Homework #1:
Input / Process / Output Assignment (100 points)

Directions:

- Create the following programs in Python that perform the purpose described and produce the sample output (with user input where applicable).
- Include at least ***three lines of comments/remarks in each program***, including your name, the date, and a description of the program.
- Upload your .py Python program to our Moodle/eThink web site for each of the following programs.
- Be sure to adhere to the college and course academic honesty policy.

1. Prompt the user for two user inputs from the keyboard: a) a type of fruit (e.g. apples, bananas, etc.) and 2) the unit cost/cost per individual item of that fruit. Accept in the type of fruit as a string data type and accept in the cost as a float data type. Display the following output based on what they enter: " "*****'s are ******* each. " where **** is the user input entered by the user. Name the file hw1-1.py.

   Sample run:

   Please enter name of fruit: Red Delicious Apple
   Please enter cost per item: 1.72
   Red Delicious Apple's are $1.72 each.

   (note: the first two lines above were user input and the last line was the program output)

2. Create a program named hw1-2.py that prompts the user for two user inputs: a) an amount of money a customer owes, and b) an amount of money they pay. Calculate and display the change owed to the customer. Include the $ signs as shown. Accept in the user input as float. Your program should run as shown in the following sample run.

   Sample run:

   Please enter amount owed: 5.50
   Please enter amount paid: 10
   Customer receives $4.50 change.

3. Create a program named hw1-3.py that prompts the user to enter the radius of a circle. Based on this, the program will calculate and display the area of the circle. Allow the user input to be entered in as a float. Round the numeric output to two digits to the right of decimal place. Create and use the value of pi as a CONSTANT.

   Sample run:

   Enter the radius of the circle? 9
   The area of the circle is: 254.47

4. Create a program named hw1-4.py that asks the user to enter how many eggs a restaurant used in the previous month – see sample run below. Based on this user input, calculate and display how many cartons of eggs the restaurant should order for next month assuming a dozen eggs are in a carton. Test the program with 100 eggs as user input. To show you the many ways in which programming languages have to and can handle numeric data and calculations, display the output three ways as shown in the sample run below. 8.333333333333334 was outputted raw with no formatting. The next line – with the first 9 in it – was outputted using a math built-in function. The last line of output – with the second 9 in it – was outputted without using the built-in math function, but instead using a formula.

   Sample run:

   How many eggs does the restaurant use last month?100
   Order 8.333333333333334 cartons of eggs next month.
   Order 9 cartons of eggs next month.
   Order 9 cartons of eggs next month.

5. Prompt the user to enter the population from the last census for the Michigan cities of Dearborn, Detroit and Southfield as shown in the sample run below. This will require the creation of three variables. Use a data type of float for each. Display the output shown in the sample run exactly as it is shown, i.e. commas as thousands place, period at end, etc. The numeric output is the numeric input entered by the user. Name the file hw1-5fd.py.

   Sample run:

   Use data from last census

   Enter the population of Dearborn: 98153
   Enter the population of Detroit: 713777
   Enter the population of Southfield: 71758
   The population of Dearborn, Detroit and Southfield is 98,153 713,777 and 71,758.

6. A particular college course has the following grading system and weights:

2 Exams each worth 100 points	Weight: 70% of course grade
2 Homework assignments each worth 100 points	Weight: 30% of course grade

   Design and create a program that allows the user to enter their score for each of the 4 items above and then calculates and displays their course grade as a percentage (0%-100%) as the example in the sample output shows (round number output to zero digits to right of decimal). Allow user input to be integer or float. Display a % sign after the grade with no space in between. Align all the numeric user input and output in a second column as shown below using the tab character. Name the file hw1-6.py.

   Sample run:

   ```
   Enter your score for Exam #1:          100
   Enter your score for Exam #2:          100
   Enter your score for Homework #1:      100
   Enter your score for Homework #2:      100
                                          -----
   Your grade in the class is:            100%
   ```

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Extra Credit (10 pts)

7. One acre of land is equivalent to 43560 square feet. Prompt the user to enter in the total square feet in a tract of land and calculate and professionally display the number of acres in the tract. Name the file hw1-7.py.

8. A customer in a store is purchasing three items. Prompt the user for the price of each item individually. Professionally display the subtotal of the sale, the amount of sales tax and the total. Assume that sales tax is 6 percent – created as a constant. Name the file hw1-8.py.

9. A car's miles per gallon can be calculated with the following formula: mpg = miles driven / gallons of gas used. Prompt the user for any data required to calculate the miles per gallon and professionally display the result. Name the file hw1-9.py.

10. Prompt the user for a Fahrenheit temperature and professionally display the Celsius conversion. Celsius = (5/9)*(Fahrenheit - 32) Name the file hw1-10.py.