CPSC 121

Week 11
Inheritance

Lab 11 - 3D Geometric Shapes

Create a GeometricalShape base class that contains the location of the object in 3 dimensional space stored within int coordinates of xPosition, yPosition, & zPosition.

Create 3 derived classes of Sphere, RectangularBox, & Cylinder. In each derived class create member functions that calculate the volume for that specific geometrical object.

Data Members
Sphere is defined by a radius.
RectangularBox is defined by a height, length, width.
Cylinder is defined by a height and radius.

Volume Formulas

Sphere	$\frac{4.0}{3.0} * 3.14 * r^3$
RectangularBox	H * L * W
Cylinder	$3.14 * r^2 * H$

Example Output on back

====Creating Objects with default constructors!=====
Sphere info:
The center coordinate is at X: 0 Y: 0 Z: 0
Dimensions - Radius: 0
The Volume is 0
Rectangular Box info:
The center coordinate is at X: 0 Y: 0 Z: 0
Dimensions - Height: 0, Length: 0, Width: 0
The Volume is 0
Cylinder info:
The center coordinate is at X: 0 Y: 0 Z: 0
Dimensions - Height: 0, Radius: 0
The Volume is 0

====Creating Objects with Overloaded constructors!=====
Sphere info:
The center coordinate is at X: 2 Y: 2 Z: 5
Dimensions - Radius: 3.5
The Volume is 179.503
Rectangular Box info:
The center coordinate is at X: 5 Y: 0 Z: -5
Dimensions - Height: 2.5, Length: 3.2, Width: 1.5
The Volume is 12
Cylinder info:
The center coordinate is at X: 1 Y: 1 Z: 1
Dimensions - Height: 4, Radius: 1.75
The Volume is 38.465