Lab/Homework 05 - Input

See the list of problems below and on reverse. Do them. I would like you to spend at least 3 hours on this over the weekend. You do not have to do all of the problems but you should give an honest effort and put in about 3 hours (or less if you finish of course). Do the best you can. The more you actually practice programming the better off you will be in this class (and future classes if you take more CS). If you have any questions, I should be able to them by email this weekend.

For each program that you complete, create a short report (it should include several example program runs), and then record the approximate number of minutes you spent working on the problem in the space provided. Staple together your reports, in order, to this sheet, with this sheet on top, and hand the “package” in next class.

Your programs should be similar to the GPA05 program posted on the web site:

http://www.csc.villanova.edu/~joyce/csc1051/fall09/projects.html

For each program you need to declare variables of an appropriate type. Use “good” names for your variables, names that “fit” the usage of the variable (for example I used credits for the number of credits in the GPA program).

Then you need to prompt for and read in input from the user. Make sure your prompts are simple, yet clear. Next you may have to do some processing, and finally, your program prints a nice statement of the results, which includes all the pertinent information.

1. Create a program that declares int variables to hold the cost of a new pair of shoes and the number of pairs of shoes Julie wants to buy, prompts for and reads in that information, and then calculates and prints out the total cost.

   How long did you spend on this problem? __________

2. Create a program that asks the user to input their age, and then their name. The program should then print a nice message about how old they are in “dog years”. For example, if their name is “Wilma” and their age is 24 the program might print: “Hey Wilma, in dog years you are only 2.” Be sure to “consume” the end of the input line that contains the age before reading in the string, as discussed in class.

   How long did you spend on this problem? __________

3. Create a program that declares int variables to hold the cost of a new pair of shoes, the number of pairs of shoes Julie wants to buy, the number of pairs of shoes that Julie actually buys, prompts for and reads in that information, and then calculates and prints out the amount of money saved by Julie not giving into her crazy spending desires (i.e. the money not spent on the extra pairs of shoes).

   How long did you spend on this problem? __________
4. This program should ask the user to enter in their first name, then their middle initial, and then their last name. It should then print their name out in the form: Last, First M.. For example if first is Herbert, middle initial is T, and last is Gillis, the program prints out: “Gillis, Herbert T.”. Of course declare appropriate variables (I will not continue to state that as part of the problem specification ... it should be “understood” from this point on).

How long did you spend on this problem? _________

5. Create a program that asks the user to enter a number of seconds, reads in that number, and then calculates and prints out the equivalent number of hours, minutes and seconds.

How long did you spend on this problem? _________

6. Create a program that gets the radius of a circle from the user and then prints the radius, diameter, and circumference of the circle. Note: The Math class defines a constant PI that defines the value of $\pi$ to a large number of decimal points ... you can use this static constant by just typing “Math.PI” in your code.

How long did you spend on this problem? _________

7. The quadratic formula provides an equation for determining the two roots of a quadratic equation, an equation of the form $ax^2 + bx + c$. Prompt the user for the values of a, b, and c, and then use the quadratic formula (look it up if necessary) to calculate the two roots of the equation. Print the roots.

How long did you spend on this problem? _________