

Python System Information

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

Requirements

Ask the user to enter the radius and height of a cylinder. Calculate and display the cylinder's surface area and volume.

1. Create a Python program named **cylinder_calculator.py**
2. Add a creative title
3. Ask the user for the radius and height of a cylinder, cast to float
4. You will need to convert the following math equations into Python
 - a. Surface area of the cylinder: $a = 2\pi rh + 2\pi r^2$
 - b. Volume of the cylinder: $v = \pi r^2 h$
5. Echo user's input
6. Display the surface area
7. Display the volume
8. Ask the user if they wish to continue or exit

.lower()

If you ask a user to type in an uppercase Y, they might type in a lowercase y. In Python, these are two different values. To compare apples to apples, use the `.lower()` method. If

they type in a capital N, `.lower()` changes the case to lower case as shown in the example below.

```
if menu_choice.lower() == "n":
```

TODO Outline of Program

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

```
"""
    Name: cylinder_calculator.py
    Author:
    Created:
    Purpose: Python program to calculate
            the surface area and volume of a cylinder
"""
# TODO: Import math module

# TODO: Print creative program title

# TODO: Get user input for radius and height as float

# TODO: Calculate surface area of cylinder Math formula:  $A = 2\pi rh + 2\pi r^2$ 

# TODO: Calculate volume of cylinder Math formula:  $v = \pi r^2 h$ 

# 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

# TODO: Ask user to run program again
```

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:

```
-----  
|   Calypso's Master Cylinder Calculator in Python   |  
| Calculate the surface area and volume of a cylinder |  
-----  
Enter radius: 201.3  
Enter height: 125.3  
You entered: radius 201.3 - height 125.3  
Surface Area: 20,174,934,653.19  
Volume:      15,951,021.24  
Again? (Y/N) y  
Enter radius: 12.5  
Enter height: 36.2  
You entered: radius 12.5 - height 36.2  
Surface Area: 1,395,623.75  
Volume:      17,769.63  
Again? (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.