

Green Programming Competition: Dubitare

Due 1 second before the class on Oct. 26, 2017

Description

The word “dubitare” is “to doubt” in Latin. The Latin alphabet is a subset of English alphabet, so we can easily type Latin on modern computer. Your friend, Eve, recently has been very interested in Latin. However, she does not have any Latin-English dictionary. Therefore, she collected many articles in English or in Latin about some specific topic. Her plan is to compute the frequency of each word appearing in the articles, and use the statistics to help her to map Latin words into English words. Please write a program to help her.

Input Specification

The first line of input contains an integer T ($T \leq 40$) indicating the number of test cases. For each test case, it starts with a line containing three integers L, a, b ($L \leq 300, 1 \leq a \leq b \leq 100$). Each of the following L lines contains several words separated by spaces. You may assume:

1. There are at most 1200 characters including spaces.
2. All words consist of English alphabets.
3. All alphabets are in lower cases.

Output Specification

For the i^{th} test case, output “Testcase # i :” first. Then output the $a^{\text{th}}, (a+1)^{\text{th}}, \dots, b^{\text{th}}$ most frequent words and their frequency, respectively. For example, if “cat” appears 15 times, then you should output “cat:15” in a line. If two words have the same frequency, then the word is considered as more frequent if it comes before another in the dictionary. Output a blank line between two test cases.

Sample Input

```
3
1 2 3
i am who i am
2 3 4
      sore ha sore          kore ha kore
kore da      kore ha gyakkyou
5 1 8
```

the classical latin alphabet also known as the roman alphabet is a writing system which evolved from the cumaeen version of the greek alphabet the cumaeen script was descended from the phoenician alphabet the cumaeen alphabet was adopted and modified by the etruscans who ruled early rome the etruscan alphabet was in turn adopted and further modified by the ancient romans to write the latin language

Sample Output

Testcase #1:

i:2

who:1

Testcase #2:

sore:2

da:1

Testcase #3:

the:11

alphabet:6

cumaeae:3

was:3

adopted:2

and:2

by:2

from:2

Program Submission

Please submit a zip file that contains the following files to TRACS.

1. A summary report (in the .doc or docx format), which should clearly demonstrate the performance and energy consumption of each version of your code (you can show it in a table). In addition, you should clearly state the details of optimizations you have made to improve the energy efficiency of your code.
2. A ppt file (use the presentation template) that provides the measured performance and energy consumption of each version of your code as well as a brief summary of your optimizations techniques. You can also share the experiences and lessons you learned when optimizing your code.
3. The source code of each version (at least two versions – the basic version and the optimized version). Make sure the name of each version of your source code follows the name you use in your summary report and slides.

Note: If the Greencode website (<https://greencode.cs.txstate.edu/>) is not working during my absence, please contact my research assistant Michael Baum (mcb114@txstate.edu) for prompt help.