Assignment #1 (40 points; due Tuesday, 9/19/2023, at 11:59:00 P.M.)

For all Programs:

To get in the habit of writing pseudocode write the simple pseudocode for these programs. The pseudocode for #1 for example can be as simple as "Display Student Information on Screen formatted on 4 Lines".   Put your pseudocode in comments at the top of your programs, as well as many lines within the code necessary to describe what's going on in the program. PSEUDOCODE IS REQUIRED FOR ALL PROGRAMS.

For each program make sure and include the following comments at the top (do this on all homework assignments from now on – this is required):

//Your Name
//CS 1, Section #XYZ (where XYZ is your section)
//Assignment #Q, Problem #R
//Summary of the program

For this first homework you have six SHORT programs, so you will be submitting 6 source files via Canvas. Future homework assignments will not have this many programs involved; these are simple programs. That is the only reason there are so many programs for this assignment. These programs address the basics from Chapters 1 – 3.

From Chapter 1 – Student Information Program

1.   Write a program that displays the following information about yourself: your name, the computer languages you know (you can write "none"), your favorite video game, and what 3 people/characters, real or imaginary, living or dead, . You should format your program output similar to the output below (make sure and use your own name and information):

STUDENT INFORMATION

NAME: Jane Doe

COMPUTER LANGUAGES: Java, HTML

FAVORITE VIDEO GAME: Call of Duty

WHO I WOULD HAVE DINNER WITH: John Doe, Mickey Mouse, Bono

From Chapters 2 and 3

2. Write a C++ program that displays the results of the expressions 3.0 * 5.0, 7.1 * 8.3 – 2.2, and 3.2 / (6.1 * 5). Display the results of each calculation vertically, decimals right aligned, and rounded to two decimal places similar to what is shown below. Calculate the value of each expression manually to verify that the displayed values are correct. An example of how to display output for the first problem of the three math problems is shown below. Each number should be displayed using either a numeric constant or an expression. You do not need to take in input, only output the results.

<div align="center">

3.0
* 5.0

15.00

</div>

3. Write a C++ program that produces a simple personalized adventure game called Lost Fortune about a band of explorers that finds a stash of 750 gold pieces. Start by asking the player for the following information: the number of explorers and the number of explorers lost in battle. The program should then use the information input by the player (this information will be different EACH time the game is played) to generate and print a basic adventure story. Here's a sample run of the input and output of the game (program) where the player entered the following input: 17 (for the number of explorers), followed by 13 (for the number of explorers lost).

Welcome to Lost Fortune!

Please answer the following questions for your personalized adventure:

Enter the number of Explorers:
17
Enter the number of Explorers Lost in Battle:
13

You bravely led 17 adventurers on a quest for gold.
The group fought a band of ogres and lost 13 members.
Only 4 survived.

The party was about to give up when they stumbled upon the buried fortune of 750 gold pieces. The group split the loot evenly and as the quest leader you kept the extra 2 gold pieces.

Note the game must work correctly no matter what number of explorers and lost explorers the player inputs. Therefore, in addition to using the values that the player provides, the program needs to calculate the number of remaining explorers after the battle and the number of extra gold pieces the player keeps after the gold pieces are divided evenly between the surviving explorers (in the above example each of the 4 surviving explorers got 187 gold pieces and the two remaining pieces that couldn't be divided evenly between the 4 explorers go to the player (quest leader)).

4. The formula to compute the volume of a square based pyramid is:

$$\text{Volume of Pyramid} = A*h/3$$

where A is the area of the base of the pyramid and h is the height of the pyramid.

Write a C++ program that asks the user to enter the length of a side for the square base, and ask for the height of the pyramid. Then the program should calculate the area of the base of the pyramid, and then calculate the volume of the pyramid. Next display the results (rounded to two decimal places). When you display the results you should display the area of the base of the pyramid, the height of the pyramid, and finally the volume of the pyramid. Make sure and format your output in a reasonable way.

5. Write a C++ program that creates an invoice for a small fruit vendor named "Bob's Fruits". The fruit vendor sells three kinds of fruit: oranges, apples, and bananas. Oranges cost .90 each, apples cost .65 each and bananas cost .70 each. For each type of fruit the program should ask the user how many of this type of fruit they would like to purchase (zero is an acceptable answer). After obtaining the purchase information from the user display an invoice on the screen similar to this:

BOB'S FRUITS GROCERY INVOICE
```
----------------------------------------------------
    20 Apples  @ 0.65 each   = $ 13.00
    20 Oranges @ 0.90 each   = $ 18.00
    20 Bananas @ 0.70 each   = $ 14.00
   -----------------------------------------------------
                     TOTAL = $ 45.00
```

This invoice is an example of the case where a user buys 20 oranges, 20 apples and 20 bananas. Make sure and use symbolic constants where appropriate in your program and make sure to format your numeric output.

6. Write a C++ program that asks the user to enter a character and then displays the decimal equivalent of that character from the ASCII code table. **HINT:** You will need to use a cast in your program to do this.

Your output for this program should be something like this:

Please enter a character: A
The ASCII code for the character A is 65