CS302

Assignment 6: Word Classification

Description

Our past UNLV professors worked on a series of excellent publications, but the categories of each publication has been lost in time. It is our job to maintain this university's excellence by classifying each publication into a category. We classify each work by looking at specific words in each publications' description. So for example graph theory type publications would have words like: node, edge, distance, etc. Publications on computational geometry have words like: point, convex, polygon, etc.

But manually going through each publication would take too much time since there were many papers published over the years. Thus we will need to use a hash map which enhances word lookup times. Your task is to write a program that takes in a series of words that belong in a category and a description of a publication and categorize each publication.

Input

The input contains a positive number $\mathcal{T}$ that denotes the amount of test cases. Each test case starts with a positive number $\mathcal{C}$ for the amount of categories. For each category, a line that contains $\mathcal{N}$ that denotes the category name along with two numbers $\mathcal{W}$ (the amount of words in the category) and $\mathcal{P}$ (the amount of different words that should appear in the description so the problem fits the category). Then there will be a series of lines that contains a description of a problem, the description ends on a blank line.

Output

For each input set, output the description's category, if the description fits more than one category, output them all in the order they appear in the input separated by a space. If the description does not fit any category, output 'SQF Problem' without the quotes.

Contents of Main

You will need to figure out the algorithm. I would suggest you first start with a brute force approach where you would use linear search to search for anything and then you need to use an `unordered_map` to speed up the search time. You might need to use more than one `unordered_map` for this problem.

Specifications

- Must use an `unorederd_map`
- Program must work with the input provided on code grade
- No linear searching of any kind is allowed (all searching must use a hash map)

Sample Run

```
$ ./a.out
Enter filename: input01.txt
Test case 1
SQF Problem

$ ./a.out
Enter filename: input02.txt
Test case 1
Math
Physics
CompSci

$ ./a.out
Enter filename: input03.txt
Test case 1
SQF Problem
Test case 2
Geometrical
Test case 3
SQF Problem
```

Submission

Submit your source file to code grade by the deadline

References

- Supplemental Video https://youtu.be/3hR6bLK35eM
- Link to the top image can be found at *https : //www.pngpix.com/download/pile−paper−png−image*