Functions

Read: *Chapter 6 from textbook*

Practice problems

1. Do the programming exercises from the textbook.
2. We want to have a function square(x) that calculates the square of a number x. Write two versions of this function; one (actually this is already in the text) should be called as follows

   ```
   >>> sq = square(x)
   ```

   and the other should be called as follows:

   ```
   >>> square(sq)
   ```

   In both cases, sq 'contains' the square of x. Note that we say 'contains' because sq is (should be) of different type in the two cases: in the first case x is not modified (check this), but in the second we use the function to modify sq as a parameter.
3. In the previous example, what is the result of

   ```
   >>> eval(“square”+”(sq)”)
   ```

   when applied to the second function? (Recall that eval() can be also used to evaluate pieces of Python code.)
4. Write a program that opens a text file with a list of first and last names, replaces the last names with X's (so “John” becomes “XXXX”) using a function that <u>modifies its parameter(s)</u>, and then writes back these altered records to a new text file. Before you sit down to code, first break down and organize your program in small subtasks, and then implement these subtasks using functions.
5. Write a program that asks the user for one number x and a name for a function that is either “convertCF” or “convertFC”; then, if the user has provided “convertCF” the program converts x degrees Celsius to degrees Fahrenheit, otherwise if the user has provided “convertFC” the program converts x degrees Fahrenheit to degrees Celsius. *(Hint: Note from (2) that you can construct a function call as a string and then make the actual call using eval().)*
6. Now try to implement (where you haven't done it already) the same functions as above but without returning value(s) to variables; just by changing the intended variable value *inside* the function (i.e., try to do the same things but with all `return` statements having no values (to return). *(Hint: We have already discussed how to do this using lists instead of simple variables.)*