

## Homework Assignment #6 – Data Files

### Reading Assignment:

Read Chapter 8 in C++ for Engineers & Scientists, 3<sup>rd</sup> Edition, by Bronson

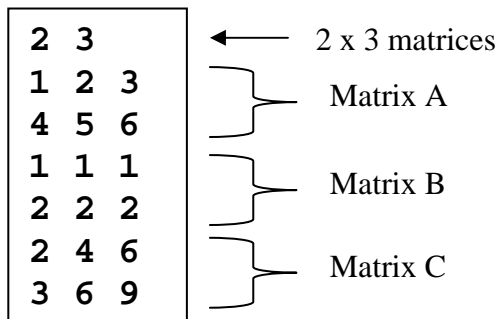
### Problem Assignment:

Submit each of the following by the assigned due date.

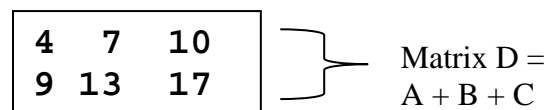
- (20 pts) Work Exercise 8.2, Problem 8 in the textbook with the following changes:
  - Instead of displaying the results on the screen, send the results to an output data file.
  - Also send your name, the course number, the homework assignment number, and the problem number to the output data file.
  - Turn in printouts of the program, the input data file, and the output data file.
- (20 pts) Work Exercise 8.5, Problem 3 in the textbook with the following changes:
  - Instead of entering the info for the file *polar.dat* with prompts from a C++ program, simply use Notepad to create the data file with the contents shown in the text. Include the table headings in the data file. Once the file has been created, write a program for part C of the problem.
  - In addition to the required x-y coordinates, also send output table headings (with units), 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) 50 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 (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) Write a C++ program that will add three matrices of any size from an input data file and write the result to an output data file. The input file should have the dimensions of the matrices on row 1 followed by the three matrices. Read the input data into matrices A, B, and C and calculate the value of matrix D and send its contents to the output data file. Print the program, the input data file, and the output data file for the two examples below.

#### Example 1:

Input data file:



Output data file:



Example 2: Make up your own example using matrices with 3 rows and 2 columns (3 x 2)

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:

<b>2.0 3</b> <b>4.0 5</b> <b>6.0 7</b>
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Contents of A:dat2.in:

<b>9-15-20</b>
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Contents of A:dat3.in:

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

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