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#include <stdio.h>
#include <string.h>

int main(){
    char pre[500], str[500];
    int n, i, j, len;
    scanf("%d\n", &n);

    // Loop invariant: at the beginning of the i-th iteration,
    // len contains the length of the longest common prefix seen
    // thus far in the first (i-1) strings
    for(i = 1; i <= n; i++){
        gets(str);
        if(i == 1){ // First string, nothing to compare to
            strcpy(pre, str); // The string is its own prefix substring
            len = strlen(pre);
            continue; // Nothing more to do for first iteration
        }

        j = 0;
        // Keep counting how many prefix locations match
        // among the prefix string and the current string
        while(pre[j] == str[j] && j < len)
            j++;
        pre[j] = '\0'; // Shorten the prefix string if needed
        len = strlen(pre); // Update its length
    }

    if(len == 0)
        printf("EMPTY");
    else
        printf("%s", pre);

    return 0;
}
```