Tutorial 3

Write a program which converts temperature degrees between Fahrenheit (F) and Celsius (C) in both directions. Formula are:

From F to C -- C = (F - 32) / 1.8

From C to F -- F = 1.8 * C + 32

Your program must do the following.

Allow the user to enter either/both scale, and display the equivalent temperature degree in the other scale. For example, if the user enters "16.0 C", your program should output "60.8 F", while if the user enters "56.2 F", your program outputs "13.4 C".

Accept both upper and lower case character for the scale, that is, F or f and C or c.

Display the result with decimal precision 1.

Write the following functions to do some of tasks involved in the program, and main() MUST call those functions appropriately to pull together the whole program.

void receiveInput(double& temp, char& sc);

This function receives the input from the user. First it makes a prompt to the user and receive a double followed by a char and assigns/stores them to the respective variables.

Be sure to accept both upper- and lower-case character for the scale ('F' or 'f', and 'C' or 'c').

This function must also check for errors in the scale the user entered --if the scale character is not any of 'F', 'f', 'C' or 'c', an error message should be displayed and prompts the user to enter again. See the sample output below for examples.

double toCels(double t);

This function receives a temperature degree (passed in as the parameter t) which is assumed to be in Fahrenheit, and returns the degree which is the equivalent degree in Celsius.

double toFahren(double t);

This function converts a temperature degree (passed in as the parameter t) which is assumed to be in Celsius, and returns the degree which is the equivalent degree in Fahrenheit.

int findScaleCase(char s);

This function receives the scale character (e.g. 'F') as the parameter, and returns an integer -- 1 if is 'F' or 'f', or 2 if it is 'C' or 'c', or 3 for all other characters. Then main() receives the returned case integer, and calls the toCels() or toFahren() function to obtain the equivalent temperature degree.

Extra Credit

Ask the user how many times he/she wants to enter the values

Create two arrays called F and C. Set the size of these two arrays as the same as the number of times he/she wants to enter.

Try saving all the Fahrenheit values in the F array and Celsius values in the C array.

Question 2

Read up the article on TDD. Explain how TDD can be valuable to software development.

Question 3

Discuss when is it not right to use TDD methods.