CS161 - Programming Assignment 3 - Selection Structures (DataFun)

The purpose of this assignment is to get some experience working with selection structures (if, else, and switch)., as well as more experience working with simple data types.

Overview

This program will allow you to demonstrate your mastery of ifs, elses, and switch statements.   It will consist of three parts, one that deals with integers, one that deals with characters, and one that deals with floating point numbers.

Details

The first part of the program will do the following:
- Get the user's favorite integer.
- Print out if it's positive or negative (consider 0 as positive)
- Print out if it's greater than 10, 100, or 1000 (only print the highest one it's greater than).
- Print out if it's odd or even (divide it by 2, no remainder means it's even).
- If the number is the atomic number of one of the 6 noble gasses, it should print out the name of the noble gas corresponding to that atomic number. If the number is NOT the atomic number of one of the 6 noble gasses, it should print a message stating that. (use a switch statement for this)

The second part of the program will do the following:
- Get the user's favorite character.
- Print out if it's a numeric digit, lowercase letter, or uppercase letter.
- If it's a letter, prints out if it's a vowel or not
- Print out the ascii value of the character (hint: static_cast will prove useful)
- If it's a letter, prints out where it is in the alphabet (A=1st, B=2nd, C=3rd, etc., and print the proper suffix (st, nd, rd, th, etc..) (hint: to get the last digit, mod by 10)

The third part of the program will do the following:
- Get the user's favorite floating point number.
- Determine and print out the parts to the left and right of the decimal point individually, and state whether or not it could have been stored in an integer.

Sample Output

Output should look similar to this::

```
What is your favorite integer? 42
     42 is a positive number,
     it is greater than 10,
     it is even,
     and it is not the atomic number of a noble gas.

What is your favorite character? E
     E is an uppercase letter,
     it is a vowel,
     its ASCII value is 69,
     and it is the 5th letter of the alphabet.

What is your favorite floating point number? 3.1415
     3.1415 could not be stored as an integer.
     The portion to the left of the decimal point is 3,
     and the portion to the right of the decimal point is 0.1415
```

Technical details
- You must use ifs, elses, and at least one switch structure.
- Try to be efficient, don't do comparisons if you already know the answer (i.e. make use if /else if/else structures where appropriate)
- Test it with a good set of test data so all lines of code get run (i.e. all conditions are tested with both true and false values)

As with all programs written in this course, maintainability is as important as functionality, so your the code should be clear and easy to follow. Make sure it follows the class coding standards (verify it against this checklist before submitting).