# Python Circe's Circle Calculator OOP

Time required: 60 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 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.

Circe is very pleased with many of the programs you have created for her. She is curious if you understand OOP. If you can successfully complete this assignment, you will be promoted to Programmer, 1st class in Circe's Circle Club.

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_oop.py**
2. Create a **CircleCalculator()** class in the same file or a separate file. A separate file is the preferred way to create a class.
3. Store all object data as private attributes.
4. Create a program object.
5. Create the following methods.
6. Call each method from the program object.

**program_title()** – Print a creative program title.

**get_radius() -** Get circle's radius from user.

**get_diameter() -** Calculate diameter.
formula: d = 2r, where r = radius

**get_area()** - Calculate area.
formula: a = πr2, where r = radius

**get_circumference()** - Calculate circumference.
formula: c = 2πr, where r = radius

**display_results()** - 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_oop.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 CircleCalculator class

# TODO: Method to print creative program title

# TODO: Method to get user input as float for radius

# TODO: Method to calculate diameter of circle
# formula: d = 2r, where r = radius

# TODO: Method to calculate area of circle
# formula: a = πr2, where r = radius

# TODO: Method to calculate circumference of circle
# formula: c = 2πr, where r = radius

# TODO: Display results method
# Echo user input
# Use f-strings to format float to 2 decimal places
# use comma (,) as a 1,000's separator

# TODO: Create program object to start program
# TODO: Use program object to access object methods
```

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.