

LAB #17
HIERARCHY
Ted Pawlicki
November 11-12, 2004

Be sure to attend the mixer sponsored by BCS/NS and CS undergrad councils: *"Brains, Bits, and Babbling Babies"*. Prof. Dana Ballard will talk about about the computational modeling of infant language acquisition.

When: TODAY..Wednesday, November 10th, 2004 @ 6:15PM

Where: Meliora 269

And of course, there will be free food

This lab should be completed during the scheduled lab sessions. In order to complete this lab you must demonstrate programs to your lab TA. The technical knowledge on how to accomplish these tasks is found in the assigned reading or the lecture notes, but the lab TA will help as well.

1. Write three JAVA classes and a main method that tests them for functionality.
2. First, write a JAVA class "Point". Points are described as having an (x,y) location. Instance variables should be private. Your class must have a constructor that takes no parameters, and a constructor that takes two integer values to set the point. Your class should contain accessor and mutator classes for the private instance variables. Your class should also contain a "toString" method.
3. Second, write a JAVA class "Circle". Since circles are described by a centervpoint and a radius, your Circle class should extend the Point class. You need to add a private double for the radius. You should include two constructors, one with no parameters one with three parameters. You should include accessor an mutator method for the radius, as well as a "toString" method. Negative values are not allowed for radii. You should also include "getDiameter", "getCircumference", "getArea" methods.
4. Thirdly, write a JAVA class "Cylinder". Since cylinders are Circles with heights, your Cylinder class should extend the Circle class. Add the appropriate instance variables, constructors, accessor, mutator, and toString methods. Negative values are not allowed for heights. You should include methods

“getArea” to return the surface area of the cylinder and “getVolume” to return the volume.

5. Lastly, write a JAVA class with a main method. Query the user for an x,y location, a radius and a height. Build a Point object, a Circle object, and a Cylinder object using the input values. Write out the description of each object using the toString methods, show that all the derived methods work. (getVolume, etc.)
6. Cut and paste your source code and screen shots of running code into your lab document and hand it in. Be sure to demo your running code to your TA so that the TA has a record of “checking you off” as having done this lab.

NOTE: Electronic hand in should be working at this point. Submit your lab work through the homework drop box in WebCT. However, if you encounter any problems, revert to paper based hand in.