Python Cecil's Cube Calculator OOP

Time required: 90 minutes

Please read the directions carefully before beginning the assignment.

- 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 or TODO

1. Write pseudocode or TODO for the exercise.
2. Comment your code to show evidence of understanding.

Minimum Requirements

Ask the user to enter the edge length of a cube. Calculate and display the cube's volume and surface area.

1. Create an OOP Python program named **cube_calculator.py**
2. Create a program title.
3. Ask the user for the edge length of a cube, cast to float.
4. Volume of a cube: **Volume = edge_length^3**
5. Surface area of a cube: **Surface Area = 6 x edge_length^2**
6. Use a method to calculate the volume.
7. Use a method to calculate the surface area.
8. Use a method to display the results.

TODO Outline of Program

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

```
"""
    Name: cube_calculator.py
    Author:
    Created:
    Purpose: Python program to calculate
    the volume and surface area of a cube
"""

class Cube:
    def __init__(self, edge_length):
        self.edge_length = edge_length

    # TODO: Calculate volume of cube: V = e^3 where e = edge length
    def calculate_volume(self):
        # This method calculates the volume
        # The result is assigned to an object attribute
        # such as self.volume
        pass

    # TODO: Calculate surface area of cube: A = 6e^2 where e = edge length
    def calculate_surface_area(self):
        # Same as above, with a different attribute
        pass

    # TODO: Display the results of the calculations
    def __str__(self):
        # This method returns a string representation of the object, this
would be the surface and volume of the cube
        pass

def main():
    # TODO: Print program title

    # TODO: Get user input for edge length as float

    # TODO: Create Cube object with edge length argument

    # TODO: Call cube methods

main()
```

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:

```
 ------------------------------------------------
 |       Cecil's Cube Calculator in Python      |
 | Calculate the volume and surface area of a Cube |
 ------------------------------------------------
 Enter edge length: 2
 You entered: edge length 2.0
 Volume:       8.00
 Surface Area: 24.00
Calculate another cube: (y/n)y
 ------------------------------------------------
 |       Cecil's Cube Calculator in Python      |
 | Calculate the volume and surface area of a Cube |
 ------------------------------------------------
 Enter edge length: 6.3
 You entered: edge length 6.3
 Volume:       250.05
 Surface Area: 238.14
Calculate another cube: (y/n)n
```

Assignment Submission

1. Use pseudocode or TODO.
2. Comment your code to show evidence of understanding.
3. Attach the program files.
4. Attach screenshots showing the successful operation of the program.
5. Submit in Blackboard.