```java
import java.util.Scanner;
import java.util.Arrays;

public class Lab11
{
        public static final int ADD = 1;
        public static final int SEARCH = 2;
        public static final int QUIT = 3;
        public static void main(String [] args)
        {
            final int EMAIL_LIST_CAPACITY = 1000; //oversized
            String[] source = new String[EMAIL_LIST_CAPACITY];
            Scanner input = new Scanner(System.in);
            int sizeOfArray = 0;
            while(true)
            {
                System.out.println("1. Enter a new email address.");
                System.out.println("2. Find an existing email address.");
                System.out.println("3. Quit");
                System.out.println("What is your choice?");
                int answer = input.nextInt();
                input.nextLine();
                if(answer == QUIT)
                {
                    System.out.println("Goodbye!");
                    input.close();
                    return;
                }
                else
                {
                    sizeOfArray = Lab11.Interface(answer, source, input, sizeOfArray);
                }
            }
        }
        public static int fillOversizedArray(String [] source, Scanner input, int sizeOfArray)
  //keeps track of size, NOT CAPACITY
        {
            System.out.println("Enter the email address");
            String email = input.nextLine();
            if(sizeOfArray == 0)
            {
                source[sizeOfArray] = email;
                System.out.println("Insertion successful!");
                ++sizeOfArray;
                return sizeOfArray;
            }
            else if(sizeOfArray > 0) //if they already entered another email
            {
                for(int i = 0; i < sizeOfArray; ++i)
                {
                    int x = email.compareTo(source[i]);
                    if(x == 0) //returns 0 if same string
                    {
                        source[sizeOfArray] = null;
                        System.out.println("That email address is already inserted!");
                        return sizeOfArray;
                    }
```

```
57                  }
58                  source[sizeOfArray] = email;
59                  System.out.println("Insertion successful!");
60                  ++sizeOfArray;
61              }
62              return sizeOfArray;
63          }
64
65          public static int Interface(int answer, String[] source, Scanner input, int
    sizeOfArray) //runs main program, calls other methods
66          {
67              if(answer == SEARCH)
68              {
69                  System.out.println("Enter the first letter");
70                  String firstLetter = input.next();
71                  String[] similarList = Lab11.searchForSimilars(source, sizeOfArray,
    firstLetter);
72                  String anotherTarget = null;
73                  int sizeOfSL = similarList.length;
74                  while(similarList.length > 1) //if it has 2 or more similar emails
75                  {
76                      System.out.println("The possible choices are: " +
    Arrays.toString(similarList)); //prints out emails of firstLetter
77                      System.out.println("Enter another letter");
78                      anotherTarget = input.next();
79                      anotherTarget = firstLetter + anotherTarget;
80                      sizeOfSL = similarList.length;
81                      similarList = Lab11.searchForSimilars(similarList, sizeOfSL,
    anotherTarget);
82                  }
83                  if(similarList.length == 1) //if it has 1 email
84                  {
85                      System.out.println("Found this email address: " + "[" + similarList[0] +
    "]");
86                  }
87                  else
88                  {
89                      System.out.println("Sorry no such email exist!");
90                  }
91                  return sizeOfArray;
92              }
93              else if(answer == ADD)
94              {
95                  sizeOfArray = Lab11.fillOversizedArray(source, input, sizeOfArray);
96                  Lab11.sort(source, sizeOfArray);
97              }
98              return sizeOfArray;
99      }
100         public static String[] searchForSimilars(String[] source, int arraySize, String
    letter)  //searches for target
101         {
102             int counter = 0;
103
104             for(int i = 0; i < arraySize; ++i)  //go through array and add those emails
105             {
106                 if(source[i].startsWith(letter)) //add the similar email to array
107                 {
```

```
108                     ++counter;
109                 }
110             }
111             String[] listOfSimilars = new String[counter];
112             counter = 0;
113             for(int i = 0; i < arraySize; ++i)  //go through array and add those emails
114             {
115                 if(source[i].startsWith(letter)) //add the similar email to array
116                 {
117                     listOfSimilars[counter] = source[i];
118                     ++counter;
119                 }
120             }
121             return listOfSimilars;
122         }
123         public static void sort(String[] source, int sizeOfArray)   //sorts array of emails
124         {
125                 int swapMe;
126                 int index = sizeOfArray-1;
127                 String temp = source[index];
128                 for(swapMe = sizeOfArray-2; swapMe >= 0 && source[swapMe].compareTo(temp) > 0;
    --swapMe)
129                 {
130                     source[swapMe + 1] = source[swapMe];
131                     --index;
132                 }
133                 source[swapMe+1] = temp;
134         }
135 }
136
```