

PROGRAMMING ASSIGNMENT 3

Submission Date : 06.12.2019

Due Date : 20:12:2019

TA : Necva BÖLÜCÜ

Accept your *3rd Assignment*.

Introduction:

In this experiment, you will get familiar with file operations, lists and dictionaries while you implement jumbled word game. Jumbled word is a game in which player has to rearrange the letters of the word to make a correct meaningful word and calculate the score of the words in 30 seconds.

Assignment:

Your assignment is to develop a word game. There are two input files: a dictionary that consists shuffled letters with possible words separated with colon, and a dictionary LETTER_VALUES that maps each letter to its letter value separated with colon.

Format of the input files are given below:

HSTAAME:HAMASET,HASTA,MATAH,HAMSE,HASAT,TASMA,MASAT,TEMAS,TAMAH,SAHTE,HASET
RİŞMEEH:EMİR,MEŞE,EŞME,ŞERH,ŞEHİR,ERİME,HEMŞERİ,HEMŞİRE,REŞME,ERMİŞ
RNSEİKA:SAKİN,ERKAN,KESİN,NESİR,ARSENİK,KANSER,ASKERİ,KARİNE,İNKAR
OTKBİNA:KONİ,NAKİT,BOTANİK,AKİT,TONİK,BAKİ,BANT,OKTAN,BANKO
TKOLUDS:STOK,TOK,DOKU,DOLU,OKUL,OLUK,DOSTLUK,OTLUK,SOLUK,DOST
İTNHAİM:HANİ,HAMİ,İTİNA,NİHAİ,İTHAM,İMTİHAN,TAHMİNİ,TAHİN,İMTİNA
ATKAMLÜ:MÜLK,ALMAK,ATMAK,KAMA,TAKMA,KATMA,MÜLAKAT,KÜLT,TAKLA
KENİOSK:KESKİ,EKSİK,KESİN,SİNEK,KONİK,ENİK,KESKİN,KESİK,SİKKE,EKİNOKS
DMİZİAH:HADİ,İMZA,AZİM,HAİZ,İZAH,HİZA,DAİMİ,İZDİHAM,MİZAHİ,MİZAH,DİZİM
ÜTECMRE:ETME,ÜCRET,CEMRE,TERCÜME,TÜREME,ÜRETME,METRE,MERET,CÜRET,TÜMCE

Figure 1: Shuffled letters and correct forms

A:1
B:3
C:3
D:2
E:1
F:4
G:2
H:4
I:1
J:8
K:5
L:1
M:3
N:1
O:1
P:3
Q:10
R:1
S:1
T:1
U:1
V:4
W:4
X:8
Y:4
Z:10

Figure 2: Letters and their corresponding scores

Firstly, program reads the files to create dictionaries. Then, program takes shuffled letters from the file one by one. For each shuffled letters, there are possible words. The player will guess the words by using each letter at most once. Some letters may remain unused (these won't be scored). In 30 seconds, the player will guess words as many words as he/she can guess. The program will check two condition: 1- Is the the guessed word is in the dictionary, 2- Is the word is guessed before?. If the word correspond these two condition, the player will calculate the score of the words that is the sum of the scores for each word formed.

The scoring is explained in detail below.

The Scoring

The score for a word is the sum of the points for letters in the word, multiplied by the length of the word. Letters are scored as in Scrabble; A is worth 1, B is worth 3, C is worth 3, D is worth 2, E is worth 1, and so on. There is a dictionary `LETTER_VALUES` that maps each letter to its letter value.

For example, 'BANT' would be worth 24 points $((3+1+1+1)$ for the four letters, then multiply by $\text{len}(\text{'BANT'})$ to get $(3+1+1+1)*4 = 24$).

As another example, if shuffled letter is 'HSTAAME' and the player makes the words 'HASTA, MATAH, HAMASET' on the try, it would be worth $(4+1+1+1+1)*5=40$ for 'HASTA', $(3+1+1+1+4)*5=50$ for 'MATAH', and $(4+1+3+1+1+1+1)*7=84$ for 'HAMASET'. The total score would be $40+50+84=174$

```
D:\bbm103-2019-2020\assignment3>py assignment3.py correct_words.txt letter_values.txt
Shuffled letters are: hstaame Please guess words for these letters with minimum three letters
Guessed Word: hasta
You have 27 time
Guessed Word: hasta
This word is guessed before
You have 26 time
Guessed Word: tamah
You have 24 time
Guessed Word: hamaset
You have 22 time
Guessed Word: hasat
You have 18 time
Guessed Word: matah
You have 14 time
Guessed Word: masat
You have 12 time
Guessed Word: temas
You have 9 time
Guessed Word: haset
You have 6 time
Guessed Word: haset
This word is guessed before
You have 2 time
Guessed Word: haset
This word is guessed before
You have 0 time
Score for hstaame is 374 and guessed words are: hasta-tamah-hamaset-hasat-matah-masat-temas-haset
```

Figure 3: Screenshot of the program for given inputs

The outputs for some conditions are given below:

```
G:\bbm103-2019-2020\assignment3>py assignment3.py correct_words.txt
You must write two arguments for this program
```

Figure 4: Output for the command line arguments

```
G:\bbm103-2019-2020\assignment3>py assignment3.py correct_words.txt letter_values.txt
Shuffled letters are: hstaame Please guess words for these letters with minimum three letters
Guessed Word: hasta
You have 26 time
Guessed Word: hasta
This word is guessed before
You have 24 time
Guessed Word:
```

Figure 5: Output for the same guessed words

```
G:\bbm103-2019-2020\assignment3>py assignment3.py correct_words.txt letter_values.txt
Shuffled letters are: hstaame Please guess words for these letters with minimum three letters
Guessed Word: hstaa
your guessed word is not a valid word
You have 27 time
Guessed Word:
```

Figure 6: Output for the guessed word when it is not valid word

Grading

- Taking arguments from command line: 5
- Reading files: 10
- Creating dictionaries: 20
- Checking word conditions: 35
- Calculating score: 20
- Printing total score: 10

Academic Integrity

All work on assignments must be done individually unless stated otherwise. You are encouraged to discuss with your classmates about the given assignments, but these discussions should be carried out in an abstract way. That is, discussions related to a particular solution to a specific problem (either in actual code or in the pseudocode) will not be tolerated. In short, turning in someone else's work, in whole or in part, as your own will be considered as a violation of academic integrity. Please note that the former condition also holds for the material found on the web as everything on the web has been written by someone else.

Important Notes

- Do not miss the submission deadline.
- Compile your code on `dev.cs.hacettepe.edu.tr` before submitting your work to make sure it compiles without any problems on our server.
- Save all your work until the assignment is graded.
- The assignment must be original, individual work. Duplicate or very similar assignments are both going to be considered as cheating. You can ask your questions via Piazza and you are supposed to be aware of everything discussed on Piazza. You cannot share algorithms or source code. All work must be individual! Assignments will be checked for similarity, and there will be serious consequences if plagiarism is detected.
- You may assume that the input `les` will be given as command-line arguments in the following order.

- You must submit your work with the file hierarchy as stated below:

→ <assignmnet3.py>