

```
1 //
2 // Shaun Chemplavil U08713628
3 // shaun.chemplavil@gmail.com
4 // C/C++ Programming III : Intermediate Programming with Objects
5 // 151116 Raymond L. Mitchell III
6 // StringUtility.h
7 // Win10
8 // Visual C++ 19.0
9 //
10 // File contains the StringUtility class definition
11 //
12 #ifndef SHAUNCHEMPLAVIL_STRINGUTILITY_H
13 #define SHAUNCHEMPLAVIL_STRINGUTILITY_H
14
15 #include <string>
16 #include <vector>
17
18 using std::string;
19 using std::vector;
20
21 namespace ShaunChemplavil
22 {
23     class StringUtility
24     {
25
26     public:
27         string join(const vector<string> &strings, char delimiter);
28         vector<string> reverse(const vector<string> &strings);
29         vector<string> combine(const vector<string> &left, const vector<string> &right);
30         vector<string> leftPad(const vector<string> &strings, char pad);
31     };
32 }
33 #endif
```

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4  // C/C++ Programming III : Intermediate Programming with Objects
5  // 151116 Raymond L. Mitchell III
6  // StringUtility.cpp
7  // Win10
8  // Visual C++ 19.0
9  //
10 // File contains the display member function for the StringUtility class
11 //
12
13 #include "StringUtility.h"
14
15 namespace ShaunChemplavil
16 {
17     string StringUtility::join(const vector<string> &strings, char delimiter)
18     {
19         string out;
20         for (size_t i = 0; i < strings.size(); i++)
21         {
22             //append string to output string
23             out += strings[i];
24             // Do not add the delimiter after the last string!
25             if (i < (strings.size() - 1))
26                 out += delimiter;
27         }
28         return out;
29     }
30     vector<string> StringUtility::reverse(const vector<string> &strings)
31     {
32         vector<string> out;
33         // Use an int to index each element of vector of strings
34         // start with last element, and decrement until the index is
35         // negative
36         for (int i = (strings.size() - 1); i >= 0; i--)
37         {
38             // declare temporary string to append elements of string
39             // indexing logic is the same as for the vector of strings
40             string temp;
41             for (int j = (strings[i].size() - 1); j >= 0; j--)
42                 temp += strings[i].at(j);
43
44             // Add the reversed string onto the output vector of strings
45             out.push_back(temp);
46         }
47         return out;
48     }
49     vector<string> StringUtility::combine(const vector<string> &left, const
50     vector<string> &right)
51     {
52         vector<string> out;
```

```
52
53     //Append every permutation of the left and right input vectors of string
54     for (size_t i = 0; i < left.size(); i++)
55         for (size_t j = 0; j < right.size(); j++)
56             // append the elements of each vector of strings
57             out.push_back(left[i] + right[j]);
58
59     return out;
60 }
61 vector<string> StringUtility::leftPad(const vector<string> &strings, char pad)
62 {
63     vector<string> out;
64     size_t max_size = 0;
65     // Find the longest string in the vector
66     for (size_t i = 0; i < strings.size(); i++)
67         max_size = max_size > strings[i].size() ? max_size : strings[i].size();
68
69     // Now do appropriate left padding
70     for (size_t i = 0; i < strings.size(); i++)
71     {
72         string padStr;
73
74         out.push_back(padStr.assign(max_size - strings[i].size(), pad).append
75             (strings[i]));
76     }
77     return out;
78 }
79 }
80
```

```
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3  // shaun.chemplavil@gmail.com
4  // C/C++ Programming III : Intermediate Programming with Objects
5  // 151116 Raymond L. Mitchell III
6  // hw7.cpp
7  // Win10
8  // Visual C++ 19.0
9  //
10 // Test Program for the StringUtility class
11 //
12
13 #include "StringUtility.h"
14 #include <iostream>
15
16 using std::cout;
17 using ShaunChemplavil::StringUtility;
18 using std::string;
19 using std::vector;
20
21 int main()
22 {
23     vector<string> strings, right, left;
24     strings = {"The", "quick", "brown", "fox", "jumps", "over", "the", "lazy",
25               "dog"};
26     left = {"Mr.", "Mrs."};
27     right = {"Jones", "Smith", "Williams"};
28
29     char delimiter = ',';
30     StringUtility testUtility;
31     string output;
32
33     // Test join member function of StringUtility class
34     cout << "6) Testing join member function \n";
35     output = testUtility.join(strings, delimiter);
36     cout << output << "\n";
37
38     // Test reverse member function of StringUtility class
39     vector<string> outVec;
40     cout << "\n7) Testing reverse member function\n";
41     outVec = testUtility.reverse(strings);
42
43     for (size_t i = 0; i < outVec.size(); i++)
44         cout << outVec[i] << "\n";
45
46     // Test combine member function of StringUtility class
47     cout << "\n8) Testing combine member function\n";
48     outVec = testUtility.combine(left, right);
49     for (size_t i = 0; i < outVec.size(); i++)
50         cout << outVec[i] << "\n";
51
52     // Test leftPad member function of StringUtility class
```

```
52     delimiter = '*';
53     cout << "\n9) Testing leftPad member function\n";
54     outVec = testUtility.leftPad(strings, delimiter);
55     for (size_t i = 0; i < outVec.size(); i++)
56         cout << outVec[i] << "\n";
57 }
58
```



```
Microsoft Visual Studio Debug Console

6) Testing join member function
The,quick,brown,fox,jumps,over,the,lazy,dog

7) Testing reverse member function
god
yzal
eht
revo
spmuj
kof
nworb
kciuq
ehT

8) Testing combine member function
Mr.Jones
Mr.Smith
Mr.Williams
Mrs.Jones
Mrs.Smith
Mrs.Williams

9) Testing leftPad member function
**The
quick
brown
**fox
jumps
*over
**the
*lazy
**dog

C:\Users\schem\source\repos\schemp98\Cpp_Certification_Course\Debug\Exercise.exe
(process 2552) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->
Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```