Chapter 10 Homework – Strings

Reading Assignment:
Read Chapter 10, Sections 1-2 in Introduction to Programming with C++, 3rd Edition by Liang

Problem Assignment:
1. (12 pts) Work ***Check Point Exercise 10.2*** on page 380 in the textbook. Include instructions and all given information with the exercises. Typo: Replace s3 with s2 in parts 14 & 15.
2. (4 pts) Work ***Check Point Exercise 10.5*** on page 381 in the textbook. Include instructions and all given information with the exercises.
3. (22 pts) ***Email Address Creation***: A company named Creative Engineering develops email addresses for their employees by using the first 5 digits of their last name (or all digits if less than 5), the first digit of their first name, and the last 3 digits of their EmployeeID, followed by "@creative.com". Write a program that will prompt the user to enter his/her last name, first name, and their EmployeeID. The program should then display their email address. Turn in a printout of the program and the results for the 3 cases below. The 3rd case uses **your** name and any 7-digit EmployeeID you pick (make one up).

Inputs	Output
Last Name: Stephens First Name: Clarence EmployeeID: 7654321	Your email address is StephC321@creative.com
Last Name: Doe First Name: John EmployeeID: 1020030	Your email address is DoeJ030@creative.com
Last Name: (yours) First Name: (yours) EmployeeID: (pick one)	Your email address is …

4.   (22 pts) ***Date Format Conversion***: 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. No error checking for invalid dates is necessary.

```
February 19, 2009
July 4, 2017
November 4, 2018
September 30, 2019
        .
        .
```

Write a program that will read the dates in the input date file and create an output data file with the form **MonthNumber-DayOfTheMonth-Last2DigitsOfTheYear** with no extra spaces. Example:

```
2-19-09
7-4-17
11-4-18
9-30-19


        .
        .
```

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

5. (22 pts) *Searching a Dictionary*: Download the file **USDictionary.txt** from the course Blackboard site that contains words in the US dictionary (about 118,000 words – all in lower case). Write a C++ program that will determine and display the following items:
    *   The total number of words in the dictionary.
    *   The total number of characters in the dictionary (not including white spaces)
    *   The total number of characters in the dictionary (including white spaces) – Hint: Use get( ).
    *   The total number of words ending in the letter b.
    *   The total number of words ending in the letter t.
    *   The total number of 5 letter words.
    *   The total number of words ending with a vowel.
    *   The total number of words containing the substring "est".
    *   The total number of occurances of the letter t.
    *   The total number of words containing at least two occurances of the letter t.
    *   The total number of words containing 3 or more vowels.
    Turn in a printout of the program and the results.

6. (18 pts) Determine the output of the program below **by hand**. This is good test practice.

```cpp
// Project:  StringsHW
#include <iostream>
#include <string>
using namespace std;
int main()
{   string S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,S13 = "aeiou";
    int I1,I2,I3,I4,I5;
    int Count1 = 0, Count2 = 0;
    S1 = "Never memorize something that you can look up."; // A. Einstein
    S2 = S1.substr(0,5);
    I1 = S1.length();
    S3 = S1.substr(I1-8,7);
    S4 = S2 + " " + S3;
    S5 = S1.substr(6,2);
    I2 = S1.find(S5);
    I3 = S1.rfind(S5,I1-1);
    S6 = S1.substr(I2,8);
    S7 = S1.substr(I3-2,9);
    S8 = S4;
    S8.append(" " + S2,0,6);
    S9 = S6 + " " + S7;
    I4 = S1.find_first_of(S13);
    I5 = S1.find_last_of(S13);
    S10 = S1;
    S10.erase(0,6);
    S10.insert(0,"Always",7);
    S11 = S1;
    S11.replace(37,8,"t look up");
    S12 = S6;
    for (int i = 0; i < I1; i++) S12[i] = toupper(S12[i]);
    for (int i = 0; i < I1; i++)
    {   if(S1[i] == 'e') Count1++;
        if(S1[i] == 32) Count2++;  }
    cout << "S2 = " << S2 << endl;
    cout << "I1 = " << I1 << endl;
    cout << "S3 = " << S3 << endl;
    cout << "S4 = " << S4 << endl;
    cout << "S5 = " << S5 << endl;
    cout << "I2 = " << I2 << endl;
    cout << "I3 = " << I3 << endl;
    cout << "S6 = " << S6 << endl;
    cout << "S7 = " << S7 << endl;
    cout << "S8 = " << S8 << endl;
    cout << "S9 = " << S9 << endl;
    cout << "I4 = " << I4 << endl;
    cout << "I5 = " << I5 << endl;
    cout << "S10 = " << S10 << endl;
    cout << "S11 = " << S11 << endl;
    cout << "S12 = " << S12 << endl;
    cout << "Count1 = " << Count1 << endl;
    cout << "Count2 = " << Count2 << endl;
    return 0;  }
```

Program Output:

S2 = _____

I1 = _____

S3 = _____

S4 = _____

S5 = _____

I2 = _____

I3 = _____

S6 = _____

S7 = _____

S8 = _____

S9 = _____

I4 = _____

I5 = _____

S10 = _____

S11 = _____

S12 = _____

Count1 = _____

Count2 = _____