Python Circe's Circle Calculator

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 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.py**
2. Create a creative program title.
3. Ask the user for the radius of a circle → cast to float.
4. Calculate the diameter. Diameter of a circle: **d = 2r**
5. Calculate the area. Area of a circle: **a = πr²**
6. Calculate the circumference. Circumference of a circle: **c = 2πr**
7. Display the user input, diameter, area, and circumference.

Convert Math Formula to Python Code

The following is an example of how to convert math formulas to Python code.

```
# Import math to get the value of pi
import math
# Diameter of a circle: d = 2r
diameter = 2.0 * radius
# Area of a circle: a = πr2
area = math.pi * (radius * radius)
# Circumference of a circle: c = 2πr
circumference = (2.0 * math.pi) * radius
```

TODO Outline of Program

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

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

# TODO: Print creative program title

# TODO: Get user input for radius as float

# TODO: Calculate diameter of circle
# formula: d = 2r, where r = radius

# TODO: Calculate area of circle
# formula: a = πr2, where r = radius

# TODO: Calculate circumference of circle
# formula: c = 2πr, where r = radius

# TODO: Echo user input

# TODO: Display results
# Use f-strings to format float to 2 decimal places
# use comma , as a 1,000's separator
```

F-strings formatting example:

```
32 # TODO: Display results
33 # Use f-strings to format float to 2 decimal places
34 # use comma , as a 1,000's separator
35 print(f" Diameter:      {diameter:,.2f}")
```

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

Example run:

```
------------------------------------------------------------
|           Circe's Circle Calculator in Python            |
| Calculate the diameter, area and circumference of a Circle |
------------------------------------------------------------
Enter radius: 3
You entered:   radius 3.0
Diameter:      6.00
Area:          28.27
Circumference: 18.85
```

```
------------------------------------------------------------
|           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
```

```
------------------------------------------------------------
|           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
```

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.