evil incatations). In order to defeat them, Lotus must first study the evil incantations of the Bens. He got a series of incantations of the Bens from the Tsenpo (king of Tibet).

However, Master Lotus did not have much time in Tibet. To save time, he wanted to select a **consecutive** subseries of the incantations for study, such that:

1. All the **distinct** evil incantations are contained.
2. The **the total length** of the incantations in the subseries is minimal.

Acer, as a loyal disciple of Lotus, had to help with selecting the subseries. But now, Acer gives the task to you.

Input

The first line of the input contains an integer N, which is length of the series.

This is followed by N lines, each of which contains a string which denotes an incantation. For convenience, Acer has modified the incantations such that they contain only lower case Latin letters.

1<=N<=100000.

Length of each incantation is between 1 and 10 (inclusive).

Output

Output the minimum length of the consecutive subseries which contains all distinct incantations.

Sample Input 1

6

letitbe

mihon

mihon

omi

omi

letitbe

Sample Output 1

18

Explanation: the last 4.

Sample Input 2

6

utilit

an

an

ism

mil

ism

Sample Output 2

16

After words: this is an easier vision (as the letter E suggests) of another problem.