

Homework Assignment #6 – Data Files**Reading Assignment:**

Read Chapter 8 in C++ for Engineers & Scientists, 4th Edition, by Bronson

Problem Assignment:

Submit each of the following by the assigned due date.

- (20 pts) Work Exercises 8.2, Problem 8 in the textbook with the following changes:
 - Instead of displaying the results on the screen, send the results to an output data file.
 - Also send your name, the course number, the homework assignment number, and the problem number to the output data file.
 - Turn in printouts of the program, the input data file, and the output data file.
- (21 points) Create a data file containing around (but not exactly) 100 integers. Do not include the same number of integers on each line of the file. Write a C++ program to read the integers into an array with a max size of 200 (i.e., search for eof marker). The program should then determine and display the average of the numbers (a real value), the number of integers greater than the average, and the number of integers less than the average. Print the program, the data file, and the output.
- (21 points) Create a data file (using Notepad, perhaps) containing the values shown below (plus add 4 more lines of your choice) and then write a C++ program as follows:
 - Read the data file (you can assume that it has exactly 8 lines with 3 numbers per line)
 - Calculate the three angles using the law of cosines (assume that the sides are valid)
 - Write the results to an output data file. The results should include headings and 2 digits after the decimal point for all values. An example is shown below.

Input data file:

20	15	10	← Sides a, b, and c for Triangle 1
5	12	13	
10	10	14.142	
50	60	70	
.			} Pick values for 4 more valid triangles
.			

Output data file:

Side a	Side b	Side c	Angle A(deg)	Angle B(deg)	Angle C(deg)
20.00	15.00	10.00	104.48	28.96	46.57
.					
.					

- (20 points) Download the file BigData.dat from the course Blackboard site. Write a C++ program to read the file (assume that you do not know the number of values in the file) and determine (and display) each of the following:
 - The number of values in the file
 - The largest value in the file
 - The smallest value in the file
 - The number of negative numbers in the file
 - The number of values in the file that are between 100 and 200

5. (18 pts) Determine **by hand** the output of each program listed on the following pages using the data files shown below.

Contents of A:dat1.in:

2.0 3
4.0 5
6.0 7

Contents of A:dat2.in:

9-15-20

Contents of A:dat3.in:

acrtjprltoiu
owhfdtrnfres
dnzzpogquse

C++ Program	Output
<pre>// HW #6, Problem 5A #include <iostream> #include <fstream> using namespace std; int main (void) { double x,y,z; ifstream infile("A:dat1.in"); infile >> x >> y >> z; cout << "x = " << x << endl << "y = " << y << endl << "z = " << z << endl; infile.close(); system("pause"); return 0; }</pre>	x = _____ y = _____ z = _____
<pre>// HW #6, Problem 5B #include <iostream> #include <fstream> using namespace std; int main (void) { int x,z; double y; ifstream infile("A:dat1.in"); infile >> x >> y >> z; cout << "x = " << x << endl << "y = " << y << endl << "z = " << z << endl; infile.close(); system("pause"); return 0; }</pre>	x = _____ y = _____ z = _____
<pre>// HW #6, Problem 5C #include <iostream> #include <fstream> using namespace std; int main (void) { int x,y,z; ifstream infile("A:dat2.in"); infile >> x >> y >> z; cout << "x = " << x << endl << "y = " << y << endl << "z = " << z << endl; infile.close(); system("pause"); return 0; }</pre>	x = _____ y = _____ z = _____

C++ Program	Output
<pre>// HW #6, Problem 5D #include <iostream> #include <fstream> using namespace std; int main (void) { int x,y,z; char c1, c2; ifstream infile("A:dat2.in"); infile >> x >> c1 >> y >> c2 >> z; cout << "Result: " << x << "\\ " << y << "\\ " << z << endl; infile.close(); system("pause"); return 0; }</pre>	Result: = _____
<pre>// HW #6, Problem 5E - Code interpreter #include <iostream> #include <fstream> using namespace std; int main (void) { int x,y,z; char c1,c2,c3,c4,c5; ifstream infile("A:dat3.in"); cout << "Result: "; infile >> c1 >> c2 >> c3 >> c4 >> c5; cout << c5; infile >> c1 >> c2 >> c3 >> c4 >> c5; cout << c5; infile >> c1 >> c2 >> c3 >> c4 >> c5; cout << c5; infile >> c1 >> c2 >> c3 >> c4 >> c5; cout << c5 << " "; infile >> c1 >> c2 >> c3 >> c4 >> c5; cout << c5; infile >> c1 >> c2 >> c3 >> c4 >> c5; cout << c5; infile >> c1 >> c2 >> c3 >> c4 >> c5; cout << c5 << endl; infile.close(); system("pause"); return 0; }</pre>	Result: _____
<pre>// HW #6, Problem 5F #include <iostream> #include <fstream> using namespace std; int main (void) { char x,y,z; ifstream infile("A:dat1.in"); infile >> x >> y >> z; cout << "Results:" << endl; cout << "x = " << x << endl << "y = " << y << endl << "z = " << z << endl; infile.close(); system("pause"); return 0; }</pre>	x = _____ y = _____ z = _____