**Assignment 5**

Chapter 5 has an example about analyzing the frequency of the words in a text file. Although the chapter provided the structure of a design, the implementation was incomplete. So in this assignment, you ***design and implement*** the same scenario to the following extent:

* This word-frequency analyzer has the following graphic user interface (GUI), which should be self-explanatory.
* The word-frequency counting should not be case sensitive.
* The program provides services for counting the number of unique words, and displaying word frequency of any given word in the text (as demonstrated below).
* The program also provides a service to sort the words based on their frequencies from most frequently occurring to least frequently occurring (and the result would be displayed in the left panel).

***Get File & Analyze***

***Advice.txt***

Go placidly amid the noise and haste, and remember what peace there may be in silence. As far as possible without surrender, be on good terms with all persons. Speak your truth quietly and clearly; and listen to others, even the dull and the ignorant; they too have their story. Avoid loud and aggressive persons; they are vexations to the spirit. If you compare yourself with others, you may become vain and bitter; for always there will be greater and lesser persons than yourself. Enjoy your achievements as well as your plans. Keep interested in your own career, however humble; it is a real possession in the changing fortunes of time. Exercise caution in your business affairs; for the world is full of trickery. But let this not blind you to what virtue there is; many persons strive for high ideals; and everywhere life is full of heroism. Be yourself. Especially, do not feign affection. Neither be cynical about love; for in the face of all aridity and disenchantment it is as perennial as the grass. Take kindly the counsel of the years, gracefully surrendering the things of youth. Nurture strength of spirit to shield you in sudden misfortune. But do not distress yourself with dark imaginings. Many fears are born of fatigue and loneliness. Beyond a wholesome discipline, be gentle with yourself. You are a child of the universe, no less than the trees and the stars; you have a right to be here. And whether or not it is clear to you, no doubt the universe is unfolding as it should. Therefore be at peace with God, whatever you conceive Him to be, and whatever your labors and aspirations, in the noisy confusion of life keep peace with your soul. With all its sham, drudgery, and broken dreams, it is still a beautiful world. Be cheerful. Strive to be happy.

**Type a word here, hit “Enter”**

**Word frequency is displayed here**

Number of unique words: 171

a 5

about 1

achievements 1

affairs 1

affection 1

aggressive 1

all 3

always 1

amid 1

and 16

are 3

aridity 1

as 7

aspirations 1

at 1

avoid 1

be 11

beautiful 1

become 1

beyond 1

bitter 1

blind 1

born 1

broken 1

business 1

but 2

career 1

caution 1

changing 1

cheerful 1

child 1

clear 1

clearly 1

compare 1

conceive 1

confusion 1

counsel 1

cynical 1

dark 1

discipline 1

disenchantment 1

distress 1

do 2

doubt 1

dreams 1

drudgery 1

dull 1

enjoy 1

especially 1

even 1

everywhere 1

exercise 1

face 1

far 1

fatigue 1

fears 1

feign 1

for 4

fortunes 1

full 2

gentle 1

go 1

god 1

good 1

gracefully 1

grass 1

greater 1

happy 1

haste 1

have 2

here 1

heroism 1

high 1

him 1

however 1

humble 1

ideals 1

if 1

ignorant 1

imaginings 1

in 7

interested 1

is 8

it 5

its 1

keep 2

kindly 1

labors 1

less 1

lesser 1

let 1

life 2

listen 1

loneliness 1

loud 1

love 1

many 2

may 2

misfortune 1

neither 1

no 2

noise 1

noisy 1

not 4

nurture 1

of 10

on 1

or 1

others 2

own 1

peace 3

perennial 1

persons 4

placidly 1

plans 1

possession 1

possible 1

quietly 1

real 1

remember 1

right 1

sham 1

shield 1

should 1

silence 1

soul 1

speak 1

spirit 2

stars 1

still 1

story 1

strength 1

strive 2

sudden 1

surrender 1

surrendering 1

take 1

terms 1

than 2

the 16

their 1

there 3

therefore 1

they 2

things 1

this 1

time 1

to 8

too 1

trees 1

trickery 1

truth 1

unfolding 1

universe 2

vain 1

vexations 1

virtue 1

well 1

what 2

whatever 2

whether 1

wholesome 1

will 1

with 7

without 1

world 2

years 1

you 8

your 7

yourself 5

youth 1

171

***Sort words based on frequency***

**Some hints on design and implementation:**

* The elements / components you designed should be “detachable”, meaning that when a console user interface is desirable, the GUI component can be swapped out with minimal modification to the program.
* For the display of the text and word-frequency counts, you feel free to use “text area” component; but it might be nicer to use split-pane component. You can find some references and code examples at: <http://docs.oracle.com/javase/tutorial/uiswing/components/splitpane.html>.
* The book suggested a class: WordFrequencyCollection. But you feel free to use an existing collection from the Java library such as HashMap / TreeMap, or ArrayList.
* How to get input from a file? The following code demonstrates:

try {

File f = new File("Advice.txt");

Scanner sc;

sc = new Scanner(f);

sc.useDelimiter("[^a-zA-Z']+");

while(sc.hasNext()) { ….. sc.next() ….. }

} catch(IOException e) {

System.out.println("Unable to read from file.");

}

Note that the “Scanner” has a method *useDelimiter(pattern match string)* to allow “the scanner” to extract only the words, not punctuations, white spaces, etc. A scanner object works like an iterator to allow processing of the input one word at a time (see above demo loop). The file needs to be a text file with extension .txt (Notepad file), and to be saved in the project folder (the other folder is .metadata folder). (BTW, pattern patching is important in CS. For instance, how would you confirm whether a phone number or a zip code is entered in an expected format? You can learn about Java Regular Expressions (although not necessarily for this assignment) at <http://www.vogella.com/tutorials/JavaRegularExpressions/article.html>.)

**The deliverables:**

* Class and sequence diagrams (software made)
* Working code
* Your thought process of designing the elements and their interaction – Did diagrams help the coding? Did you have to refactor (meaning that you revised your design later for some reason)?