

Problem 2 : Closest Path

Statement

Grisha's first wife is the one responsible for killing Carla Jaeger, Eren's mom. The so-called Smiling **Titan who ate** Carla was recently revealed to be Dina Fritz, the first wife of Grisha. After enlisting in the military, Eren is seeking revenge for his mother's death.

One day Dina gets imprisoned in this mysterious place out of the big forest, Eren wants to reach her while she is trying to escape, we need the concised path with the least number of steps that Eren should take or else Dina is gone and he will never catch her up!

Given a string composed from the following characters representing the path to the target:

- Z: step up
- S: step down
- Q: step left
- D: step right


Output four integers counting the number of steps in each direction.

Input

The path to the targeted place where Dina Fritz is hidden : String[1:10⁶] of characters (either Z, Q, S or D).

Output

Four listed integers as a string corresponding the number of steps **UP** ,number of steps **DOWN**,number of steps **LEFT** ,number of steps **RIGHT**.



Ps: The output numbers should be **separated with white spaces!**

Example

Input	Output
DSZSD	0 1 0 2