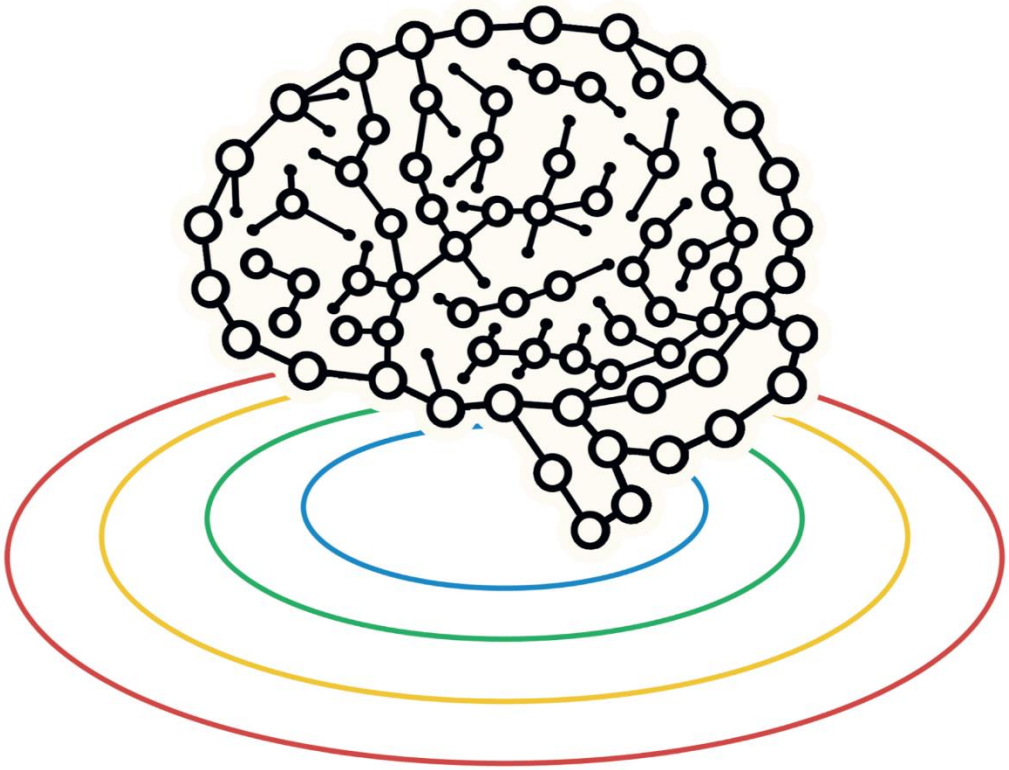
Association for Computing Machinery
University of the Philippines Diliman Student Chapter, Inc.



ALGOLYMPICS 2022

UP ACM PROGRAMMING COMPETITION

PRACTICE PROBLEMS

Sample Problem

Space Bar Space

Time limit: 2 seconds
Memory limit: 256 megabytes

This tells a story in a galaxy far, far, away...

The characters of our story want to enter a certain location.

Numerous characters are lining up to hang out at the Space Bar, but not everyone can be given entry due to the current situation. Very important characters have been given special attention in the Space Bar, but outside, the situation isn't as good. To observe the situation, the *Space Broadcasting System* (SBS) has been given exclusive access to cover and monitor the space outside the Space Bar.

Through advanced Star Treking technology, SBS has determined that some characters have been reached by an infection. The infection spreads easily, such that an infected character will immediately pass on the infection to a character that is beside it.

Due to this, SBS and some of its partners decided to launch an advertisement campaign to promote awareness and control the spread of the infection.

"SPACE BETWEEN SOCIALIZING! SANITIZE BY SOAP! SHIELD BEFORE SPEAKING!"

Hopefully, this campaign will encourage the characters of our story to sanitize, wear proper safety gear, and of course, to keep some *space* from one another to prevent the spread of the infection.

However, the characters do not necessarily follow these recommendations and still don't always keep some space between each other, eventually worsening the situation. To check this, SBS is using c cameras to monitor the characters queueing up to enter the Space Bar and see if they are keeping space between each other. Each camera monitors one queue.

Given this information, can you determine the characters who will be infected eventually? Again, an infected character will immediately infect any character beside it, while the infection cannot propagate through empty space.

Input Format

The first line contains an integer c, the number of cameras. Then c lines follow, one for each camera.
For each camera, the line will contain letters or spaces representing the queue monitored by this camera. If a character is uppercase, it is infected. One space character (ASCII code 32) represents empty space which the infection can't use to propagate. There are no other whitespace characters, except for the newline at the end of each line.

Constraints

- $1 \leq c \leq 300$
- Each line contains only English letters and the space character (ASCII code 32).
- Each line is up to 300 characters long.
- Each line does not start or end with a space.

Note: Some problems have large input file sizes, so it's recommended to use fast I/O.

- In Java, use BufferedReader and PrintWriter.
- In C/C++, use scanf and printf.

Output Format

Print one line for each camera.

- If a character is infected or eventually becomes infected, print it as uppercase.
- Keep the spaces as is; do not add any leading, trailing, or extra space.

Sample input	Sample Output
4 K e e p U r D i s t a n c e Please follow Keep good hygieNe eOoHw pHoWzZzz	K e e p U r D i s t a n c e PLEASE follow KEEP good HYGIENE EOOHW PHOWZZZZ