

Assignment 4

Outcomes addressed in this Assignment:

Unit outcomes:

- Demonstrate creating and using overloaded methods

Course outcome:

- **IT258-1:** Implement basic object-oriented programming design techniques.
- **IT258-2:** Apply the debugging process to Java development.

Instructions

Develop class Cylinder. This class will define two number fields for height and radius. The height value should be a whole point number and the radius a floating point number. Develop the following, overloaded constructors:

- A constructor accepting only the Cylinder's height. Have the constructor assign zero to the radius variable. So that you will know this constructor runs, write a line of code to display to the console a line of output stating "Cylinder created with height Z and radius 0.0", where 'Z' is replaced by the value of the length passed into the constructor.
- A constructor accepting only the Cylinder's radius. Have the constructor assign zero to the height variable. So that you will know this constructor runs, write a line of code to display to the console a line of output stating "Cylinder created with height 0.0 and radius Z", where 'Z' is replaced by the value of the radius passed into the constructor.
- A 2-parameter constructor that accepts both the height and radius. This constructor should also display a line of output to the console that lists the values passed in the form, "Cylinder created with height Y and radius Z", where 'Y' is replaced by the height value passed and 'Z' is replaced by the radius value passed.

Once you have completed developing the Cylinder class, create a second class, CreateCylinders, which will demonstrate each of the constructors working. Feel free to hard code any values used to create each Cylinder. It is also acceptable to develop your program to prompt these values from the user.

Your program output is not required to look exactly this way. However, the output may appear as:

```
Cylinder created with height 10 and radius 0.0  
Cylinder created with height 0 and radius 1.5  
Cylinder created with height 100 and radius 10.5
```

When your program compiles and runs correctly, please locate the folder containing all of your NetBeans files for this Assignment. Zip the contents of this folder and upload it to the Dropbox.



Assignment Grading Rubric

Course: IT258 Unit: 4 Points: 50

Challenge Levels

Anyone up for a challenge? This course offers you the opportunity to go beyond the required course material. Two Challenge Levels are offered to supercharge your coursework: Programming Whiz and Rock Star Programmer.

Challenge Levels are a great way for you to learn more about programming, better improve your existing skills and abilities, and/or highlight how knowledgeable you are in the unit material. These levels do not count for additional points or guarantee a higher grade.

Challenge Levels offer you an opportunity to stand out, learn more, and gain confidence.

To start, follow the rubric and project instructions as normal. If you choose to try it, supplement your project with the challenge levels. Reach out to your instructor and do some research for resources. The "Programming Whiz" level adds to the basic level, and the "Rock-Star Programmer" level adds more challenges to the "Programming Whiz" level.

If you start a challenge level, but it becomes too difficult to handle, please stick with the basic project instructions, as found in the rubric to calculate your grade. Most importantly—have fun with it!

Your Challenge Levels for this week:

Programming Whiz

Instead of hard-coding the height and radius values, prompt the user for these and create the corresponding Cylinder objects.

Rock-Star Programmer

Instead of hard-coding the height and radius values, prompt the user for these and create the corresponding Cylinder objects. In the Cylinder class, add the method `getVolume` that will calculate and return the Cylinder object's volume. Modify the program's code to include the Cylinder's volume with the height and radius in the output.

Review the grading rubric below before beginning this activity.

Assignment 4 grading rubric = 50 points

Project Requirements	Points Possible	Points Earned
Cylinder Class		
- Appropriate comments in class body.	0–2	
- Class variables.	0–3	
- Constructor accepting only height.	0–5	
- Constructor accepting only radius.	0–5	

- Constructor accepting both height and radius.	0-5	
CreateCylinders Class		
- Appropriate comments in class body.	0-2	
- Creates Cylinder passing only height.	0-5	
- Creates Cylinder passing only radius.	0-5	
- Creates Cylinder passing both height and radius.	0-5	
- Output shows each object being created.	0-5	
Overall		
- Comments for name, class, project.	0-2	
- Appropriate indenting.	0-2	
- Appropriate variable names.	0-2	
- Attractive output.	0-2	
Total (Sum of all points)	0-50	
Less points deducted for spelling, grammar, and APA errors. Plagiarism is totally unacceptable.		
Total Adjusted Points		