Python Cecil's Cube 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. Submit with the assignment

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. Use a class method: Surface area of a cube: Surface Area **= 6 * (edge_length * edge_length)**
6. Use a class method to calculate the volume.
7. Use a class method to calculate the surface area.
8. Use a class 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 display_results(self):
        # This method displays the results of the calculation methods
        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. Attach the pseudocode.
2. Attach the program files.
3. Attach screenshots showing the successful operation of the program.
4. Submit in Blackboard.