Source File: ~/1337/53/lab53.(C|CPP|cpp|c++|cc|cxx|cp)
Input: Under control of **main** function
Output: Under control of **main** function
Value: 2

For this assignment, write two functions. The first function will sort an array of **string**s. The array should be sorted in ascending order using an exchange sort. The second function should write the contents of an array of **string**s, one element per line. The prototype for each of these functions can be found in the sample **main** function shown in Figure 1. Commands to compile, link, and run this assignment are shown in Figure 2. To use the **Makefile** as distributed in class, add a target of **lab53** to **targets2srcfiles**.

```
1   #include <iostream>
2   #include <cstdlib>
3   #include <string>
4
5   using namespace std;
6
7   // Function sort - sorts the n-element array of strings in
8   // ascending order using an exchange sort
9   void sort(string array[], int n);
10
11  // Function writeArray - Writes the n-element array of strings to
12  // output stream out, each element on a separate line
13  ostream& writeArray(ostream& out, const string array[], int n);
14
15  int main()
16  {
17    string words[100];
18    unsigned int count = 0;
19
20    while (count < 100 && cin >> words[count])
21      ++count;
22
23    cout << "Before Sort:" << endl;
24    writeArray(cout, words, count);
25    sort(words, count);
26    cout << "After Sort:" << endl;
27    writeArray(cout, words, count);
28
29    return EXIT_SUCCESS;
30  }
```

Figure 1. /usr/local/1337/src/lab53main.C

```
1   newuser@csunix ~> cd 1337
2   newuser@csunix ~/1337> mkdir 53
3   newuser@csunix ~/1337> cd 53
4   newuser@csunix ~/1337/53> cp /usr/local/1337/data/53/* .
5   newuser@csunix ~/1337/53> cp /usr/local/1337/src/lab53main.C .
```

Figure 2. Commands to Compile, Link, & Run Lab 53 (Part 1 of 2)

```
 6  newuser@csunix ~/1337/53> cp /usr/local/1337/src/Makefile .
 7  newuser@csunix ~/1337/53> touch lab53.cpp
 8  newuser@csunix ~/1337/53> # Edit Makefile and lab53.cpp
 9  newuser@csunix ~/1337/53> make lab53
10  g++ -g -Wall -std=c++11 -c lab53main.C -I/usr/local/1337/include -I.
11  g++ -g -Wall -std=c++11 -c lab53.cpp -I/usr/local/1337/include -I.
12  g++ -o lab53 lab53main.o lab53.o -L/usr/local/1337/lib -lm -lbits
13  newuser@csunix ~/1337/53> cat 01.dat
14  first second third fourth fifth sixth
15  seventh eighth ninth tenth eleventh twelfth
16  newuser@csunix ~/1337/53> cat 01.dat | ./lab53
17  Before Sort:
18  array
19  {
20    [ 0] = first
21    [ 1] = second
22    [ 2] = third
23    [ 3] = fourth
24    [ 4] = fifth
25    [ 5] = sixth
26    [ 6] = seventh
27    [ 7] = eighth
28    [ 8] = ninth
29    [ 9] = tenth
30    [10] = eleventh
31    [11] = twelfth
32  }
33  After Sort:
34  array
35  {
36    [ 0] = eighth
37    [ 1] = eleventh
38    [ 2] = fifth
39    [ 3] = first
40    [ 4] = fourth
41    [ 5] = ninth
42    [ 6] = second
43    [ 7] = seventh
44    [ 8] = sixth
45    [ 9] = tenth
46    [10] = third
47    [11] = twelfth
48  }
49  newuser@csunix ~/1337/53> cat 01.dat | ./lab53 > my.out
50  newuser@csunix ~/1337/53> diff 01.out my.out
51  newuser@csunix ~/1337/53> cat 02.dat | ./lab53 > my.out
52  newuser@csunix ~/1337/53> diff 02.out my.out
53  newuser@csunix ~/1337/53>
```

Figure 2. Commands to Compile, Link, & Run Lab 53 (Part 2 of 2)