

# CST8130: Data Structures --- Assign #4- Dictionary

Using **TreeMap Generic** Data Structure

**DUE: Tuesday December 6th by 10PM SHARP!**

## Problem Description:

In this assignment, you will write a program which builds a tree "dictionary" of words that were found in a piece of text and keep track of how many occurrences there were of each of the words.

## Basic Requirements:

- You must have a menu in your main method with the following options:
  - Reset the tree to empty
  - Read a string of text from the keyboard and add to the dictionary (optional)
  - Read text from a file add to the dictionary
  - Search for a word and show how many times it occurred in the text
  - Display the number of nodes in the dictionary
  - exit
- You must use the collection class `TreeMap` to implement this assignment. A description of the methods available in that class can be found in the Java documentation. Efficient use of the class will factor in the assignment marking.
- Hint: you might consider putting all the "words" that you read into either uppercase or lowercase to make sure that the words "there" and "There" count as the same. You might also choose to remove non-alphabetic characters (I did) using the String method `word.replaceAll("[^\\s]", "");` which replaces basically all non-characters with nothing.
- I have given you a .txt file of the book Oliver Twist called `oliver.txt`. I have used that in my sample output. (Note you may get slightly different numbers if your editing of the word is different than mine – that is okay).

## Sample Output:

```
Enter 1 to clear dictionary,
2 to add text from keyboard,
3 to add text from a file,
4 to search for a word count,
5 to display number of nodes,
6 to quit
3
```

```
Enter name of file to process:
c:\oliver.txt
```

```
Enter 1 to clear dictionary,
2 to add text from keyboard,
```

```
3 to add text from a file,
4 to search for a word count,
5 to display number of nodes,
6 to quit
```

```
4
Enter word to search for:
the
the occurs 9635 times
```

```
Enter 1 to clear dictionary,
2 to add text from keyboard,
3 to add text from a file,
4 to search for a word count,
5 to display number of nodes,
6 to quit
```

```
4
Enter word to search for:
oliver
oliver occurs 747 times
```

```
Enter 1 to clear dictionary,
2 to add text from keyboard,
3 to add text from a file,
4 to search for a word count,
5 to display number of nodes,
6 to quit
```

```
4
Enter word to search for:
twist
twist occurs 57 times
```

```
Enter 1 to clear dictionary,
2 to add text from keyboard,
3 to add text from a file,
4 to search for a word count,
5 to display number of nodes,
6 to quit
```

```
5
There are 11670 nodes
```

## Submission:

You must submit to the assignment link in Blackboard by the due date and time a zip file (named `LastNameFirstNameAssign4`) containing:

- all source code – ie .java files (Note – I may choose to re-compile your program....so all code must be available to me) with
- Your test plan in either .docx or .xls format

Failure to provide any of the above will have an effect on your grade for this assignment. Marking guide will be published shortly.