Finding Prefixes and Suffixes

Team ID: 36
Team Member: B04203002 B04203036 B05902025

1.   Topic

Trie

2.   Description

Prefixes and suffixes are sets of letters that are added to the beginning or the end of other words. They are usually related to the meaning of the word. If there is a way to generate the prefixes and suffixes, it would be useful for studying language.

字首跟字尾(以下用字根代表)是一組出現在一個字的開頭或結尾的字串，通常字根會和這個字的意義有關係，如果能夠自動判別字根，將會幫助研究一門新的語言。

Problem definition
Given a list of N different words, an integer T, you should write a program which generates the prefixes and suffixes of the words from this list.

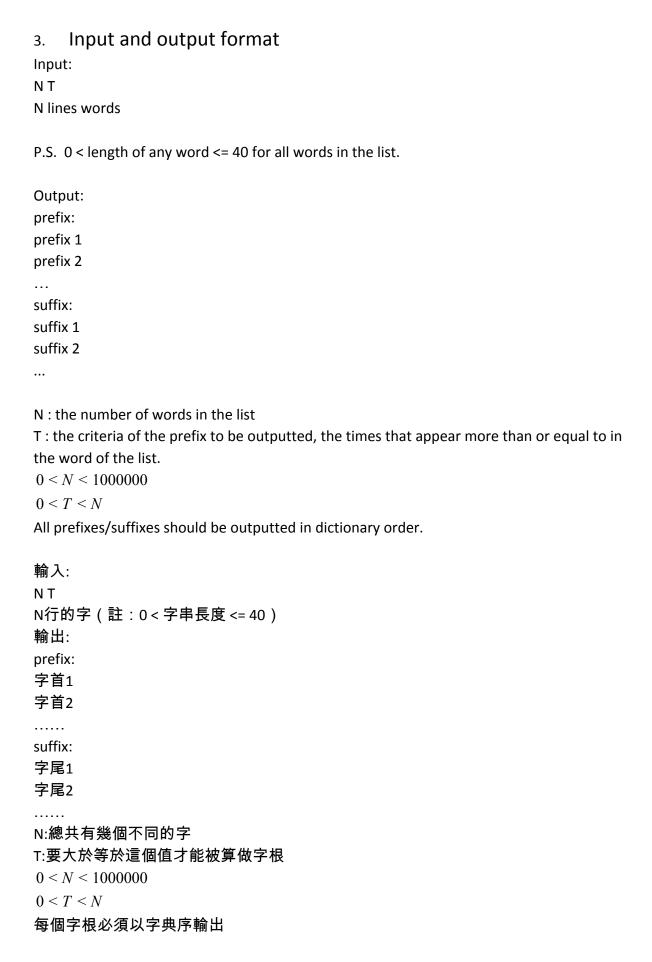There are 3 conditions for this output.
The first condition is that : for each prefix or suffix, it needs to occur more than or equal to T times in this list.

The second condition is that : for each prefix or suffix, it cannot be contained by the prefix or suffix being outputted. E.g., if there is a prefix "tri-" outputted, tr- nor t- then could be outputted since they are contained by tri-.

The third condition is that : for all of prefixes or suffixes being outputted, they should be outputted by dictionary order.

給定N個字，還有一個整數T，你的程式要能找出在這N個字中的字根
字根必須符合下面三個規則:
1.每個字根必須在這些字中出現不小於T次(字首字尾分開計算)
2.字首/字尾不能被包含於另外一個字首/字尾，例如:tri-是個字首，則tr-和t-雖然出現超過T次，也不能算成一個字首（不能為字首的字首）
3.所有prefix字根的輸出必須符合字典序 suffix亦同

3. Input and output format

Input:

N T

N lines words

P.S. 0 < length of any word <= 40 for all words in the list.

Output:

prefix:

prefix 1

prefix 2

…

suffix:

suffix 1

suffix 2

…

N : the number of words in the list

T : the criteria of the prefix to be outputted, the times that appear more than or equal to in the word of the list.

$0 < N < 1000000$

$0 < T < N$

All prefixes/suffixes should be outputted in dictionary order.

輸入:

N T

N行的字（註：0 < 字串長度 <= 40）

輸出:

prefix:

字首1

字首2

……

suffix:

字尾1

字尾2

……

N:總共有幾個不同的字

T:要大於等於這個值才能被算做字根

$0 < N < 1000000$

$0 < T < N$

每個字根必須以字典序輸出

Hint:

"Be careful for the memory being used!!"

There might be two same words in the list, just view them as two different words!

4. Sample input and output

Input:

13 3

prepare

coworker

prevent

preorder

apology

employment

complicated

appointment

fisherman

container

application

cabbage

exercise

Output:

prefix:

ap

co

pre

suffix:

e

ent

er

5. Time and memory limit

Time limit: 2.0 second.

Memory limit: 512MB

Testdata 1 (20%)

Testdata 2 (20%)

Testdata 3 (20%)

Testdata 4 (20%)

Testdata 5 (20%)

https://drive.google.com/file/d/0Bw6UUNZgryIzZHdEMXI3cGRBQnM/view?usp=sharing