ASSIGNMENT ONE: AWONKE MNOTOZA

UNDERSTANDING THE ASSIGNMENT REQUIREMENTS
GenericsKB - A knowledge base of "generic" sentences around the world.

The goal of the assignment:
1. Query the knowledge base.
2. Add new knowledge.
3. Update existing the knowledge base.

Assignment guide:
- Implement the above goals using a List.
    o Implement the List from scratch, do not use any list class or array class.
- Implement the above goals using a Binary search tree.
    o Implement the BST from scratch or use an implementation for an external. I chose to implement the BST from scratch.

ASSIGNMENT IMPLEMENTATION
To achieve the goals for this assignment, I needed to do the following:
1. Get the file path.
2. Extract the file content based on the file path.
3. Implement the List and the BST.
4. Add the file content on the list or the BST.
5. Create an interaction platform so that the user can manipulate the BST or List.

Get the file path and extract the content
- For this I created a ExtractFile class that will be responsible for extracting the content based on a file path.
- The user will be able to select the file they want to use.
    o Upon getting the file name from the user, I will then generate the file path within the main method (where I collected the file name), then pass it to the ExtractFile.
- The ExtractFile will read the file then return a output string separated by "\n".
- Then I will create a Field java class that will act an object that will represent the data stored in each line in the selected file.
    o We are told that: The data is given in a text file with one statement per line; the 3 data fields (term, sentence, score) are separated by tabs. Therefore, when reading in the data line by line, the first step is to split each line by tabs.
    o The Field class will also have a key that will be generated from the term.
        ▪ The key will just be equal the term.hashCode().
        ▪ The key will be used in the BST for all the operations.
        ▪ I will not use it for the List.
- Since I now have the Field, let me manipulate the string that I got from the ExtractFile.
    o I will achieve this by creating a java class called FeildList.
        ▪ FieldList will store all the fields in a list.
    o First I will split the string I got from ExtractFile by "\n" and store the output in a string array.
    o Then I will loop through the string array and split the string by "\t" in order to get a string list that contain the data according to the Field.
    o Then populate the field and append it to the output listField that will be returned by the FieldList class.

Implement the List and BST
List implementation:
- For the list, I will set two variables called index and listSize.
- Every time I add a new item on the list, I will increment these variables.
- Then update the main list with the updated listSize and index.
- The purpose of the index is that it will ensure that I add an item at the end of the array all the time.
- The item that will be
BST implementation:
- I will implement this one the same way you would implement any BST.

CREATE AN INTERACTION PLATFORM SO THAT THE USER CAN MANIPULATE THE BST OR LIST.

- For this I decided to use the terminal instead of the GUI due to time constraints.
- First, I populate the BST or List, based on which the user ran on the terminal using the Makefile.
- Then allow the user to execute some tasks based on the given prompt.
- I have a create a guide on how to install and run the application here: uct/assignments/data_structures/assigment_1/README.md at master · Awonke11/uct (github.com)

Git log Report:

```
awomn >> git log
commit 81a26b7d5d80bcd1bb68d098e36dea4b650c5f03 (HEAD -> master, origin/master)
Author: Awonke Mnotoza <93478189+Awonke11@users.noreply.github.com>
Date:   Sat Mar 9 21:21:00 2024 +0200


    ReadMe update


commit 00a86ef35d1ebe73cb40d96234dda30c0247f997
Author: Awonke Mnotoza <93478189+Awonke11@users.noreply.github.com>
Date:   Sat Mar 9 20:34:43 2024 +0200


    ReadMe update


commit 17cca0537fc4b411f35c12212310027e2d751167
Author: Awonke Mnotoza <93478189+Awonke11@users.noreply.github.com>
Date:   Sat Mar 9 19:50:13 2024 +0200


    Tests update


commit 12d2e3ecea9cc4abfef9277abb101d5e71173d81
Author: Awonke Mnotoza <93478189+Awonke11@users.noreply.github.com>
Date:   Sat Mar 9 19:23:50 2024 +0200


    Updated Makefile in order to create javadoas
```

I have added a UCT repo, hence you will not see a .gitignore on the assignment 1.

HERE IS THE REPO TO THE ASSIGNMENT:

uct/assignments/data_structures/assigment_1 at master · Awonke11/uct (github.com)