Java Swing and Interfaces Practical example

CSCI 2300

lethod Summary	
Methods Modifier and Type	Method and Description
int	getIconHeight() Returns the icon's height.
int	getIconWidth() Returns the icon's width.
void	<pre>paintIcon(Component c, Graphics g, int x, int y) Draw the icon at the specified location.</pre>

Moving Shape

We want to add some "animation" to our application

Let's melt that snowman

Design changes:

- Introduce MovableShape interface
- Introduce "generic" ShapeIcon class that "has-a" MovableShape



Creating an Animation

Application sketch:

- MeltingSnowman snowman = new MeltingSnowman...
- Shapelcon icon = newShapelcon(snowman,...)
- Jlabel label = new Jlabel(icon)
- Add the label to the frame
- Create a "timer" with ActionListener
- actionPerformed calls snowman.move() and label.repaint()
 - label.repaint() will call icon.paintlcon()
 - icon.paintIcon() will call MovableShape's draw() method

Example 2: ShapeIcon.java, MovableShape.java, MeltingSnowman.java, SnowmanAnimation.java

Car Animation

Same design as SnowmanAnimation

Use Car.java class instead of MeltingSnowman.java

public class Car implements MovableShape

{ ... }

Exercises

- 1. The snowman in Example 1 does not stand up straight. Fix this problem.
- 2. Refactor Example 2 as follows:
- Create a superclass FixedSnowman() that has a draw() method
- Create two subclasses of FixedSnowman: MeltingSnowman and WalkingSnowman().
 - Both subclasses should implement MovableShape interface.
 - MeltingSnowman should implement 'move()' method that will make the snowman disappear (as in the original example 2)
 - WalkingSnowman should implement 'move()' method that will make the snowman take small steps along the xcoordinates of the window. You may need to add some instance variables to make this happen.
 - Do NOT implement draw() method in MeltingSnowman and WalkingSnowman, as they will inherit the draw() method from FixedSnowman()
- $^{\circ}\,$ Create a test application for WalkingSnowman
- Create a test application for MeltingSnowman