C212/A592 Lab 6

Intro to Software Systems

Instructions:

- Review the requirements given below and Complete your work. Please compress all files (including main to test your work) into a zip file and submit it through Canvas.
- The grading scheme is provided on Canvas

Frequency Counter

We will be developing a program that takes a text file as input and has methods to return the number of total words, the number of distinct words, the number of lines, and keeps track of all the distinct words and their frequency. The name of the file being processed should also be stored in an instance field

1. Create a class named *FrequencyCounter*
   The constructor for this class has the following signature *FrequencyCounter(String filename)* were filename is the name of the file that will be processed.
   - The constructor should process the file and gather all the data required as described above and store the data in instance fields for the class
   - Use another ArrayList to keep track of distinct strings and the number of times each one occurs
     - To do this, create another class to hold this data
     - The instance fields of this class should be private, thus you will need to use getter and setter methods
       e.g., this class will need a *String* instance field, *Count* instance field and a *length* instance field.
     - The ArrayList<> will be instantiated with this type e.g. if your class was name StringFrequency then the ArrayList declaration would look like this ArrayList<StringFrequency> frequencies;
   - We have not covered exception handling yet, but you will need to use them when opening a file, else the Java compiler will throw an error related to *FileNotFoundException*, so I will provide a template on how to open a file with a *try* and *catch* block below.

```
import java.io.File;
import java.io.FileNotFoundException;

try {
        // create new File object and pass to the scanner
        Scanner scan = new Scanner(new File(file));

        // Use Scanner methods have you normally have to process the file
```

```
            // Gather all the data you need in the try block, and store in instance
            // fields
        } catch (FileNotFoundException e) {
            e.printStackTrace();
    }
```

- There are two files onCanvas Lab 6 folder, tinyTale.txt and Tale.txt
- Download these files, make sure to keep them as txt files, and save them in the same directory as the class file
- When creating a FrequencyCounter instance, simply pass the name of the file
  FrequencyCounter tinyTale = new FrequencyCounter("tinyTale.txt");

2. After populating all the data in the constructor, create methods to return the following data
    a. Total number of words
    b. Number of Lines
    c. Number of distinct words
    d. The distinct words, their length and how many times they occur

Example 1:

Here is what the output of what my FrequencyCounter class output for tinyTale.txt:

tinyTale.txt has 60 number of words – Method from step c
tinyTale.txt has 5 number of lines. – Method from step b
tinyTale.txt has 20 distinct words. – method from step a

Below is the output from method from step d
It {Word length: 2}: 10
was {Word length: 3}: 10
the {Word length: 3}: 10
best {Word length: 4}: 1
of {Word length: 2}: 10
times {Word length: 5}: 2
worst {Word length: 5}: 1
age {Word length: 3}: 2
wisdom {Word length: 6}: 1
foolishness {Word length: 11}: 1
epoch {Word length: 5}: 2
belief {Word length: 6}: 1
incredulity {Word length: 11}: 1
season {Word length: 6}: 2
light {Word length: 5}: 1

darkness {Word length: 8}: 1
spring {Word length: 6}: 1
hope {Word length: 4}: 1
winter {Word length: 6}: 1
despair {Word length: 7}: 1

Example 2:
tale.txt has the following data. I excluded results from step d since there is 10679 distinct words, but looks the same as from tinyTale.txt:

tale.txt has 135635 number of words
tale.txt has 16039 number of lines.
tale.txt has 10679 distinct words.

and so on …