```
 1 package proj5;
 2
 3 /**
 4  * Data structure that holds words and their
   associated synonyms.
 5  * You can look up a word and retrieve a synonym for
   it.
 6  * author: Son Nguyen (Kyrie)
 7  * version: 6/3/2020
 8  */
 9 public class Thesaurus {
10
11     // empty string array constant
12     private String[] EMPTY = new String[]{};
13
14     // instance variable
15     private LineReader thesaurusReader;
16     private String[] currentLine;
17     private String currentKeyword;
18     private String[] currentList;
19     private BinarySearchTree<SynonymsList>
   myThesaurus;
20
21     /**
22      * Default constructor. Creates an empty
   thesaurus.
23      */
24     public Thesaurus() {
25         myThesaurus = new BinarySearchTree<
   SynonymsList>();
26     }
27
28     /**
29      * Builds a thesaurus from a text file.
30      * Each line of the text file is a comma-
   separated list of synonymous words.
31      * The first word in each line should be the
   thesaurus entry.
32      * The remaining words on that line are the list
   of synonyms for the entry
33      * @param file path to comma-delimited text file
34      */
35     public Thesaurus(String file) {
36         thesaurusReader = new LineReader(file, ",");
```

```
37          currentLine = thesaurusReader.getNextLine();
38          myThesaurus = new BinarySearchTree<
    SynonymsList>();
39          buildThesaurus();
40      }
41
42      /**
43       * helper method to construct the non-default
    thesaurus
44       */
45      private void buildThesaurus() {
46          while (currentLine != null) {
47              currentList = new String[currentLine.
    length - 1];
48              currentKeyword = currentLine[0];
49              for(int i = 1; i < currentLine.length; i
    ++) {
50                  currentList[i - 1] = currentLine[i];
51              }
52              myThesaurus.insert(new SynonymsList(
    currentKeyword, currentList));
53              currentLine = thesaurusReader.getNextLine
    ();
54          }
55          thesaurusReader.close();
56      }
57
58      /**
59       * removes entry (and its associated synonym list
    ) from this thesaurus.
60       * If entry does not exist, do nothing.
61       * @param entry word to remove
62       */
63      public void delete(String entry) {
64          myThesaurus.delete(new SynonymsList(entry,
    EMPTY));
65      }
66
67      /**
68       * Gets a random synonym for the given keyword.
69       * If keyword does not exist, return the empty
    string.
70       * @param keyword word to find a synonym for
71       * @return a random synonym from the synonym list
```

```
 71  of that word,
 72       * or empty string if keyword doesn't exist.
 73       */
 74      public String getSynonymFor(String keyword) {
 75          SynonymsList database = myThesaurus.search(
    new SynonymsList(keyword, EMPTY));
 76          if (database != null) {
 77              return database.getSynonym().toString();
 78          }
 79          return "";
 80      }
 81
 82      /**
 83       * inserts entry and synonyms into thesaurus. If
     entry does not exist, it creates one.
 84       * If it does exist, it adds the given synonyms
    to the entry's synonym list
 85       * @param entry keyword to be added
 86       * @param syns array of synonyms for keyword
    entry
 87       */
 88      public void insert(String entry, String[] syns
    ) {
 89          SynonymsList toInsert = new SynonymsList(
    entry, syns);
 90          SynonymsList counterpart = myThesaurus.
    search(toInsert);
 91          if (counterpart == null) {
 92              myThesaurus.insert(toInsert);
 93          }
 94          else {
 95              for (String synonym: syns) {
 96                  counterpart.add(synonym);
 97              }
 98          }
 99      }
100
101      /**
102       * @return this thesaurus as a printable string.
103       * Each keyword and synonym list should be on
    its own line. T
104       * he format of each line is: <keyword> - {<syn1
    >, <syn2>, ..., <synN>}
105       * For example,
```

```
106       * happy - {glad, content, joyful}
107       * jump - {leap, bound}
108       *
109       * The thesaurus keywords will be in
    alphabetical order.
110       * The order of the synonym list words is
    arbitrary.
111       */
112      public String toString() {
113          return myThesaurus.toString();
114      }
115 }
116
```