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CSL-131

1/22/2024

Lab #3

9.

The Radius is 3.0

The Height is 7.0

The Volume is 197.92016999999998

The results are correct, as the numbers add up.

10.

**public** **static** **void** main(String[] args) {

**double** radius;

**double** height;

**double** volume;

radius = 3.0;

height = 7.0;

volume = 3.14159 \* (radius \* radius) \* height;

System.***out***.println("The Radius is " + radius);

System.***out***.println("The Height is " + height);

System.***out***.println("The Volume is " + volume);

13.

The only changes I needed to make was the values in radius and height, as those were the only values that were changing.

14.

|  |  |  |
| --- | --- | --- |
| Radius | Height | Volume |
| 11.0 | 6.5 | 2470.860535 |
| 0.0 | 3.2 | 0.0 |
| 1.5 | 0.0 | 0.0 |
| -2.0 | 1.0 | 12.56636 |
| 1.0 | -2.0 | -6.28318 |

18.

|  |  |  |
| --- | --- | --- |
| Radius | Height | Volume |
| 11.0 | 6.5 | 2470.860535 |
| 0.0 | 3.2 | 0.0 |
| 1.5 | 0.0 | 0.0 |
| -2.0 | 1.0 | 12.56636 |
| 1.0 | -2.0 | -6.28318 |

The outputs are the exact same for all values

19.

|  |  |  |
| --- | --- | --- |
| Radius | Height | Volume |
| 11 | 6 | 2280.79434 |
| 0 | 3 | 0.0 |
| 1 | 0 | 0.0 |
| -2 | 1 | 12.56636 |
| 1 | -2 | -6.28318 |

The outputs are the exact same for all values. The decimals don’t make a difference

20.

1e1 displayed: 10.0

2e2 displayed: 200.0

I believe that the first number in the statements is the first number of the value, and the second letter represents the number of zeros that come afterwards.

21.

It immediately outputs that an error has occurred whenever anything other than a number is input.

24.

|  |  |  |  |
| --- | --- | --- | --- |
| Radius | Height | Volume | Surface area |
| 11.0 | 6.5 | 2470.860535 | 1209.51215 |
| 0.0 | 3.2 | 0.0 | 0.0 |
| 1.5 | 0.0 | 0.0 | 0.0 |
| -2.0 | 1.0 | 12.56636 | 12.56636 |
| 1.0 | -2.0 | -6.28318 | -6.28318 |

26.

**import** java.util.Scanner;

/\*\*

\* Name: Volume and Surface Area Calculations

\* Author: DJ Hazall-Farrell

\* Purpose:To calculate the area and volume of geometric objects

\*

\*/

**public** **class** ScannerCalculator {

/\*\*

\* **@param** args

\*/

**public** **static** **void** main(String[] args) {

//declares value holders

**final** **double** PI = 3.14159;

**double** radius;

**double** height;

**double** volume;

**double** area;

//Inputs a scanner so the user can declare their own values

Scanner consoleInput;

consoleInput = **new** Scanner(System.***in***);

System.***out***.println("Enter the radius of the cylinder: ");

radius = consoleInput.nextDouble();

System.***out***.println("Enter the height of the cylinder: ");

height = consoleInput.nextDouble();

consoleInput.close();

//Calculates values of volume and area

volume = PI \* (radius \* radius) \* height;

area = ((2 \* PI) \* (radius \* radius)) + ((2 \* PI) \* radius \* height);

//Outputs values in structured sentences

System.***out***.println("The Radius is " + radius);

System.***out***.println("The Height is " + height);

System.***out***.println("The Volume is " + volume);

System.***out***.println("The Surface area is " + area);

}

}

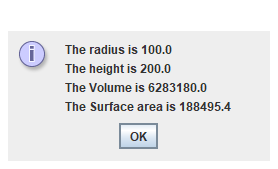
27.

By using a constant declaration for Pi, setting up equations will be much simpler than typing the full number every time it is needed.

33.

The DialogCalculator is much easier to use as the user had an actual window to both input and see the information. It is much more visually attractive and easier to use overall. The ScannerCalculator made the user type in the output window, which is essentially the same window that the programmer sees. In my opinion the ScannerCalculator looks ugly.

34.



35.

**import** javax.swing.\*;

/\*\*

\* Name: Volume and Surface Area Calculations

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\* Purpose:To calculate the area and volume of geometric objects

\*

\*/

**public** **class** DialogCalculator {

/\*\*

\* **@param** args

\*/

**public** **static** **void** main(String[] args) {

//declares value holders

**final** **double** PI = 3.14159;

**double** radius;

**double** height;

**double** volume;

**double** area;

//Displays a window in which the user can assign their values to the variables

String dialogResult;

dialogResult = JOptionPane.*showInputDialog*(**null**, "What is the radius of the cylinder?");

radius = Double.*parseDouble*(dialogResult); // Converts dialogResult from String to double

dialogResult = JOptionPane.*showInputDialog*(**null**, "What is the height of the cylinder?");

height = Double.*parseDouble*(dialogResult);

//Calculates values of volume and area

volume = PI \* (radius \* radius) \* height;

area = ((2 \* PI) \* (radius \* radius)) + ((2 \* PI) \* radius \* height);

//Displays the radius, height, volume and surface area in one window

JOptionPane.*showMessageDialog*(**null**, "The radius is " + radius + "\nThe height is " + height + "\nThe Volume is " + volume + "\nThe Surface area is " + area );

}

}

36.

Everything appeared the same except for the error that was output when a nonsensible number was input.