

# Acronym

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# Statistics

- Attempts: 76
- Max: 100
- Mean: 44.092

• Subtasks:

15: 62	16: 36	17: 27	14: 29	10: 28	28: 25
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- Relatively easy problem
- 類題(Tung, 2016)

# Problem Description

- Given an acronym (a string consisting of capital English letters) and N guesses (a phrase consisting of one or more words)
- A guess is reasonable if it is possible to choose the first letters of several words of the phrase to form the acronym
- E.g. for the acronym HKOI, “Hong Kong Olympiad in Informatics” is a reasonable guess, and “k h o i” is not reasonable guesses
- Determine whether the guesses are reasonable

# Problem Description

- If a guess is reasonable, output a standard form of it:
  - For the chosen words, their first letters are capitalized.
  - All other letters are small letters.
  - The capital letters form the acronym.
- E.g. for the acronym HKOI and the guess "hOnG KONG olimpiada en informatica", a standard form will be "Hong Kong Olimpiada en Informatica".

# Constraints

- Let  $N$  denote the number of guesses
- Let  $L$  denote the length of acronym
- Let  $G_i$  denote the length of the  $i^{\text{th}}$  guess
- Let  $W_i$  denote the number of words of the  $i^{\text{th}}$  guess
- $1 \leq L \leq 100, 1 \leq N \leq 100, 1 \leq G_i \leq 5000$

# Subtask 1 (15 points)

- $L = 1, N = 1, G_i = 1$
- Only one letter in the acronym
- One guess containing one letter only
- Capitalize the letter in the guess
- Check whether the letter is same as the one in the acronym

## Subtask 2 (16 points)

- $L = 1, W_i = 1$
- Only one letter in the acronym
- Guesses contain one word only
  
- Capitalize the first letter and convert other letters into small letters
- Check whether the first letter is same as the one in the acronym

## Subtask 3 (17 points)

- $L = 1$
- Only one letter in the acronym
- The first letter of words must be either the first letter in the phrase or after a space
- Convert all letters into small letters first
- Find the first letter that matches with the one in the acronym



## Subtask 4 (14 points)

- $W_i = L$ , All guesses are reasonable
- Convert all letters into small letters first
- Capitalize the first letter of all words

## Subtask 5 (10 points)

- $W_i \leq L$
- Count the number of words
- If  $W_i < L$ , then the guess cannot be reasonable
- If  $W_i = L$ , then check whether the first letter of the words matches with the corresponding letter in the acronym

# Subtask 6 (28 points)

- No additional constraints
- Consider the first letter of the acronym
- If more than one first letter of words match with it, it is always optimal to choose the first one
- Less letters are eliminated -> More letters can be chosen later
- HKOI
- Hong Kong Happy Olympiad in Informatics

## Subtask 6 (28 points)

- Same for other letters in the acronym
- Picking earlier can provide more choices for the remaining acronym
- For each letter in the acronym, choose the first matching letter that is after the last chosen one
- Time complexity:  $O(NLG)$  (or  $O(NG)$  with better implementation)

# Common mistakes

- string type in Pascal can only store 255 characters
  - Use ansistring instead, or
  - **Use C++ instead**

Thank you