

## 4 Methods for Complex Class Hierarchies; Libraries

### Portfolio Problems

- **Pong Game**

Work out the Pong Game problem in Lab 4.

### Pair Programming Assignment

#### Morphing a Polygon

##### 4.1 Problem

Design the following methods for the classes that represent polygon data that you have defined in the previous two assignments:

1. Count the number of points in the polygon. (Method name *count*)
2. Produce a morphed polygon from two original ones, with the given morphing factor (a number between 0.0 and 1.0). Make sure you follow the *one task, one method* rule. (Method name *morphPoly*)
3. Produce a polygon moved by the given distance  $dx$  and  $dy$  from the given polygon.
4. Draw the polygon on the *Canvas c*. (Method name *drawPoly*) Use a sample program that uses the *draw* library as a guide - or consult the **Help Desk**.

##### 4.2 Problem

Design the class that represents a *World* that contains two polygons (the *start* and the *finish* polygon) and keeps track of the elapsed time.

1. Define the method *currentPoly* that produces the *current* polygon based on the elapsed time. This is a follow up on an earlier homework problem.
2. Define the method *draw* that draws the current image of the world — i.e the *current* polygon.

3. Define the *onTick* method for this world.
4. Define the *onKeyEvent* method that responds to the "up", "down", "left", and "right" key events by moving the polygons 3 pixels in the indicated direction. *Note:* You must move both the *start* and the *finish* polygons.
5. You can now run your world, using the *World's bigBang* method. **It you do so, comment out the code before submitting.**