# CMSY 156 - Lab 5 (Part 2) Functions



Create a program with the following functions (remember to define the functions before calling them):

1. Celsius to Fahrenheit function:
    a. Function name and parameter name: **to_fahr(ctemp)**
    b. Parameter – temperature in Celsius
    c. Return value – temperature in Fahrenheit

    **Formula**: (9/5) * Celsius temp + 32.

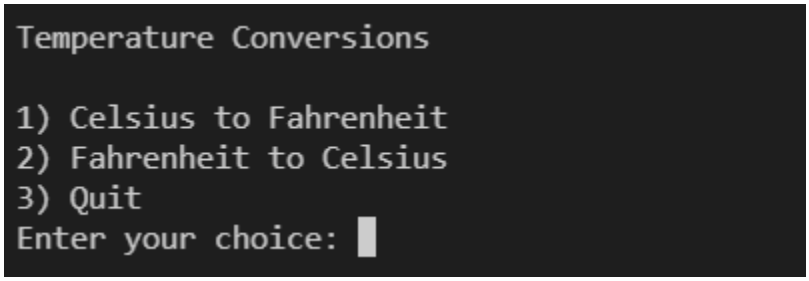
    **Note**: the function must be passed the temperature to convert and must return the converted temperature. The function must not perform any input or output operations.

2. Fahrenheit to Celsius function:
    a. Function name and parameter name: **to_cels(ftemp)**
    b. Parameter – temperature in Fahrenheit
    c. Return value – temperature in Celsius

    **Formula:** (Fahrenheit – 32) * 5 / 9

    **Note**: the function must be passed the temperature to convert and must return the converted temperature. The function must not perform any input or output operations.

3. Menu function:
    a. Function name: display_menu()
    b. Parameter: None
    c. Return value: None
    d. The appropriate temperature conversion function should be called for options 1 and 2, and the program should terminate for option 3.



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4. Main function: Use for temperature input, function calls, and temperature output.

   **Note:** Make sure to place the main function definition before the other function definitions.

   a. Call the display_menu function to display the menu.
   b. Prompt the user to make a menu choice. The menu must redisplay after each temperature conversion. The program should only terminate if the user selects option 3 to quit.
   c. If the user enters in an invalid menu option, the code must display the appropriate error message and the code must redisplay the menu to allow the user to reselect the menu option.

      **Note:** See the screen shot below for examples of program input and output

      i. For menu choice 1, Celsius to Fahrenheit:
         1. Prompt the user to input the Celsius temperature to convert.
            a. The code must validate the input value. The code must not allow the entry of a temperature value that is less than absolute zero (-273.15 degrees Celsius)
            b. If the user enters an invalid number, the code must display an appropriate error message and allow the user to reenter.
            c. The code must continue to loop until the user enters in a valid temperature.
         2. Call the **to_fahr** function passing as an argument the Celsius temperature entered by the user.
         3. Use the input temperature and the returned temperature from the function to display the output like the screenshots below. The Celsius temperature and the Fahrenheit temperature must be formatted with two decimal places using F-strings.

**Please submit your py file as well as a screen shot of the output.**

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ii. For menu choice 2: Fahrenheit to Celsius
    1. Prompt the user to input the Fahrenheit temperature to convert.
        a. The code must validate the input value. The code must not allow the entry of a temperature value that is less than absolute zero (-459.67 degrees Fahrenheit)
        b. If the user enters an invalid number, the code must display an appropriate error message and allow the user to reenter.
        c. The code must continue to loop until the user enters in a valid temperature.
    2. Call the **to_cels** function passing as an argument the Fahrenheit temperature entered by the user.
    3. Use the input temperature and the returned temperature from the function to display the output like the screenshots below. The Celsius temperature and the Fahrenheit temperature must be formatted with two decimal places using F-strings.

iii. For menu choice 3: Terminate the program

5. Once you have defined the required functions, the last statement (last line) of your program should be a call to the main menu function.

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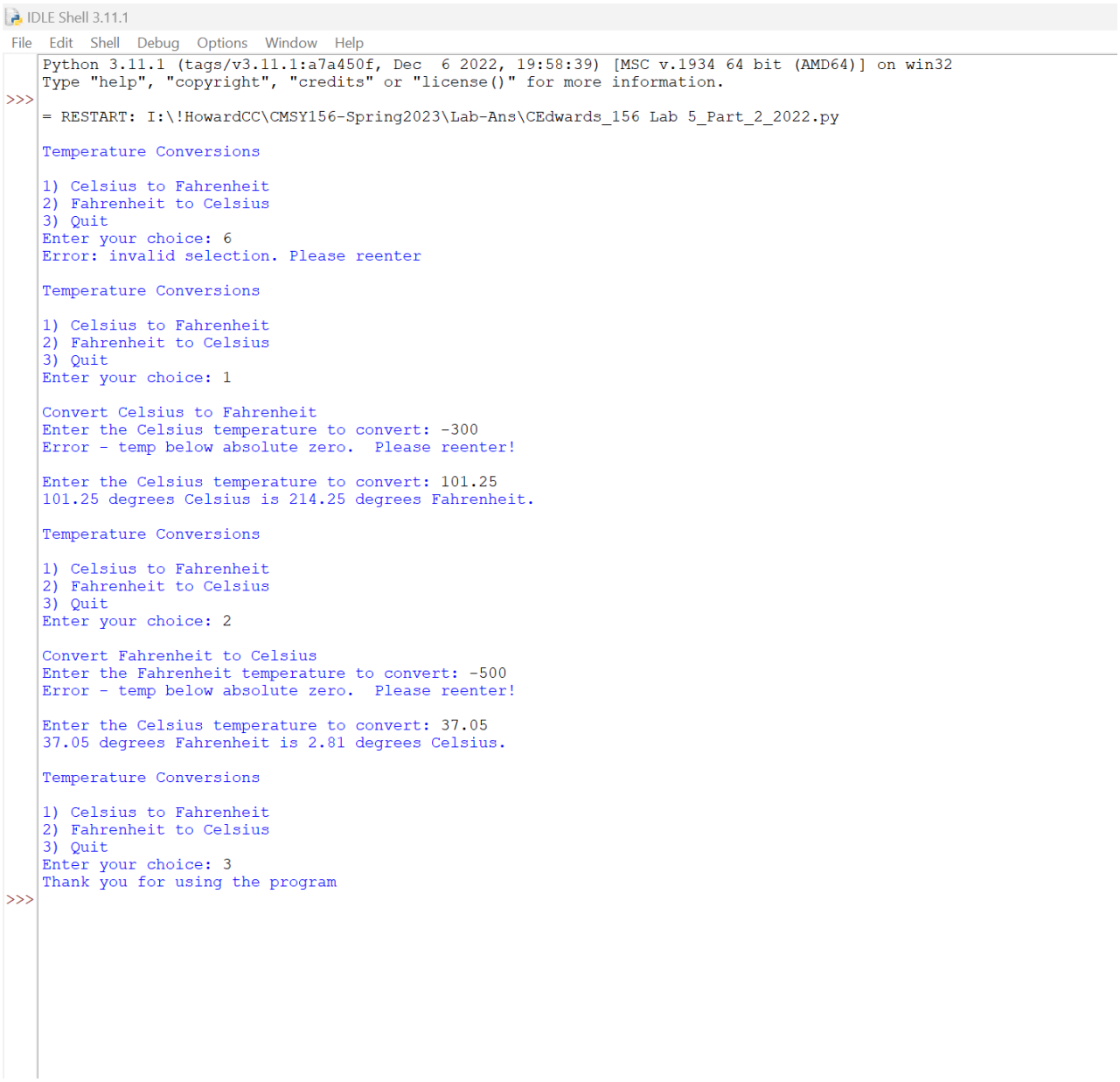


**Rubric:** The rubric is located on the assignment page in Canvas. Please review the rubric to make sure you meet all of the requirements for this lab.