

Homework 4

- ❖ Using UML design a class to represent a sphere. The class must contain appropriate data fields, and the following methods: Constructor, setDiameter, getDiameter, getVolume, getSurfaceArea, getQtySpheres.
- ❖ Implement your design using Java and name your Java file `YourName_Sphere.java` but Do not include main method in you Sphere class!
- ❖ For this program you will determine the total volume of glass required to make a glass sphere of a certain diameter and wall thickness. For your algorithm you should consider two concentric spheres of different diameters. Determine the volume of these two spheres. Then subtract the volume of the smaller inner sphere from the volume of the outer sphere. Create a flowchart to describe the processing in this one main method showing boxes for calls to sphere object methods.
- ❖ Your program must prompt the user for the outer sphere and inner sphere diameters. Alternatively you could also prompt for wall thickness and make appropriate calculations to determine inner sphere diameter.
- ❖ Create a second class called `VolGlassSphere` within in the same file which will have the main method. Code your glass sphere volume calculator such that it calls methods in the `YourName_Sphere` class
- ❖ Upload via WebTycho your `YourName_Sphere.java` program source code file to the Homework 4 assignment folder. Submit on paper: Cover sheet, design to include specifications, UML class diagram, test data, output for test data, and source code.
- ❖ This program is due at the beginning of Class 2 - Week 7.