```
1   import java.util.StringTokenizer;
2
3   import BasicIO.ASCIIDataFile;
4
5   /*This program searches and compare the ReservedWords
6    * with the NestedSquares.java, it does a cross reference
7    * if the word is a reserved word then it doens't show it
8    * @author Long Nguyen
9    * Student Number 5427059
10   * @version 1.0 (Feb 10, 2014)
11   * */
12
13  //This is the Link Class
14  public class Link {
15
16   public String word;
17   public int lineNum;
18
19   public Link next; //reference the next link
20
21     //List constructor
22   public Link(String word, int lineNum){
23    this.word = word;
24    this.lineNum = lineNum;
25   }
26
27   //return the word of the Link
28   public String getWord(){
29    return word;
30   }
31
32   //display the information of the Link method
33   public void display(){
34     //System.out.println("The word is "+word + " " + lineNum);
35           System.out.print(word + "    " + lineNum);
36
37           //printing out the line number of the words if it's the same word
38     while(this.next.word != null && this.word.equalsIgnoreCase(this.next.word)){
39     System.out.print(" " + this.next.lineNum);
40      //System.out.println();
41         this.next = this.next.next;
42    }
43    System.out.println();
44   }
45
46   public static void main(String[] args) {
47
48    ASCIIDataFile inReservedWordsFile = new ASCIIDataFile("JavaReservedWords.txt");
    //file to be read
49    ASCIIDataFile inNestedSquaresjava = new ASCIIDataFile("NestedSquares.java");
    //file to be read
50
51
52    LinkList inReservedWordsLinkedList = new LinkList();//creating the linkList
    object
53    LinkList crossReferenceLinkedList = new LinkList();//creating the linkList object
54
55    //passing in the file "JavaReservedWords.txt" to be read
56    String breakingUpReservedWordsFile= inReservedWordsLinkedList.readWord
    (inReservedWordsFile);
57
58    //passing in the file "NestedSquares.java" to be read
59    //String breakingUpCrossReferenceFile= inReservedWordsLinkedList.readWord
    (inNestedSquaresjava);
60
61    StringTokenizer breakingUpWords = new StringTokenizer
    (breakingUpReservedWordsFile);
62
63    //StringTokenizer breakingUpbreakingUpCrossReferenceFile = new StringTokenizer
    (breakingUpCrossReferenceFile);
```

```
64
65    //breaking up the JavaReservedWords and creating a linkedLists
66    while (breakingUpWords.hasMoreElements()) {
67
68     inReservedWordsLinkedList.insertInOrder((String) breakingUpWords.nextElement(),
    (int)0);
69
70    }
71
72    ////////////////////////////////
73    //This part reads in the code and check against the the reserved word list
74    ////////////////////////////////
75    int lineNumber = 1; //Increment for the line counter
76    while(!inNestedSquaresjava.isEOF() && lineNumber < 40){//while it's the Java file
    is not end of file
77
78    //passing in the file to be read and return the line as a string
79    String breakingUpbreakingUpCrossReferenceFile = crossReferenceLinkedList.readLine
    (inNestedSquaresjava);
80
81    //This part uses the String Tokenizer to  parse the string
82    StringTokenizer CrossReferenceFile = new StringTokenizer
    (breakingUpbreakingUpCrossReferenceFile);
83    //breaking up the words one at a time by white space
84
85    LinkList FirstPointer =  new LinkList();
86    //Points to the begining of the Link List of the Reserved Word Link List
87     FirstPointer.firstLink = inReservedWordsLinkedList.firstLink;
88
89    while (CrossReferenceFile.hasMoreElements()) {
90     //casting the StringTokenize to string and setting it to worToMatch
91      String wordToMatch = (String) CrossReferenceFile.nextElement();
92      boolean wordNeverFound = false; //setting the boolean flag to false
93     //while((inReservedWordsLinkedList.firstLink.word != wordToMatch)){
94
95      while((!inReservedWordsLinkedList.firstLink.word.equalsIgnoreCase
    (wordToMatch))){
96
97       //System.out.println(" word look up " + inReservedWordsLinkedList.firstLink.
    word);
98
99      if(inReservedWordsLinkedList.firstLink.next == null){//checking the reserved
    while until the end of the link list
100      wordNeverFound = true; // set word to never found
101            break;//break out of the loop
102     }else{//point to the next list list in the Reserved Word
103      inReservedWordsLinkedList.firstLink = inReservedWordsLinkedList.firstLink.
    next;
104     }//end else
105     //If the word don't match the ReservedWord, then create a link list object of
    that word
106    }if(wordNeverFound == true){
107     crossReferenceLinkedList.insertInOrderCode((String) wordToMatch , lineNumber);
108     //System.out.println(" Didn't find :) ");
109    }//end if
110   }//end while loop
111   //System.out.println(" New Loop ");
112
113   //pointer back to the begining of the linkListed Reserved Word
114   inReservedWordsLinkedList.firstLink = FirstPointer.firstLink;
115   lineNumber++;
116   }//end while loop
117   //inReservedWordsLinkedList.display();
118   crossReferenceLinkedList.display();
119  }
120
121 }//end class
122
123 //The pointer to the Link
124 class LinkList{
```

```
125
126 ////////////////////////////////////////////
127 public String reservedWords;
128 public String result = "";
129 ////////////////////////////////////////////
130
131
132  public Link firstLink; // A reference to the first Link in the list or the last
    link that was added to the list
133
134  LinkList(){
135   firstLink = null; //first link always start as a null value
136  }
137  //checking if the link is empty
138  public boolean isEmpty(){
139   //if it's null then there's no data in the link
140   return(firstLink == null);
141  }
142
143  //method to creating a new Link object
144  public void insertFirstLink(String word, int lineNum){
145
146   Link newLink = new Link(word, lineNum);// creating a new Link object
147
148   newLink.next = firstLink; //point to the previous link, of the new object link
    that was created
149   firstLink = newLink; //first Link points to the newly created link object, added
    the link into the link list
150
151  }
152  //to remove a link object of the linkList
153  public Link removeFirst(){
154   Link linkReference = firstLink;
155
156   //checking if the link is empty before removing
157   if(!isEmpty()){
158    firstLink = firstLink.next;
159   }else{
160    System.out.println("The link list is empty ");
161   }
162   return linkReference; //return the deleted link
163  }//end removeFirst Link object method
164
165  //displaying the link list
166  public void display(){
167   System.out.print("Word Match     Line Number \n");
168   Link theLink = firstLink;  // pointing the the beginning of the link
169
170   while(theLink != null && theLink.next !=null){// while the link is not empty
171    theLink.display();//calling the display method in the Link Class
172    //System.out.println("Next Link: " + theLink.next );//print out the link data
173    theLink = theLink.next; //pointing to the next link data
174    System.out.println( );//print out a new line
175   }
176  }//end display method
177
178
179  //This method insert the data in order
180  public void insertInOrder(String word, int lineNum){
181   Link newLink = new Link(word, lineNum);// creating a new Link object
182   Link perviousLink = null; //perviousLink is set to null because the begining of
    the list won't have a pervious pointer
183   Link currentLink = firstLink; //starting at the begining of the linkedList
184
185   //while the link is not empty and the first character of the word in ASSIIC is
    greater then the linklisted word first Character
186   while((currentLink != null) && ((int)word.charAt(0) > (int)currentLink.word.
    charAt(0))){
187         perviousLink = currentLink;  //assign the perviousLink to the current link
188         currentLink = currentLink.next;// currentLink points to next
```

```
189   }//end while loop
190   if(perviousLink == null){//if there is not pervious Link, means it on the first
    link
191      firstLink = newLink; //point the firstLink pointer to the newly created newLink
192   }//end if
193   else{
194    perviousLink.next =newLink;
195   }
196   newLink.next = currentLink;
197
198  }//end insert in Order method
199
200
201
202  //This method insert the data from the Java file
203  public void insertInOrderCode(String word, int lineNum){
204   Link newLink = new Link(word, lineNum);// creating a new Link object
205   Link perviousLink = null; //perviousLink is set to null because the begining of
    the list won't have a pervious pointer
206   Link currentLink = firstLink; //starting at the begining of the linkedList
207
208
209   //while the link is not empty and the first character of the word in ASSIIC to
    lower case is greater then the linklisted word first Character
210   while((currentLink != null) && ((int)word.toLowerCase().charAt(0) >= (int)
    currentLink.word.toLowerCase().charAt(0))){
211
212    perviousLink = currentLink;  //assign the perviousLink to the current link
213     currentLink = currentLink.next;// currentLink points to next
214    //System.out.print(currentLink.word + " " + currentLink.lineNum + " ");
215
216        //perviousLink = currentLink;  //assign the perviousLink to the current link
217        //currentLink = currentLink.next;// currentLink points to next
218                  //}
219   }//end while loop
220   //System.out.println();
221
222
223   if(perviousLink == null){//if there is not pervious Link, means it on the first
    link
224      firstLink = newLink; //point the firstLink pointer to the newly created newLink
225   }//end if
226   else{
227    perviousLink.next =newLink;
228   }
229
230   newLink.next = currentLink;
231
232
233
234  }//end insert in Order method
235
236
237  public String readWord(ASCIIDataFile file) {//reading the file as one long string
238
239   ASCIIDataFile fileToRead = file; //passing in the file to read
240
241
242    while(!fileToRead.isEOF()){//while until the end of file
243     //hasNewLIne = in.readLine();
244
245                   //line = fileToRead.readLine();
246                   //System.out.println(line);
247       result += fileToRead.readString().toString().replaceAll("[^a-z^A-Z]"," ");
    /*reading in as one long string and using
248       //regex to match only  lower and uppercase letters in A-Z*/
249      //System.out.println(result);
250          result += " ";//adding a space when starting a new line
251              //     }//end if
252     }
```

```
253
254     //System.out.println(result);
255   return result;//return the string
256 }//end method readWord
257
258  //This method read in the line one at a time
259  public String readLine(ASCIIDataFile file) {
260   String line = "";
261   ASCIIDataFile fileToRead = file; //passing in the file to read
262
263   //if(!fileToRead.isEOF()){
264   line = fileToRead.readLine().replaceAll("[^a-z^A-Z]"," ");
265   //}
266   return line;
267  }//end readLine Method
268
269 }
```