

Homework Assignment #7 – C++ Strings Class

Reading Assignment:

Read Chapter 9 in C++ for Engineers & Scientists, 3rd Edition, by Bronson

Problem Assignment:

1. (18 pts) A company named XYZ Corporation develops Email addresses for their employees by using the first 4 digits of their last name (or all digits if less than 4), the first digit of their first name, and the last 3 digits of their Social Security Number (SSN), followed by “@XYZ.COM”. Write a program that will prompt the user to enter his/her last name, first name, and SSN. The program should then display their Email address. Turn in a printout of the program and the results for the 2 cases below and a 3rd case using **your** name and any SSN you pick.

Inputs	Output
Last Name: Stephens First Name: Clarence SSN: 999-99-1234	Your Email address is StepC234@XYZ.COM
Last Name: Doe First Name: John SSN: 999-99-9876	Your Email address is DoeJ876@XYZ.COM

2. (18 pts) Create a simple data file like the example shown below containing the 4 dates below plus 10 or more additional dates. The file should include 1 date per line and each date should have the form **Month DayOfTheMonth, Year**. All dates should be in this century. Assume that all months begin with an upper case letter and use lower case letters for the remaining letters. No error checking for misspelled months or invalid dates is necessary.

```
February 19, 2006
July 4, 2007
November 4, 2005
September 30, 2007
.
.
```

Write a program that will read the dates and create an output data file with the form **MonthNumber-DayOfTheMonth-Last2DigitsOfTheYear** with no extra spaces. An example is shown below.

```
2-19-06
7-4-07
11-4-05
9-30-07
.
.
```

Turn in printouts of the program, the input data file, and the output data file.

(continued)

3. (20 pts) Download the file **Preamble.dat** from the instructor's web page that contains the Preamble to the United States Constitution. Write a C++ program that will determine and display the following items:
- The total number of characters in the file.
 - The total number of letters in the file (Hint: compare each character input to the range of ASCII decimal values corresponding to upper and lower case letters).
 - The total number of vowels in the file.
 - The total number of words in the file.
 - The total number of uppercase letters in the file.
 - The total number of 3-letter words in the file.
 - The total number of lines in the file.
- Turn in a printout of the program, the data file, and the results.

4. (44 pts) Determine the output for the program below **by hand**. This is good test practice.

```
// Project: StringsHW
#include <iostream>
#include <string>
using namespace std;
string StringToLower(string); // prototype
string StringToUpper(string); // prototype
int main()
{
    string S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,Vowels = "aeiou";
    int I1,I2,I3,I4,I5,I6,I7,I8;
    int Count1 = 0,Count2 = 0,Count3 = 0;
    S1 = "To be or not to be, that is the question.";
    S2 = S1.substr(0,9);
    S3 = S1.substr(9,9);
    S4 = S2 + S3;
    I1 = S1.find(S3);
    I2 = S1.find("be");
    I3 = S1.find("be",8);
    I4 = S1.find("be",17);
    I5 = S1.rfind("be",17);
    I6 = S3.length();
    I7 = S1.length();
    S5 = S1.substr(I7-9,8);
    S6 = S3;
    S6.erase(3,7);
    S7 = S4;
    S7.insert(9,S2);
    I8 = S1.find_first_of(Vowels);
    S8 = S2;
    S8 = S8.append(S2,0,5);
    S9 = S3;
    S9.replace(0,3,"NOT");
    S10 = S3;
    S10.resize(I6+4,'*');
    S11 = Vowels[4];
    S12 = S3;
```

```

for (int i = 3; i >=0; i--) S11 += Vowels[i];
for (int i = 0; i < I6; i++) S12[i] = toupper(S12[i]);
for (int i = 0; i < I7; i++)
{ if(S1[i] == 'o') Count1++;
  if(S1[i] == 116) Count2++;
  if(S1[i] >96 && S1[i] < 123) Count3++; }
cout << "S2 = " << S2 << endl;
cout << "S3 = " << S3 << endl;
cout << "S4 = " << S4 << endl;
cout << "I1 = " << I1 << endl;
cout << "I2 = " << I2 << endl;
cout << "I3 = " << I3 << endl;
cout << "I4 = " << I4 << endl;
cout << "I5 = " << I5 << endl;
cout << "I6 = " << I6 << endl;
cout << "I7 = " << I7 << endl;
cout << "S5 = " << S5 << endl;
cout << "S6 = " << S6 << endl;
cout << "S7 = " << S7 << endl;
cout << "I8 = " << I8 << endl;
cout << "S8 = " << S8 << endl;
cout << "S9 = " << S9 << endl;
cout << "S10 = " << S10 << endl;
cout << "S11 = " << S11 << endl;
cout << "S12 = " << S12 << endl;
cout << "Count1 = " << Count1 << endl;
cout << "Count2 = " << Count2 << endl;
cout << "Count3 = " << Count3 << endl;
system("pause");
return 0; }

```

S2 = _____

S3 = _____

S4 = _____

I1 = _____

I2 = _____

I3 = _____

I4 = _____

I5 = _____

I6 = _____

I7 = _____

S5 = _____

S6 = _____

S7 = _____

I8 = _____

S8 = _____

S9 = _____

S10 = _____

S11 = _____

S12 = _____

Count1 = _____

Count2 = _____

Count3 = _____