HOMEWORK 1

CS 125

Write a Python program to solve each of the following problems. You may either compose and test your solutions in the ActiveCode boxes on the Runestone site, or using Python installed locally on your computer.

When you have finished your solutions, copy and paste all of them into a single Python file (or text document). Use comments (lines that begin with a # symbol) to clearly state the problem number for each solution in your file. Save your file and upload it to the Homework 1 assignment on Moodle.

1. **Parentheses:** Insert parentheses into the expression `2 + 3 * 4 - 1` to change its value from 13 to 19. Demonstrate this by printing your new expression in Python. Then insert a different set of parentheses to change its value to 11, and print your new expression in Python.

2. **Eggs in cartons:** Suppose you are placing eggs in cartons that hold 12 eggs each. How many cartons are required to hold n eggs? Write a program that asks the user for a number of eggs n. Then print out how many cartons will be filled by these eggs, and how many eggs will be in the last, partially-filled carton. *Hint: use integer division and the modulus operator.*

   When you run your program, it should look something like the following. (Bold text represents user input.)

   ```
   How many eggs do you have? 45
   You need 3 full cartons and 9 eggs in the last carton.
   ```

   Run your program several times with different input to verify that it works.

3. **Area of a circle:** Write a program that computes the area of a circle. Ask the user to input a radius, and then print out the area. You may use 3.14159 as a decimal approximation for π.

   When you run your program, it should look something like this:

   ```
   What is the radius? 4
   The area of the circle is 50.26544
   ```

   Run your program several times with different input to verify that it works.

4. **Temperature:** Write a program that converts degrees Fahrenheit to degrees Celsius. If F is the temperature in degrees Fahrenheit and C is the temperature in degrees Celsius, then $C = \frac{5}{9}(F - 32)$.

   When you run your program, it should look something like this:

   ```
   What is the temperature in degrees Fahrenheit? 75
   The temperature in degrees Celsius is 23.888888889
   ```

   Run your program several times with different input to verify that it works.