Programming Challenges to Review (Lecture/Lab – week#3/4)

(1A) Average Rainfall

Write a program that calculates the average monthly rainfall for three months. The program should ask the user to enter the name of each month, such as June or July, and the amount of rain (in inches) that fell that month. The program should display a message similar to the following:

The average monthly rainfall for June, July, and August was 6.72 inches.

(1B) Using Files—Average Rainfall Modification

Modify the program you wrote for Programming Challenge (Average Rainfall) so reads its input from a file instead of from the keyboard. Sample data to test your program can be found in the rainfall.dat file.

Use notepad or the text editor in your compiler to create a new data file and insert the data below and save the file as rainfall.dat

April .87
May 1.51
June 1.05

(3) Using Files—Storing and Retrieving Numbers

For this assignment you will write two programs:

Program 1: Write a program that asks the user to enter five floating-point numbers.
The program should create a file and save all five numbers to the file.

Program 2: Write a program that opens the file created by Program 1, reads the five numbers, and displays them. The program should also calculate and display the sum of the five numbers.

NOTES:

A few sample programs from to use as a guide …

```
//rectangle.cpp - This program calculates and displays the area of a rectangle.
#include <iostream>
#include <cstdlib> //as needed
using namespace std;

int main()
{
        int length, width, area;

        cout << "This program calculates the area of a rectangle.\n";

        // Have the user input the rectangle's length and width
        cout << "Enter the length and width of the rectangle ";
        cout << "separated by a space.\n";
        cin  >> length >> width;

        // Compute and display the area
        area = length * width;
        cout << "The area of the rectangle is " << area << endl;
        system ("PAUSE"); //as needed
        return 0;
}
```

```
// dimensions_file_io.cpp - This program uses the >> operator to read rectangle dimensions
// from a file. It demonstrates that, as with cin, more than one value can be read in from a file with a single statement.
#include <iostream>
#include <fstream>
#include <cstdlib> //as needed
using namespace std;

int main()
{
        ifstream inFile;
        int length, width;

        inFile.open("dimensions.txt");
        cout << "Reading dimensions of 4 rectangles from the file.\n\n";

        // Process rectangle 1
        inFile >> length >> width;
        cout << "Area of rectangle 1: " << (length * width) << endl;

        // Process rectangle 2
        inFile >> length >> width;
        cout << "Area of rectangle 2: " << (length * width) << endl;

        // Process rectangle 3
        inFile >> length >> width;
        cout << "Area of rectangle 3: " << (length * width) << endl;

        // Process rectangle 4
        inFile >> length >> width;
        cout << "Area of rectangle 4: " << (length * width) << endl;

        // Close the file
        inFile.close();
        cout << "Done.\n";
      system ("PAUSE"); //as needed
        return 0;
}
Contents of dimensions.txt
10  2
 5  7
 6 20
 8  3
```