Python Circe's Circle Calculator Functions

Time required: 90 minutes

- Comment each line of code as shown in the tutorials and other code examples.
- Follow all directions carefully and accurately.
- Think of the directions as minimum requirements.

Pseudocode

1. Write pseudocode or TODO for the exercise
2. Save it in a document
3. Submit with the assignment

Requirements

Circe is an enchantress and a minor goddess of magic in ancient Greek mythology and religion. She loves circles! She would like you to create a circle calculator for her to use whenever she takes a break from being a goddess.

This program will ask the user to enter the radius of a circle. Calculate and display the circle's diameter, area, and circumference.

1. Create a Python program named **circle_calculator_functions.py**
2. Create each of the following functions.
3. Call each function from the main() function. The main() functions runs the program.

program_title() – Print a creative program title.

get_radius() - Get circle's radius from user. Return value as float.

get_diameter() - Accept radius as argument. Calculate diameter. Return value as float.
formula: d = 2r, where r = radius

get_area() - Accept radius as argument. Calculate area. Return value as float.
formula: a = πr2, where r = radius

get_circumference() - Accept radius as argument. Calculate circumference. Return value as float.
formula: c = 2πr, where r = radius

display_results() - Accept radius, diameter, area, and circumference as arguments. Display results on the screen.

TODO Outline of Program

You can use the following TODO outline to get started with your program.

```
"""
    Name: circle_calculator_functions.py
    Author:
    Created:
    Purpose: Python program to calculate
    the diameter, area, and circumference of a circle
"""
# Import math module to get the value of pi

# TODO: Create main functions to call all functions

# TODO: Function to print nice program title

# TODO: Function to get and return user input as float for radius

# TODO: Function to calculate and return diameter of circle
# formula: d = 2r, where r = radius
# Pass in radius as argument

# TODO: Function calculate and return area of circle
# formula: a = πr2, where r = radius
# Pass in radius as argument

# TODO: Calculate and return circumference of circle
# formula: c = 2πr, where r = radius
# Pass in radius as argument

# TODO: Display results
# Echo user input
# Pass in radius, diameter, area, and circumference as arguments
# Use f-strings to format float to 2 decimal places
# use comma (,) as a 1,000's separator

# TODO: Call main method
```

F-strings formatting example:

```
print(f" Perimeter: {perimeter:,.2f}")
```

```
: indicates formatting codes are coming up
, comma formats 1,000 separators
.2f formats a float to 2 decimal places
```

Example run:

Notice that results are the same. Only you know that the code is better organized and reusable.

```
-----------------------------------------------------------------
|            Circe's Circle Calculator in Python                |
| Calculate the diameter, area, and circumference of a Circle |
-----------------------------------------------------------------
Enter radius: 2563.36
Radius entered: 2563.36
      Diameter: 5,126.72
          Area: 20,642,822.53
 Circumference: 16,106.07
```

```
-----------------------------------------------------------------
|           Circe's Circle Calculator in Python                 |
| Calculate the diameter, area and circumference of a Circle |
-----------------------------------------------------------------
Enter radius: 100.2
You entered:   radius 100.2
Diameter:      200.40
Area:          31,541.72
Circumference: 629.58
```

Assignment Submission

1. Attach the pseudocode.
2. Attach the program files.
3. Attach screenshots showing the successful operation of the program.
4. Submit in Blackboard.