**CSci 1500 - Assignment 2 – 100 pts.**

**Due Date: Oct 2, 2019**

Write a *detailed* pseudocode solution for each of the following problems. Then, using your pseudocode, convert your pseudocode into C++ programs. Here are the things you need to do for each problem:

* Design your solutions to produce the program output like that given for each of the problems. Note: Your program should work correctly for any valid user input, not just for the example user input values given.
* Convert your pseudocode into C++ code. Follow the coding guidelines in the textbook. Remember to use appropriate data types for all variables. Remember to include each name of your group in a comment at the top of the program. Compile and run the program and verify that it works properly for a variety of input values.

**What you need to turn in:** A printed copy of your pseudocode and your C++ code for each of the problems, arranged in order, and stapled together. Include each name of your group on the front page of what you turn in. Clearly identify which pseudocode and C++ code solves which problem. Use a simple text editor to write and print your pseudocode.

1. Write a program that prompts for and reads a floating point number and a letter. If the letter following the number is F, the program is to treat the number entered as a temperature in degrees Fahrenheit, convert the number to equivalent degrees Celsius, and display both temperatures. If the letter following the number is C, the program is to treat the number entered as a temperature in Celsius, convert the number to the equivalent degrees Fahrenheit, and display both temperatures. Note: You may assume that the user will enter an F or a C for the letter.

**Formulas:**

* *Celsius* = (5.0/9.0)\*(*Fahrenheit* – 32.0)
* *Farenheit* = 1.8 \* *Celsius* + 32.0

Here are examples of what output should look like from running your program (user input is in **bold**):

Run 1:

Enter temperature and type (C or F): **15.2C**

15.2 C = 59.36 F

Run 2:

Enter temperature and type (C or F): **72F**

72.0 F = 22.2222 C

2. The grade level of undergraduate college students is determined according to the following schedule:

|  |  |
| --- | --- |
| Number of credits completed | Grade level |
| less than 32 | Freshman |
| 32 to 63 | Sophomore |
| 64 to 95 | Junior |
| 96 or more | Senior |

Using this information, write a program that prompts for and reads the integer number of credits that a student has completed, determines the student's grade level, and displays the grade level. Here is an example of what output should look like from running your program (user input is in **bold**):

Enter number of credits: **70**

Grade level: Junior

3. Write a program that prompts for and inputs three exam scores (an integer between 0 and 100) and then outputs both the highest and the lowest of the scores. Note: Do not assume that the user will enter the scores in any particular numerical order. Here is an example of what output should look like from running your program (user input is in **bold**):

Enter three exam scores: **70** **60 90**

Highest score = 90

Lowest score = 60

4. A mail order company sells Jesse Ventura tee shirts for $11.95 each if fewer than four are ordered, $9.95 each if at least four, but less than eight are ordered, and $7.95 each if at least eight are ordered. The company charges a shipping and handling fee that depends on the total price of the order, as shown in the table below:

|  |  |
| --- | --- |
| Total price of order | Fee |
| $0 - $25.00 | $3.50 |
| $25.01 - $75.00 | $5.95 |
| $75.01 or more | $7.95 |

Write a program to input the number of shirts to be purchased and output the total cost of the shirts, the shipping and handling charge, and the total final cost. Display all monetary values with a dollar sign and two decimal places of accuracy. Note: Refer to chapter one of our text to see how to format floating point output to two places of accuracy. Here is an example of what output should look like from running your program (user input is in **bold**):

Enter number of shirts: **7**

Total shirt cost = $69.65

Shipping and handling = $5.95

Total final cost = $75.60