

ST-Olaf / UTBM Programming Contest Fall 2103

Subject N°1 The Scrabble

This is the hard problem of the contest

Usage of internet is allowed.

Given a “hand” of letters, a dictionary and the value of each letter. The problem is to find the combination of words making the highest score.

A hand is composed of more than 10 lowercase ascii letters (an average number would be 100 but we would increase this number in case of a draw between two teams)

The dictionary will be a file containing one word per line. (roughly 90 000 words)

The different values (one for each letter) will be given in the file « **lettersvalue** », each line will contain a pair of the following form :

z34

example:

a1

b2

c4

Using all the letter you can in your hand and only words present in the dictionary, You will therefore have to form the combination of words making the highest score you can

As an example :

Given the dictionary : « *I am a poney hey* » the hand : « *zeyhdgtriopn* » and the letter values <l4 p3 o2 n1 e1 y5 h1>

The highest combination is : “I poney” with a score of 16

The combination “I hey” is also possible but would only score 11 points

Authorized programming languages are: **C/C++, Java, Python**

The program should run on linux (no .net funtions).

For C/C++ developpers, provide you sources along with a makefile.

The runnable should be called **solution.bin**

Inputs :

- « **lettervalues** » : contains the value of each letter .It will be composed of **26** lines, with the form *a2 (lettervalue)*
- « **dictionary** » : contains the whole dictionary with one word per line.
- « **hand** » contains one line the letters

Ouputs :

The output should be written to the file **solution** which will contain every word of the best combination you found with one word per line

exemple:

I

poney

>e will check if this combination is valid considering the dictionary and the hand. If it is, we will compute its score.

Please send the solutions compressed into a file called

TEAM<teamNumber>S<SubjectNumber>.<compressionformat>

and send it by email when done to **rondele.utbm@gmail.com** at **12pm** (french hour) or **5pm** (American Hour).

Don't hesitate to send us something before the end of the contest to see if we can run it !
We will take into account the last file you send us!

We will run every program send in time and will try to provide the result within 30 minutes