**Assignment 2**

Write a Java program that accepts words and their meanings; displays the list of words in alphabetical order.

When an entry is to be added to the dictionary you must first enter the word as one string, and then enter the meaning as separate string.

A word may have multiple meanings, and may be entered at separate times. When this occurs, place each successive meaning on a separate line. This new meaning must be preceded by a dash. For example, if you enter the following words and with their meanings in the following order: **Library**, **School**, **Cup**, and **School**, then your output should be a display as shown below.

Cup – a container from which we drink.

Library – a collection of books

School – a place of learning

- any group of fish

Another requirement - from time-to-time words become obsolete. When this happens, that word must be removed from the dictionary.

Use the concept of Binary Search Tree (BST) to solve this problem.

Example:

Suppose we are given the following list of words:

**"listen", "the", "quick", "brown", "foxes", "jumped", "over", "lazy", "dog"**

We would construct, conceptually, a BST as shown in **Fig. 1.**

listen

the

brown

quick

fox

over

jumped

dogs

lazy

Fig 1



Next, the following is a tracing of the processing o**f** Fig 1**.**



Binary Tree Example

Building tree with root value [listen] -

Inserted [the] to right of [listen]

Inserted [quick] to left of [the]

Inserted [brown] to left of [listen]

Inserted [fox] to right of [brown]

Inserted [jumped] to right of [fox]

Inserted [over] to left of [quick]

Inserted [lazy] to right of [jumped]

Inserted [dogs] to left of [fox]

**Fig 2**

The following is the of words in alphabetical order

Traversing the tree "in order" - ascending order

brown

dogs

fox

jumped

lazy

listen

over

quick

the

**Fig 3**

Note:

1. Attached please find a zip that contains segment of program that will generate **Fig 2** and **Fig 3,** respectively. You may **modify** this code to complete the assignment.
2. To complete the methods"**contains**" and "**deleteNode**", refer to solutions for **Chapter 4, Question 4.11.**
3. You will need at minimum the following classes:

* A WordMeaning class that hold the data - name of a word and its meaning.

meaning

word

* A WordMeaningNode class that creates the node of information and its link fields.

Word meaning object

link

link

* A WordList class that creates and maintain a BST list of words and their meanings.

Similar to **Fig 1**.

* A Dictionary test class similar to the class **TestBinaryTree**.

For the output, the program should produce two lists:

* The current list of words and their meanings, and
* The list of the deleted words. Do not list the meanings.