

Comp 401 – Assignment 5: Composition of Graphics Objects

Date Assigned: Thu Feb 12, 2009

(Early) Completion Date: Thu Feb (24) 26, 2009

In this assignment, you will create two different implementations (and interfaces) of a movable, named avatar. In this process, you will learn about design, structured objects, graphics, and object composition. In the previous assignments, the “*what*” was spelled out for you, and the challenge was the “*how*” – in other words, the interfaces and behaviors of the objects were given to you, and the challenge was to implement these interfaces. In this assignment, aspects of the interfaces you have to implement are not completely specified so that you can use your creativity to make design decisions. Once you have made these decisions, the implementation should be relatively straightforward, involving a simple application of the object composition and graphics concepts you have learned in class.

Task

You will create two different movable named avatars that are displayed and manipulated using ObjectEditor. An avatar is either a predefined shape or a programmer-defined shape. A predefined shape is one of the following graphics objects predefined by Java and ObjectEditor: point, line, rectangle, oval, and icon-label. A programmer-defined shape is a composition of predefined and programmer-defined shapes. A named avatar is a composition of a name and an avatar. A name is either a label or a textbox. A movable named avatar is one whose position can change in the X dimension in a manner that ensures that the positions of components of the named avatar do not change relative to each other. One of the avatars you will create should be a predefined shape as in Figure 1, and the other should be a programmer-defined shape, as in Figure 2. *The exact choice of the shape and name that comprise the avatar are left to you as design decisions.* There are some constraints on the programmer-defined shape if you choose to do extra credit.

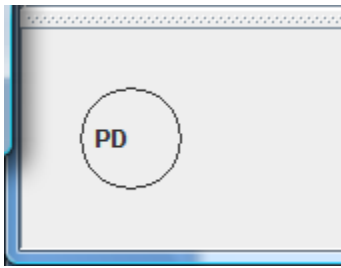
Extra Credit

1. Allow the angle between the arms and legs of the avatar with a programmer-defined shape to change by supporting at least two angles, as in Figure 3. This puts some constraints on the nature of the avatar – it must have arms and legs.
2. Provide other features you can think of such making an avatar smile or frown.

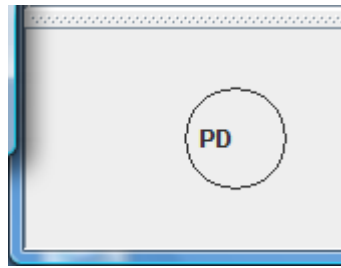
Constraints

As always, try and follow all style principles you have learned. Your ability to share code among the various classes you create will, however, be limited by the fact that we have

not discussed inheritance and multiple interfaces in depth. In later assignments, you will be given a chance to improve the code.



(a) Position 1



(b) Position 2

Figure 1 A movable named avatar with a predefined shape (only the drawing window of ObjectEditor shown)

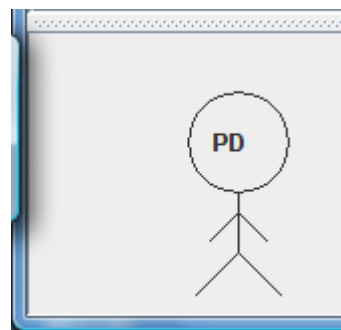
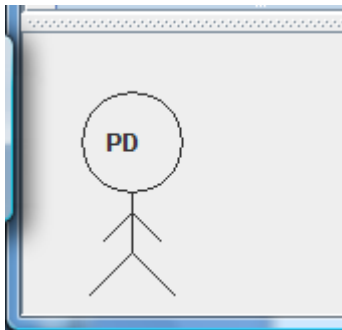


Figure 2 A movable named avatar with a programmer-defined shape

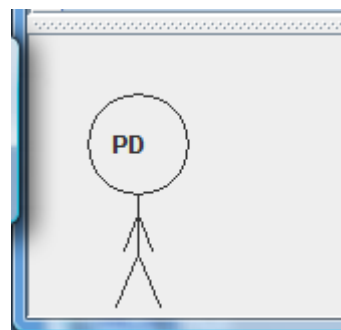
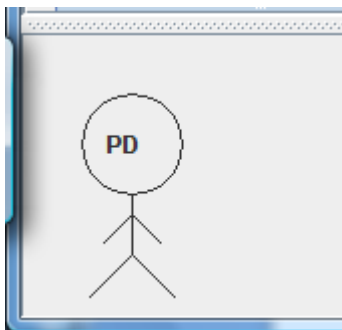


Figure 3 Supporting two different angles between arms and legs of avatar with programmer-defined shape

Submission Instructions

1. Submit a print out of your code at the start of class on the (early) submission date together with screen shots showing your code working in various cases, and a document identifying how you support regular and extra credit style features.
2. Upload the assignment directory in blackboard. In general, for all assignments, you should do so by midnight of the day the assignment is due. But do not change the code after you submit it in class.