CSC2001

Assignment1

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GUIDE

- Object oriented Design!
- Testing
- Creativity
- Git Statistics

Object Oriented Design.

For this Assignment I made 15 classes only a few are independent. The first class is the DataQuery class, this is an abstract class that defines the methods that the ArrayBase class and BinarySearchTreeBase must implement so the user interface is shared by both the array and the binary search tree and to reduce coding. The fourth class is the Guru class that contains only static methods this is the just a help class containing methods that will be used to aid other classes. The 5th class is the Statement class this class contains an individual term its description and confidence score this class is the crucial data type in this Assignment cause the ArrayBase class contains an array of statements as base and the BinarySearchTreeBase contains a binary search tree with nodes containing a Statement instance each.

The 6th class is the Node class this class simply contains a Statement and a node at left and right. The 7th class is the BinarySearchTree is the class containing the root node and the class I used to implement a binary search tree together with its methods.

The 8th class is the Home class this is the class containing graphics for the main menu. It also has methods to manipulates the GUI components it contains. The 9th class is the search class which contains graphics used for searching for an item either by its term or the sentence for the description. The 10th class is the Update class that contains graphics for searching or adding an item to the knowledge base. The 11th class is the SearchField class this class is a panel enclosing a text field with a button creating an illusion of a text field with a button. The 12th class is the coButton class this enables a JButton class to keep track of its container JFrame thus making it easier to manipulate the JFrame class from outside. The 13th class is the UniversalListener class this listens to all the events made by buttons made throughout the application.

The 14th class is the GenericsKbArrayApp class which contains the main method that runs the program using the ArrayBase class as the provider of data from the text file. The 15th class is the GenericsKbBSTApp class which contains the main method that runs the program using the ArrayBase class as the provider of data from the text file.

The Graphical User Interphase is used by both the ArrayBase and the BinarySearchTree solely on the principle of polymorphism as both these classes are descendants of the abstract class DataQuery the Home class takes the DataQuery type as a parameter and the methods used in this entire Gui are declared as abstract in the DataQuery class.

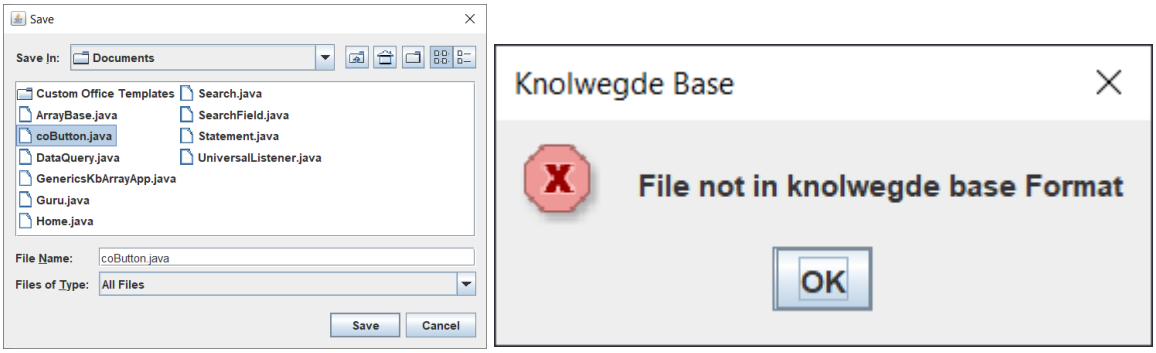
The array was implemented in the ArrayBase class which extends DataQuery this class contains method to methods to manipulate the array as specified by the

DataQuery class.

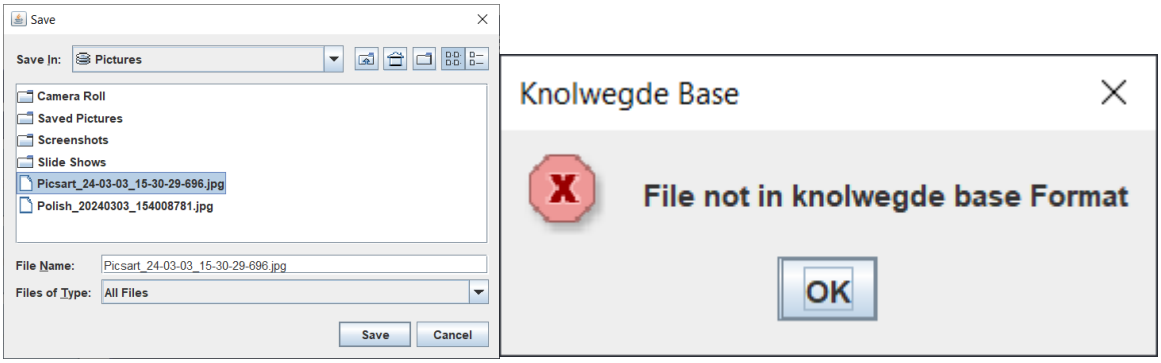
As for the Binary Search Tree I did the same as thing as I did with the array but I added a list to hold the terms similar to the ones being searched by the user as there as is no way I could store the matching Items anywhere else.

Testing

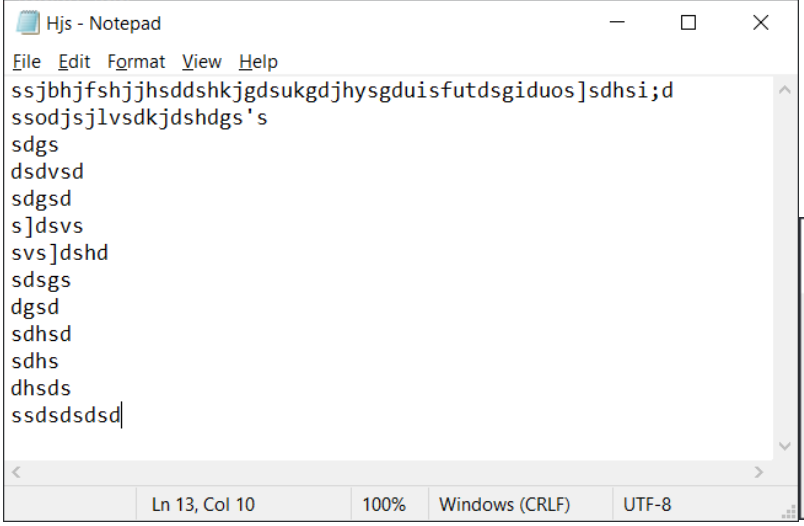
The first test is to see what happens what happens when I put a file that is not of a knowledge base. Let us start with a .java file.

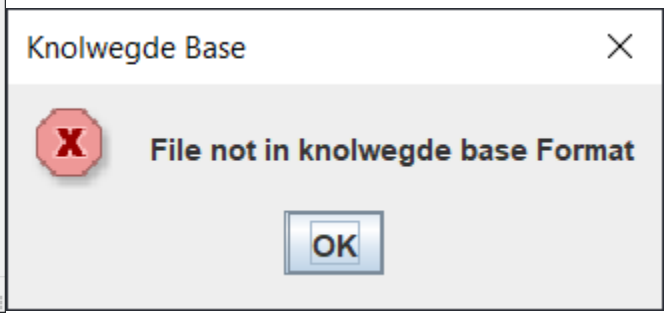


The program detects that is not a knowledge base class. Let us now try a picture.

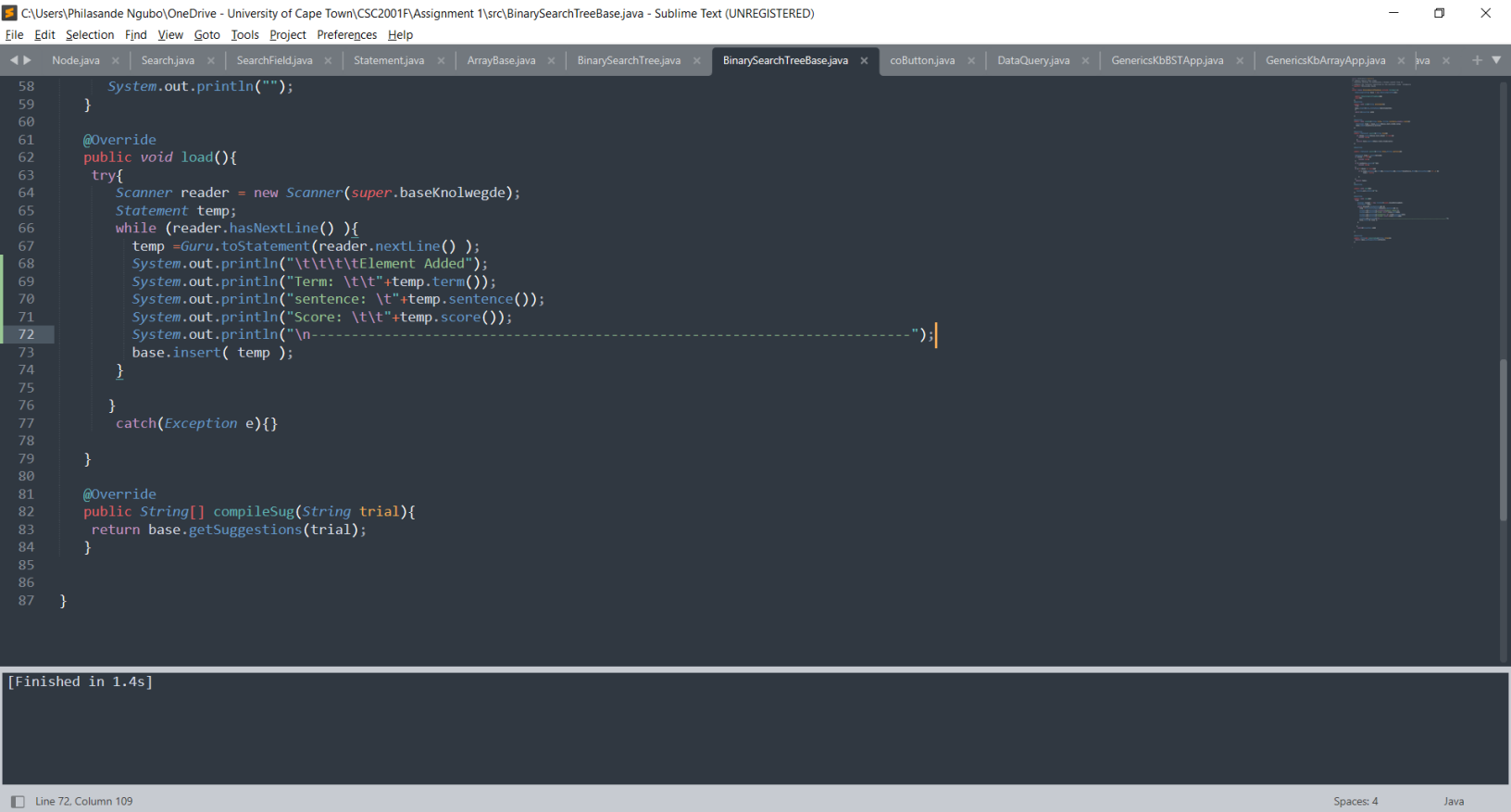


The program also detects this. Even if this is a text file like this one.

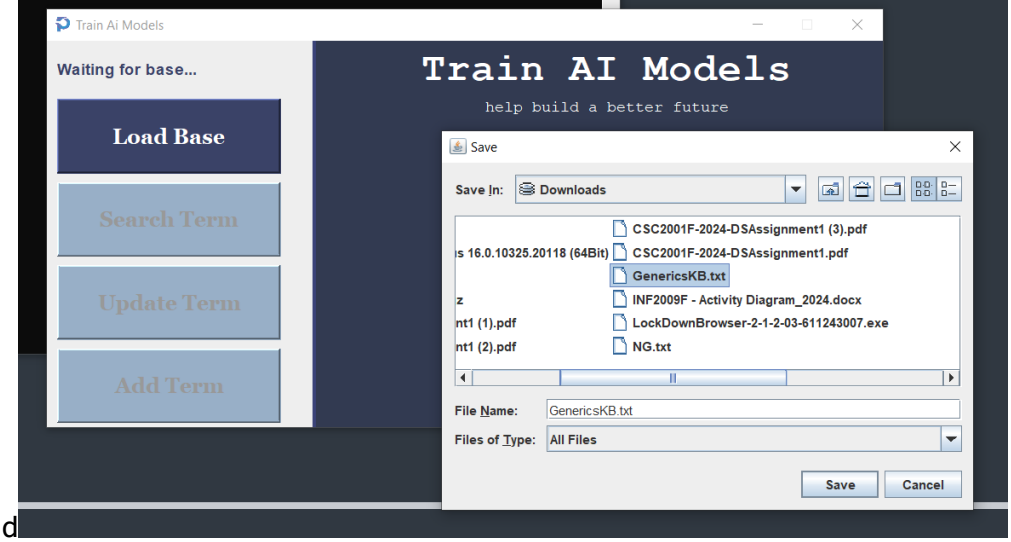




Let us test adding population lets go to the code and a tracker print statement that will print everytime a statement is added. The code looks as follow:



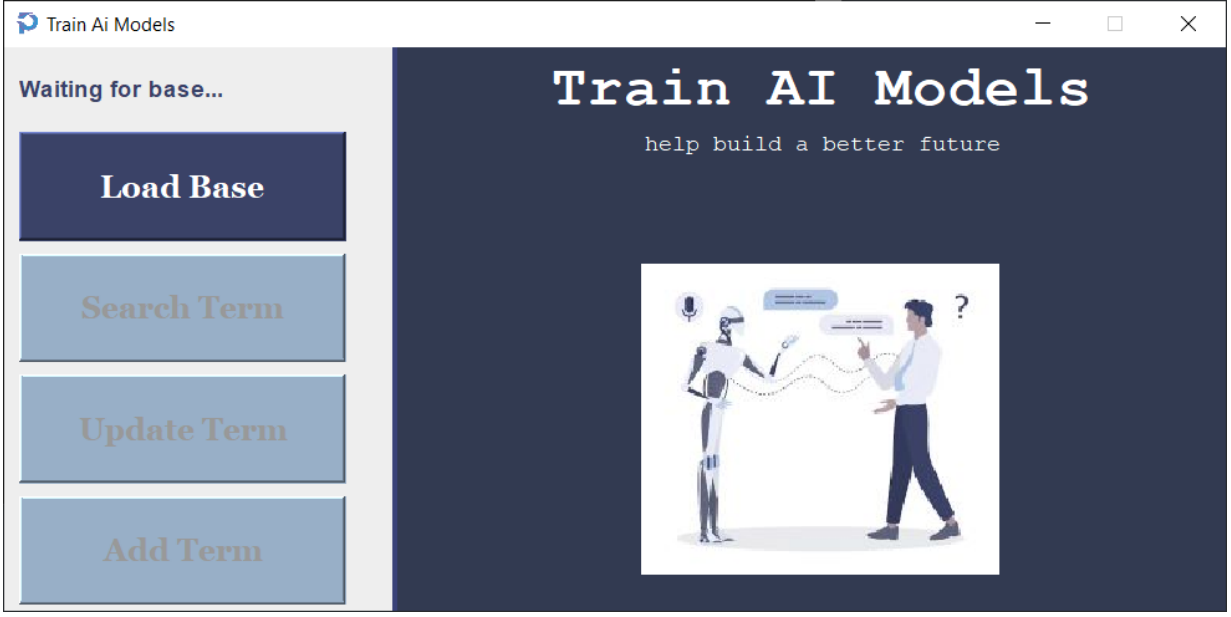
Upon adding the file as shown below the Command prompt produce the input as shown below the loading file picture which shows that indeed the knowledge base is loaded.



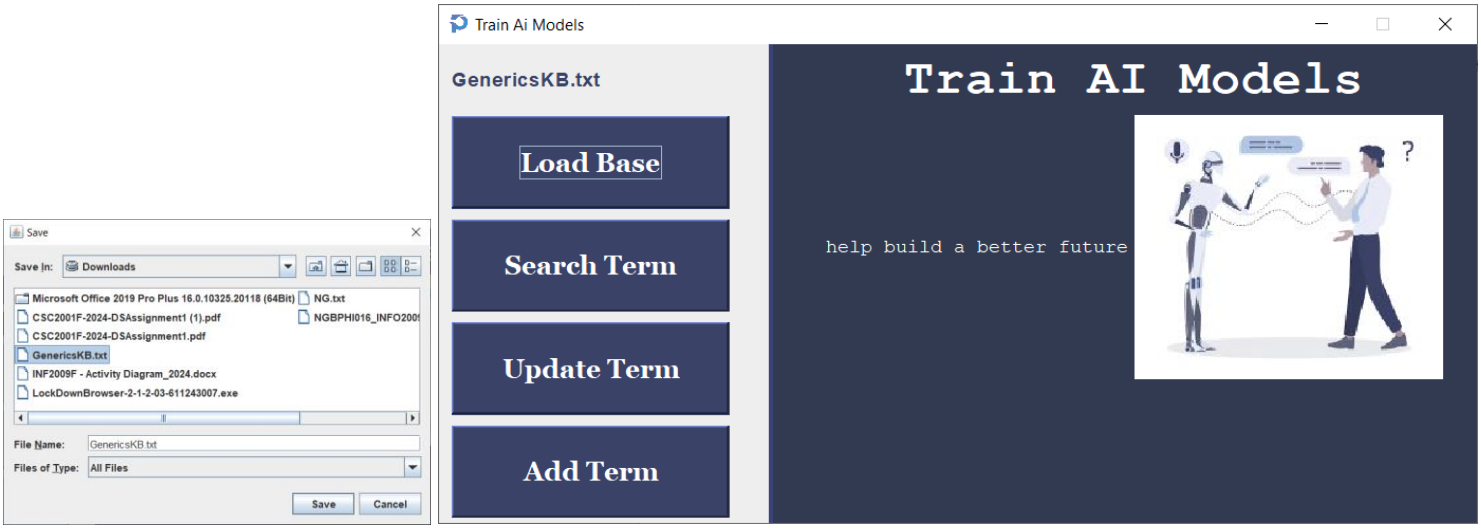
d

```
C:\Windows\System32\cmd.exe - java  GenericsKbBSTApp
                                Element Added
Term:           easter egg
sentence:       Easter eggs are modules.
Score:          1.0

--------------------------------------------------------------------------------------------------------------------------
                                Element Added
Term:           shearing
sentence:       Shearing is the indiscriminate clipping of all twig ends on the plant.
Score:          0.7172711491584778

--------------------------------------------------------------------------------------------------------------------------
                                Element Added
Term:           dental attrition
sentence:       Dental attrition is the natural result of a diet high in unprocessed vegetal materials and grit.
Score:          0.7128732800483704

--------------------------------------------------------------------------------------------------------------------------
                                Element Added
Term:           physical structure
sentence:       A physical structure is a natural object
Score:          1.0

--------------------------------------------------------------------------------------------------------------------------
                                Element Added
Term:           natural aspirin
sentence:       Natural aspirin comes from the bark of some species.
Score:          0.7269172668457031

--------------------------------------------------------------------------------------------------------------------------
                                Element Added
Term:           amazon molly
sentence:       Amazon mollies are sexual parasites.
Score:          0.7875592708587646

--------------------------------------------------------------------------------------------------------------------------
                                Element Added
Term:           counselling
sentence:       Counselling is a message
Score:          1.0

--------------------------------------------------------------------------------------------------------------------------
                                Element Added
Term:           stasis dermatitis
sentence:       Stasis dermatitis is often a chronic condition.
Score:          0.7283313870429993

--------------------------------------------------------------------------------------------------------------------------
```

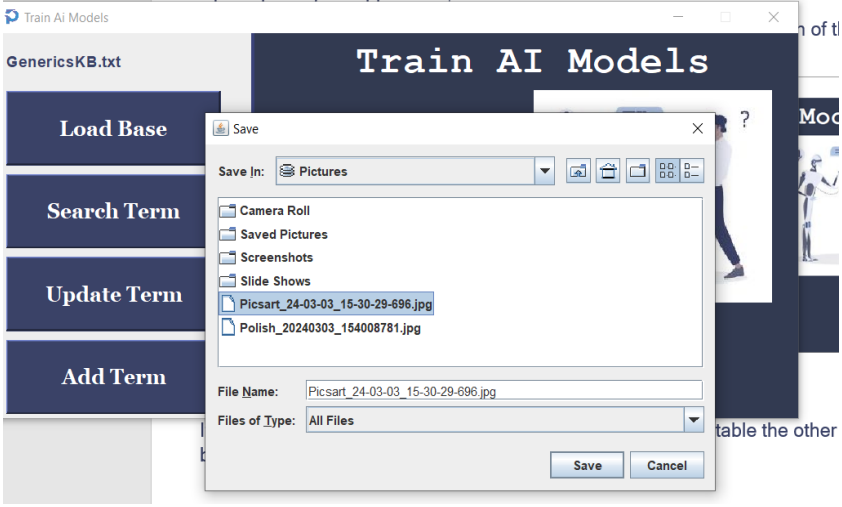
Users cannot access other features without loading the knowledge base first.

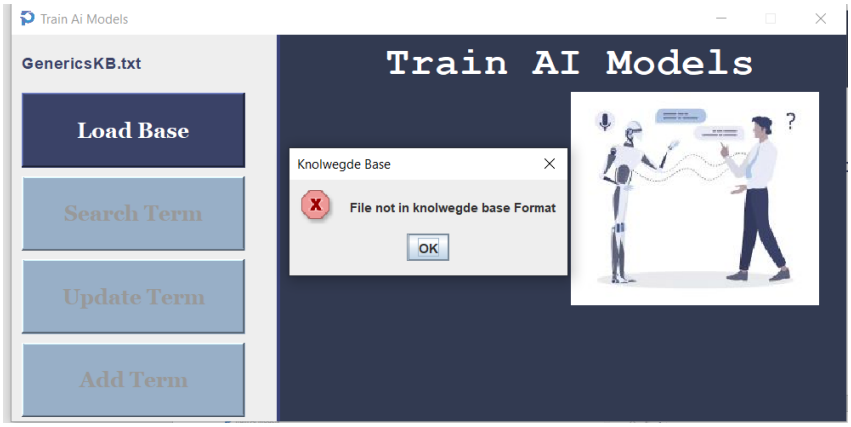


Upon opening the application, the other features are disabled but once the knowledge base, has been added the other features become enabled. And the orientation of the picture changes



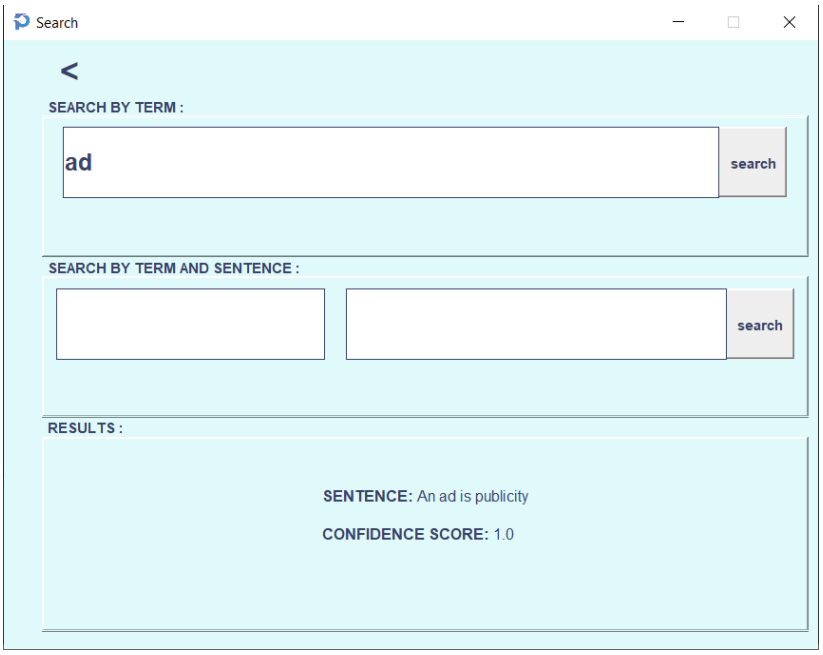
If a user however loads another file that is for instance not suitable the other menu buttons become disabled, as demonstrated below.



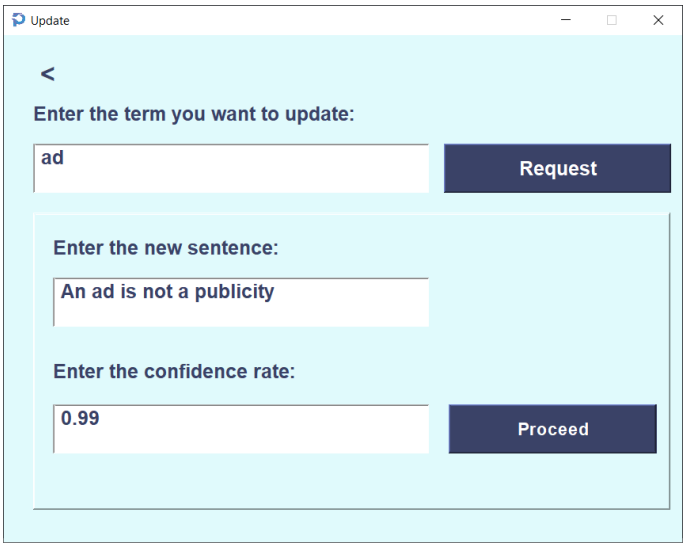


The Features work the same for the Binary search tree base and array base as the graphical user interface interacts with their parent DataQuery, so methods are the same, so a test done for one is also done for another.

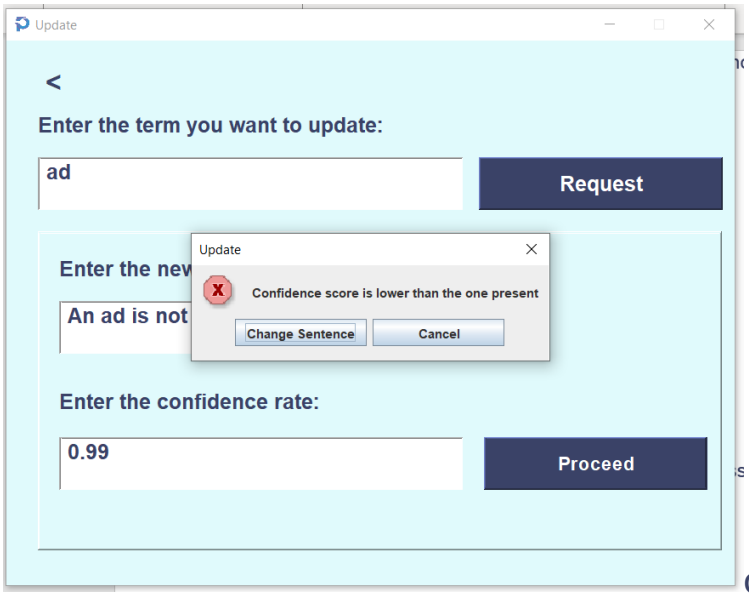
When updating a term but the score is less than that already in the data structure remains the same.



We will use the term “ad” as our test ad is defined with a Confidence score of 1.0.

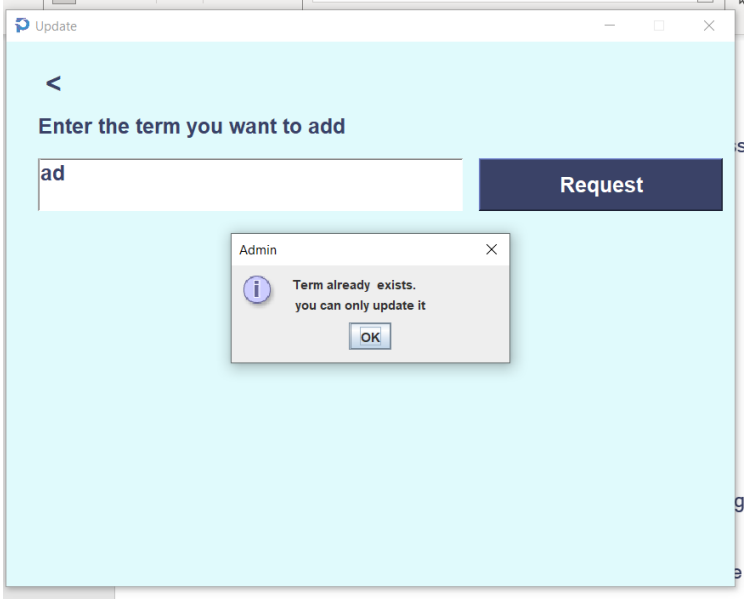


The current score is less than the existing score hence the program must give us a signal or not allow us to add.

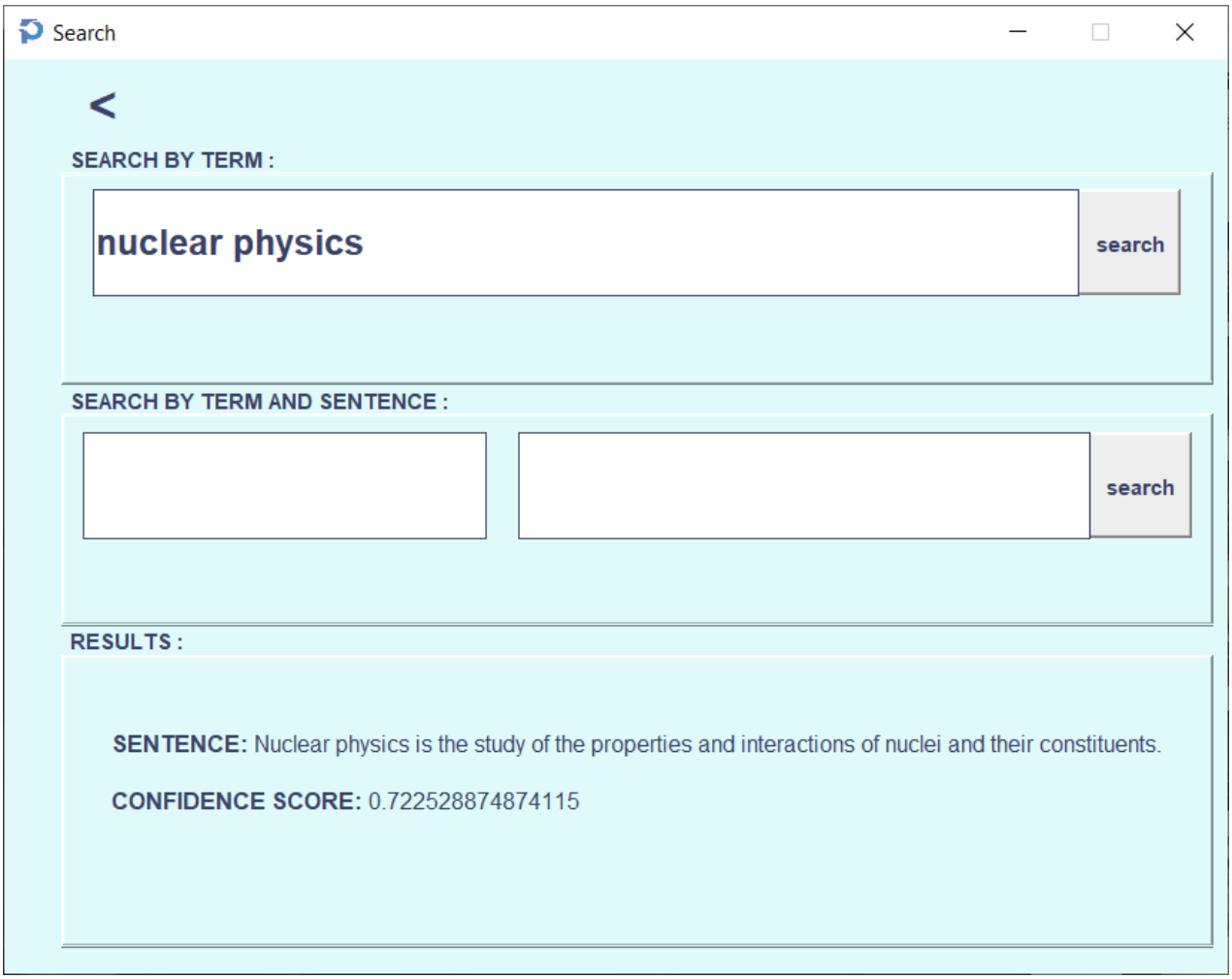


of which is what we get exactly.

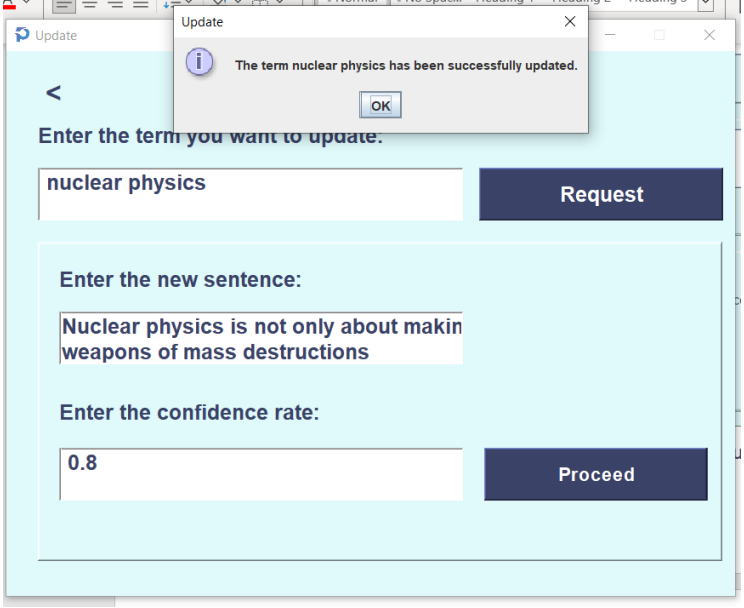
We must also not be able to add an existing term so we will use the term “ad” as our test.



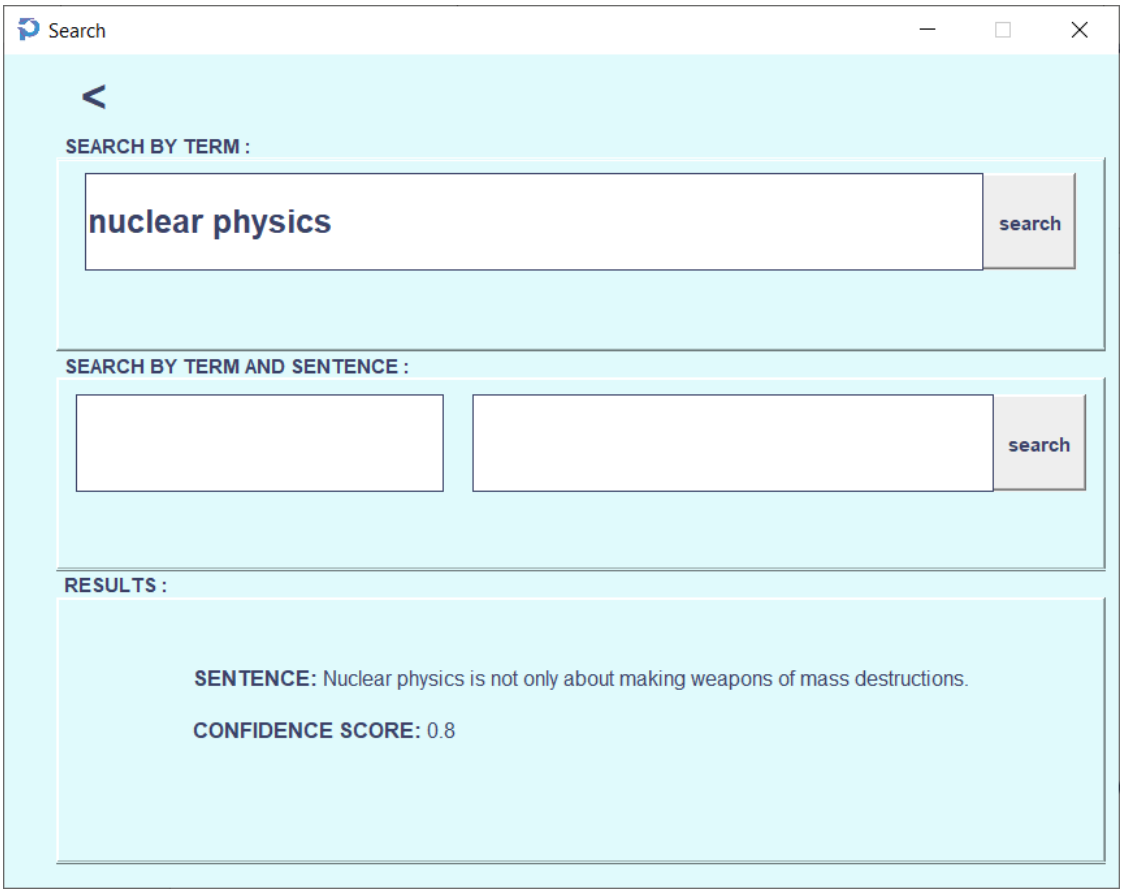
Let us now test whether the updates we made reflect on the program instantly we will the term “nuclear plant” as our test.



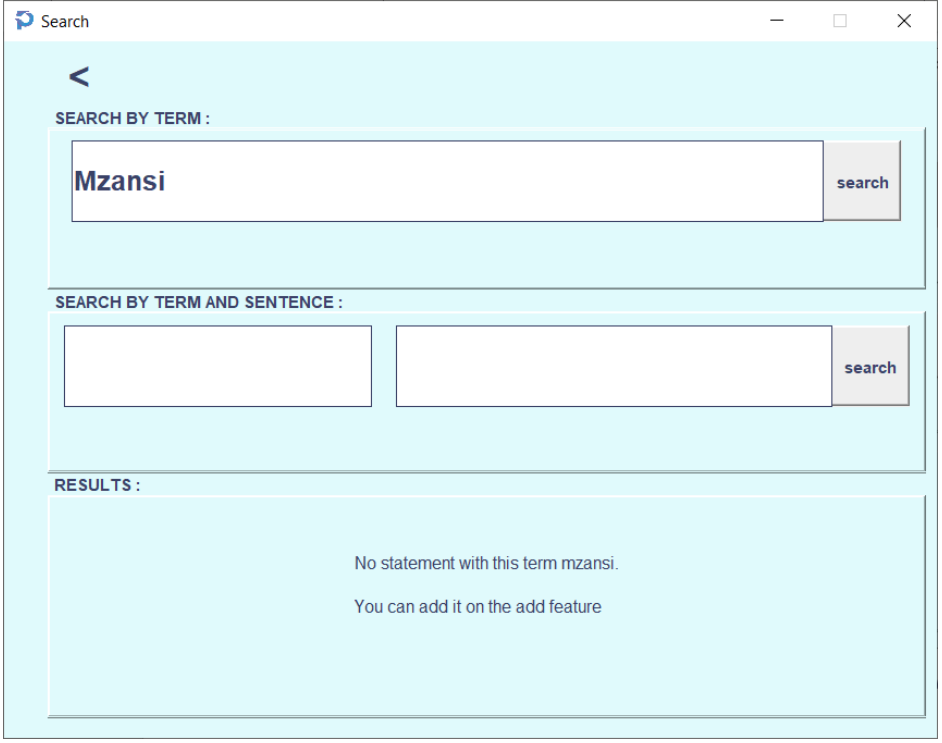
The term exists with a confidence score of 0.722528874115. Let us now update the term and set it confidence score of 0.8.

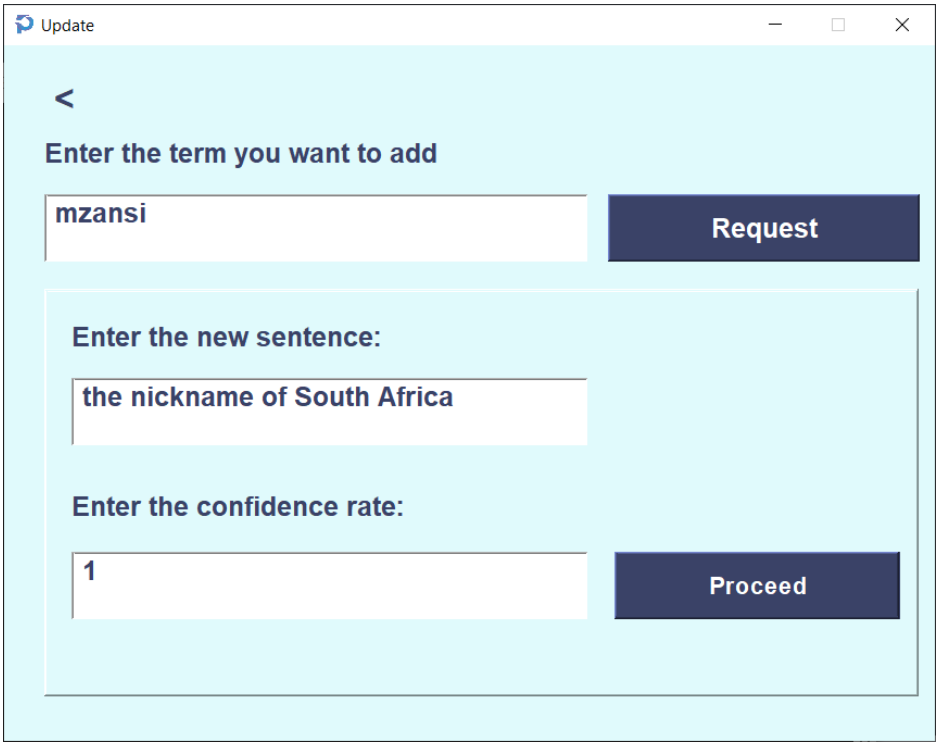


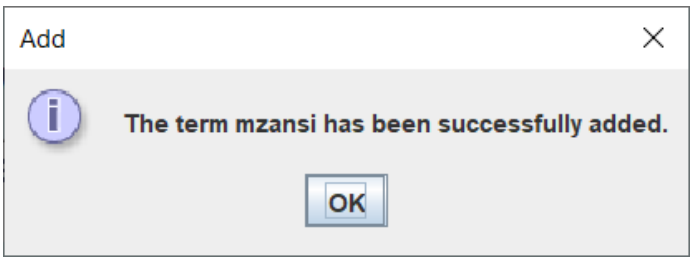
The update has been successfully updated let us search for it now.

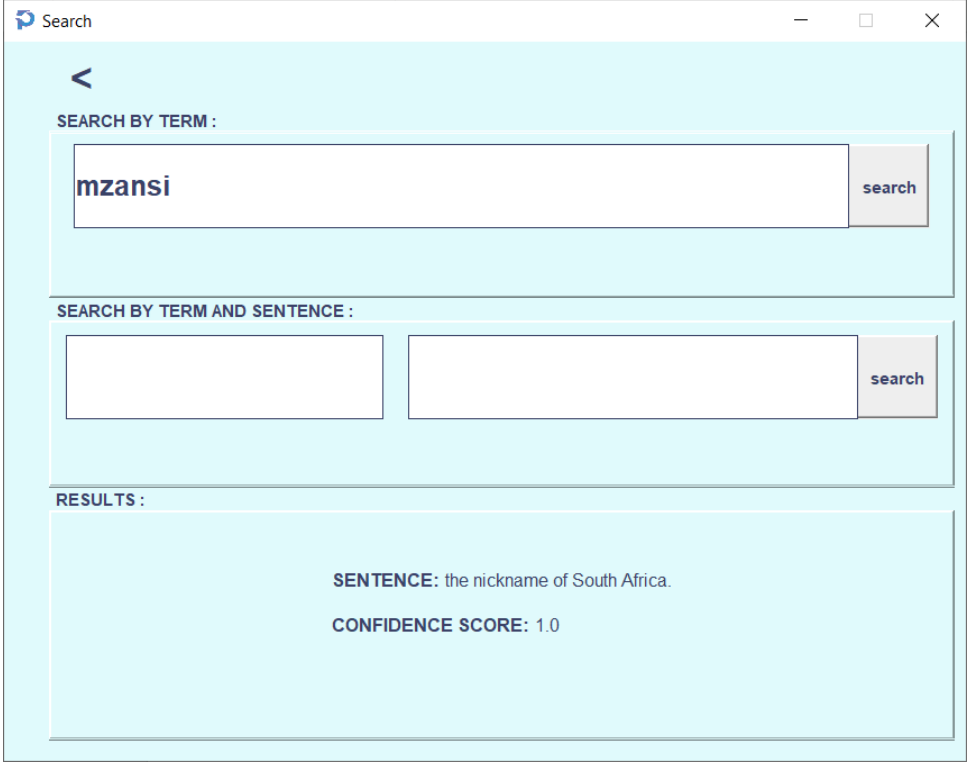


The update feature work as intended and perfectly so. Let us now proceed to adding a term, That does not exist the term is “Mzansi” so we first check whether it exist. As it appears below the term Mzansi does not exist so let us now proceed to adding it. The search results, in the expected outcome which means the program is working as it should.

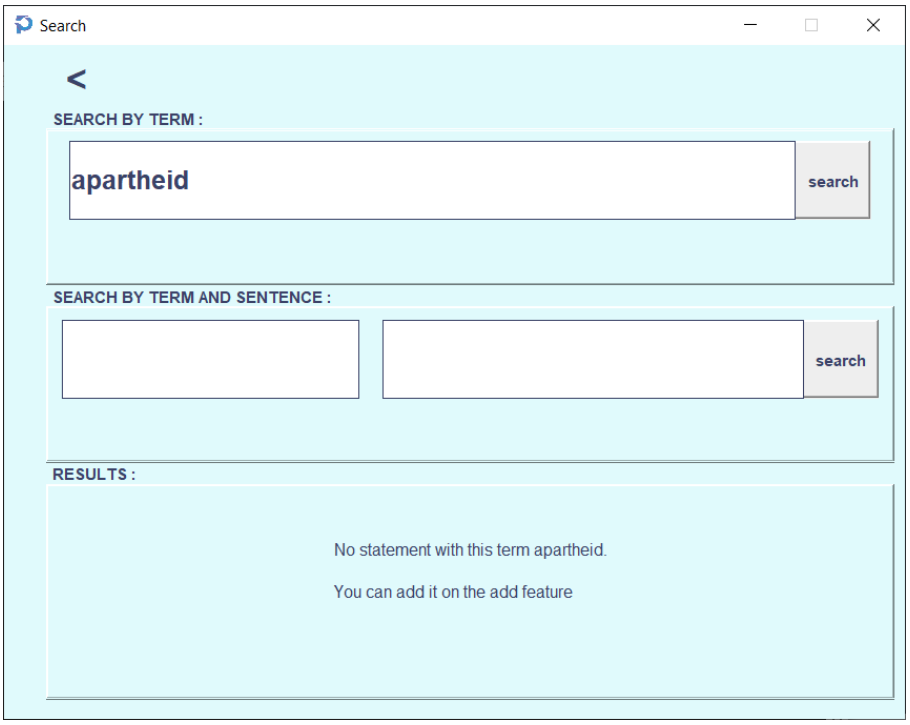

Search
<
SEARCH BY TERM :
Mzansi
search
SEARCH BY TERM AND SENTENCE :
search
RESULTS :
No statement with this term mzansi.
You can add it on the add feature

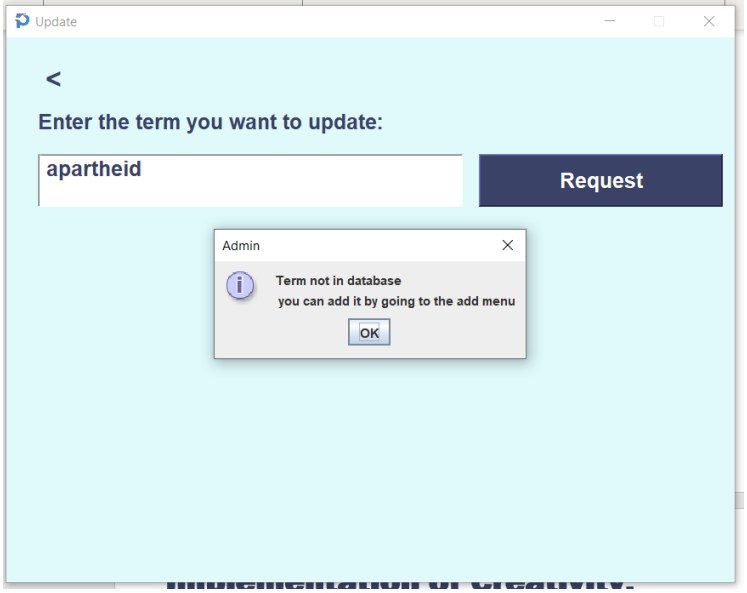

Update
<
Enter the term you want to add
mzansi
Request
Enter the new sentence:
the nickname of South Africa
Enter the confidence rate:
1
Proceed


Add
The term mzansi has been successfully added.
OK



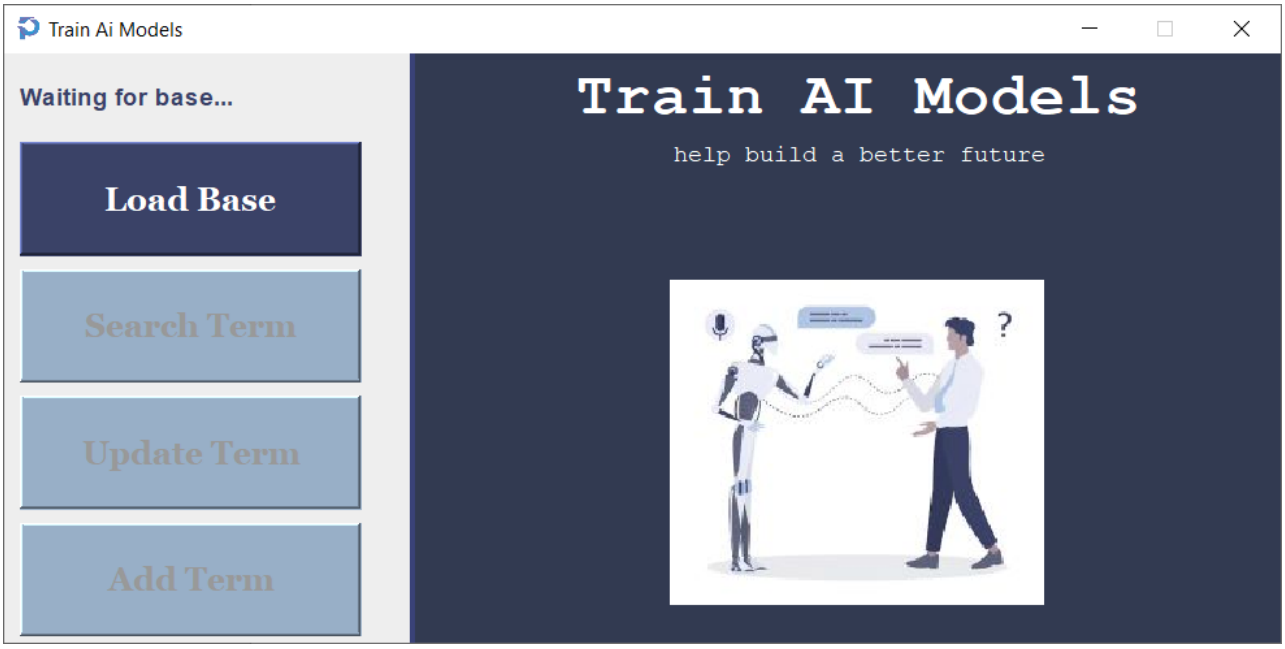
The next thing to check is to see whether you can attempt to update a term that is not in the knowledge base and see what happens. The term is “apartheid”. We search to see whether the term exist. As shown below the term is not in the knowledge base. So the next step is to attempt to update the term. We get an information message to notify that we cannot update a term that is not in the knowledge base but instead we can add it.

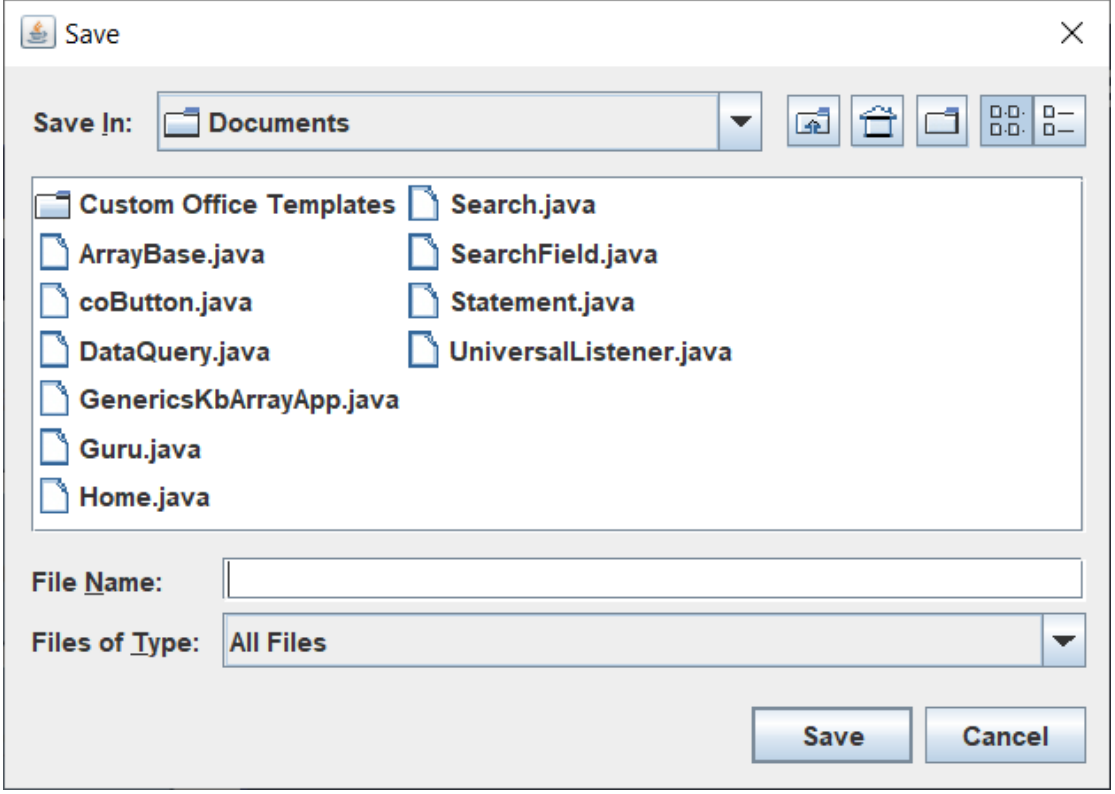


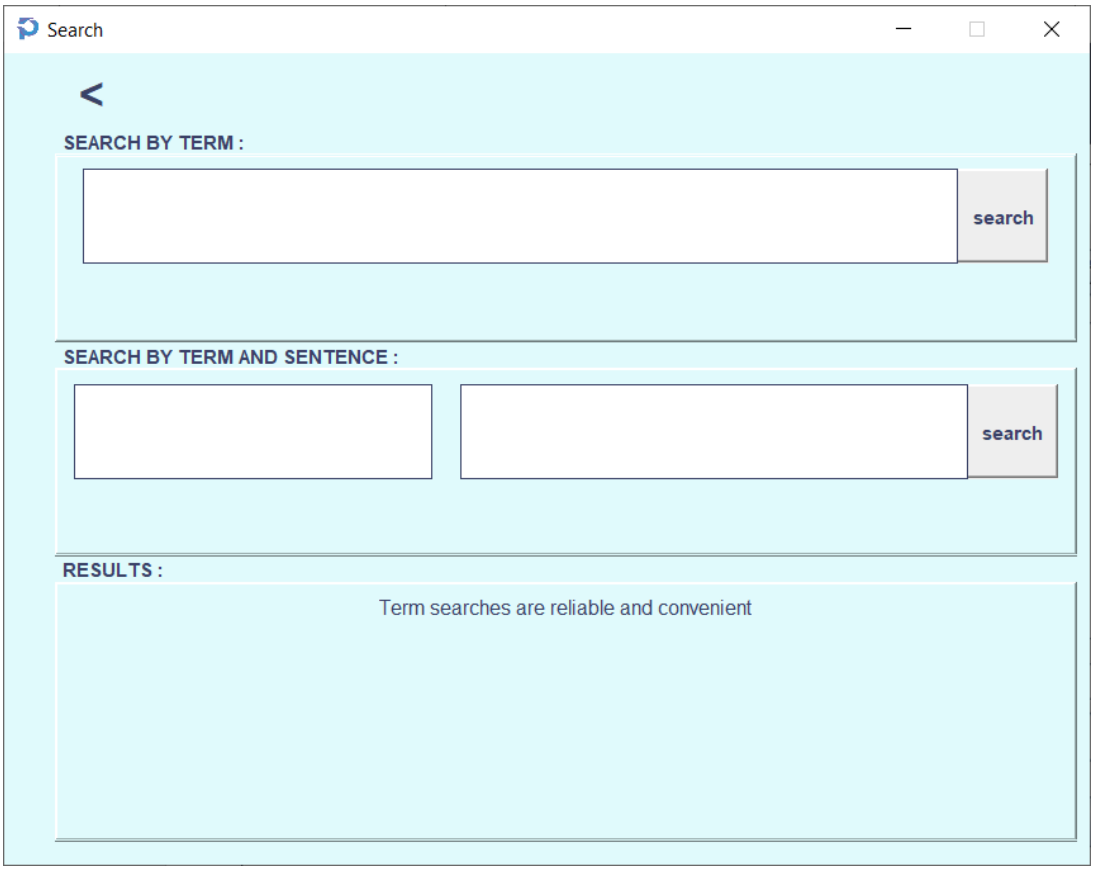


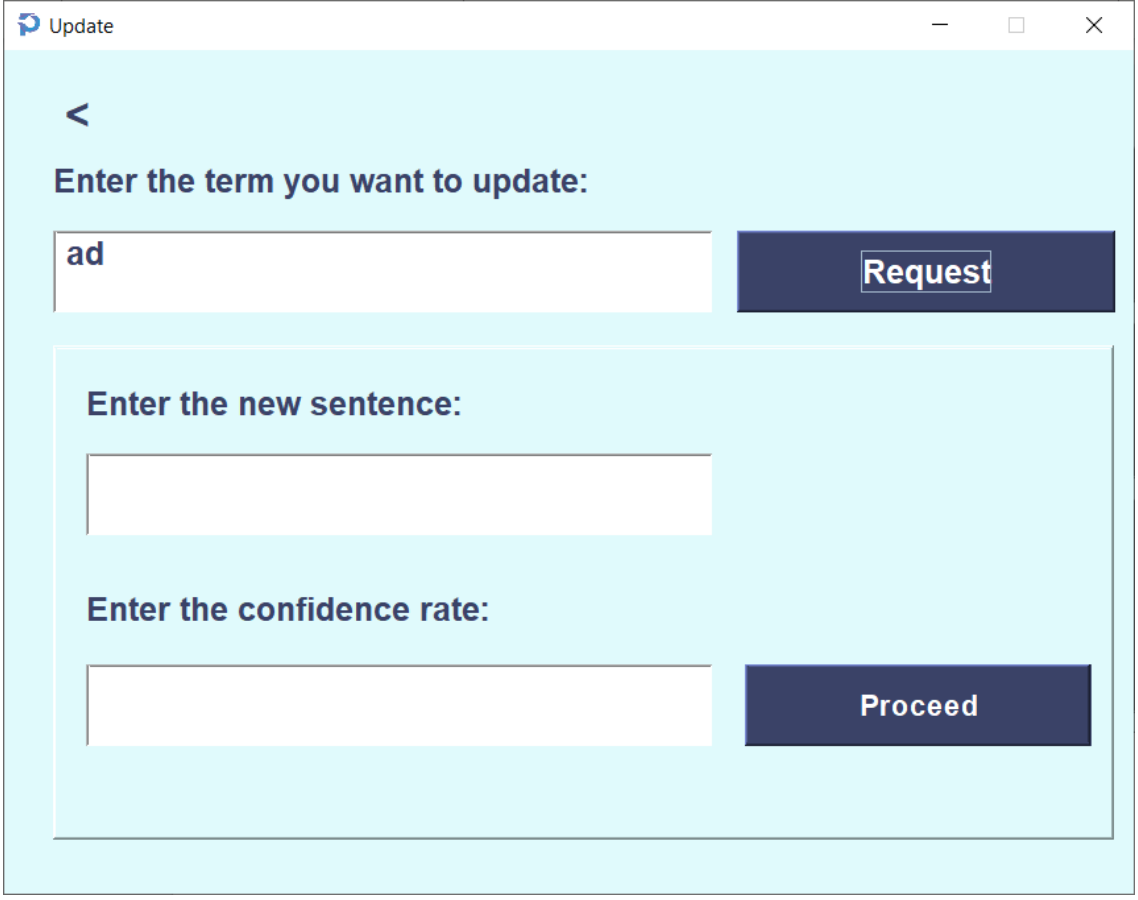
Implementation of Creativity.

I made a unique GUI.

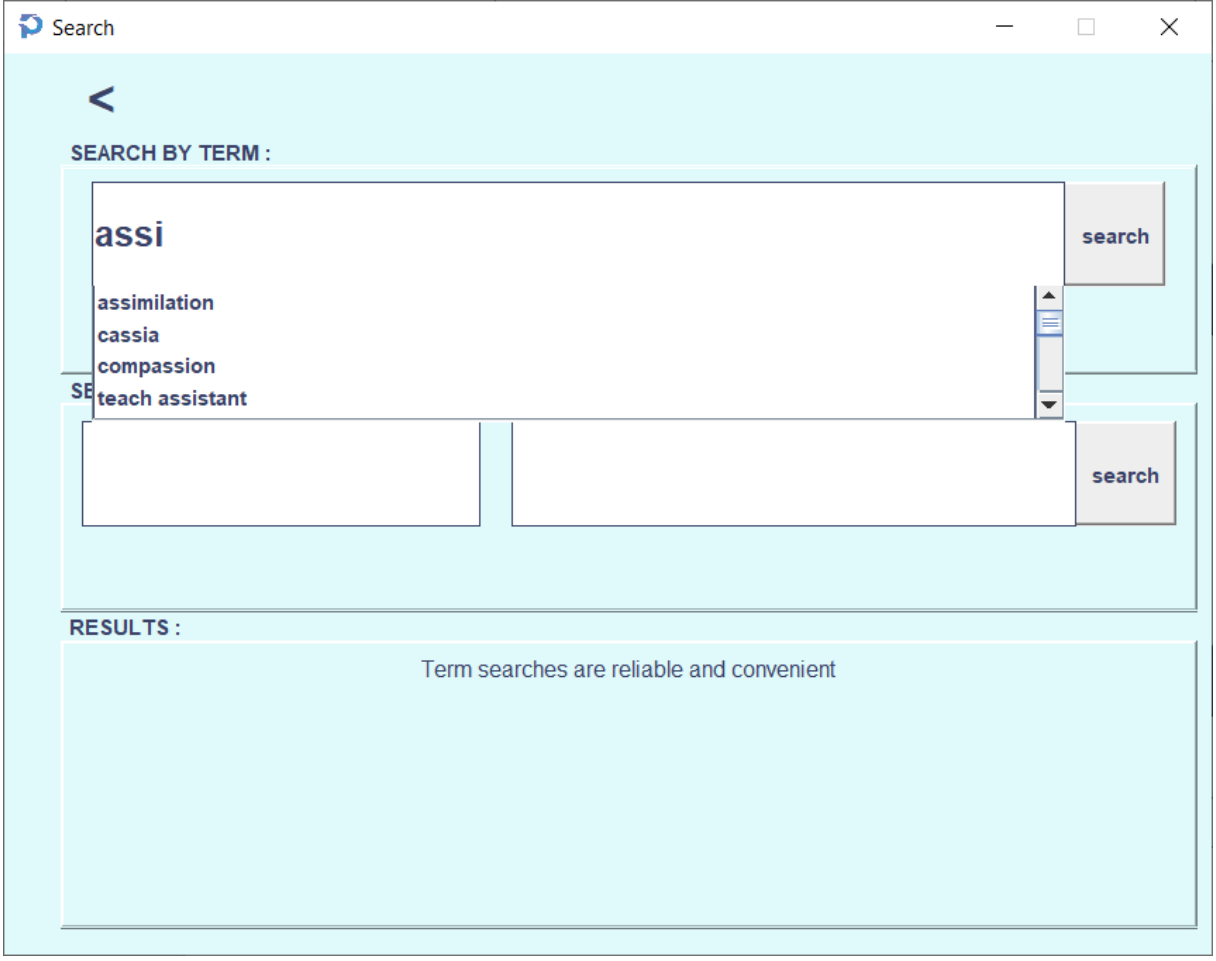



Save
Save In:
Documents
Custom Office Templates
ArrayBase.java
coButton.java
DataQuery.java
GenericsKbArrayApp.java
Guru.java
Home.java
Search.java
SearchField.java
Statement.java
UniversalListener.java
File Name:
Files of Type:
All Files
Save
Cancel


Search
<
SEARCH BY TERM :
search
SEARCH BY TERM AND SENTENCE :
search
RESULTS :
Term searches are reliable and convenient



I made a search suggestion list that updates itself as I type. It looks at the existing terms and compares it to the substrings being typed. And returns suggestions when a suggestion is clicked it is automatically added to the search text field.


Search
<
SEARCH BY TERM :
assi
search
assimilation
cassia
compassion
teach assistant
search
RESULTS :
Term searches are reliable and convenient

Git statistics