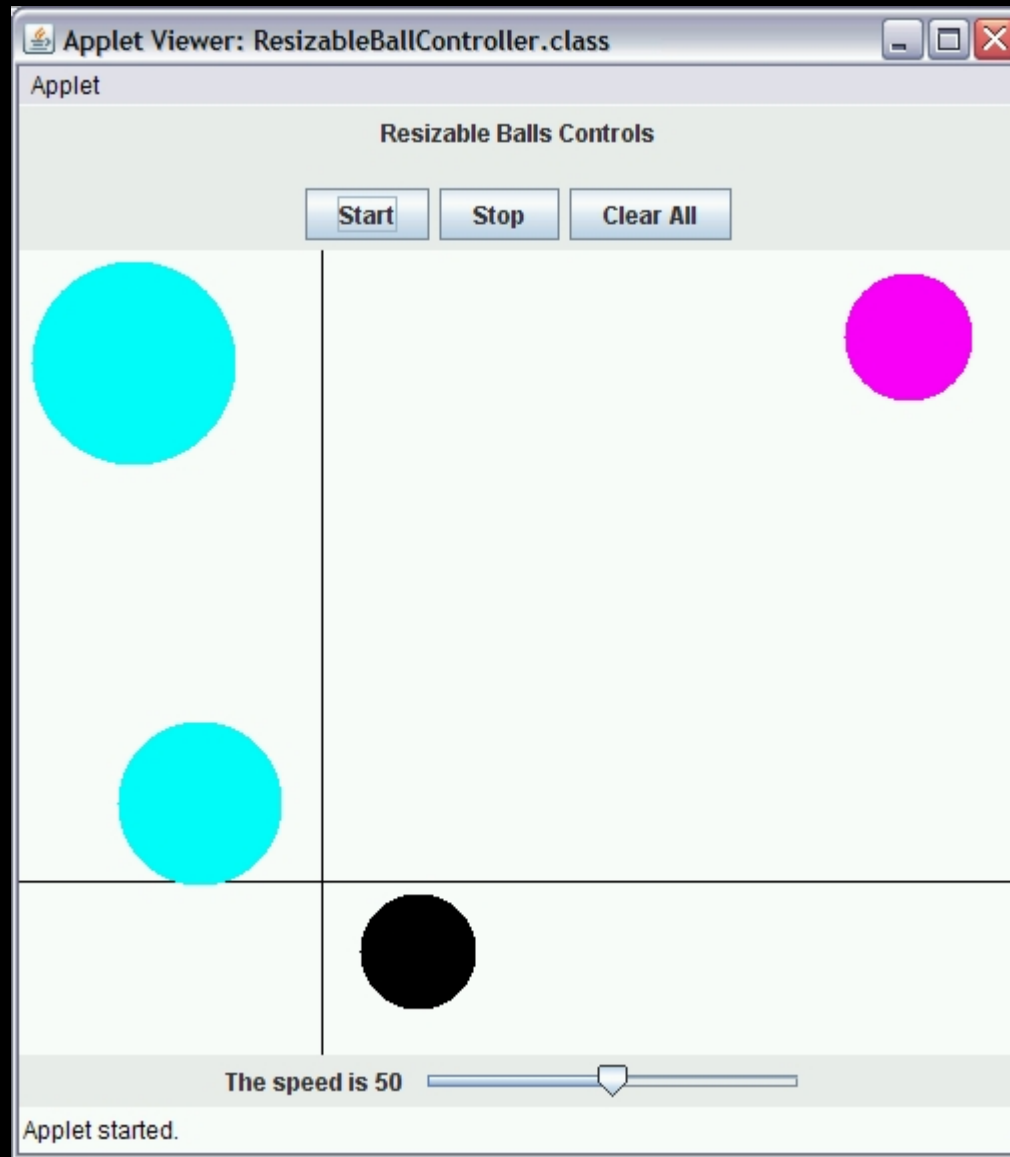
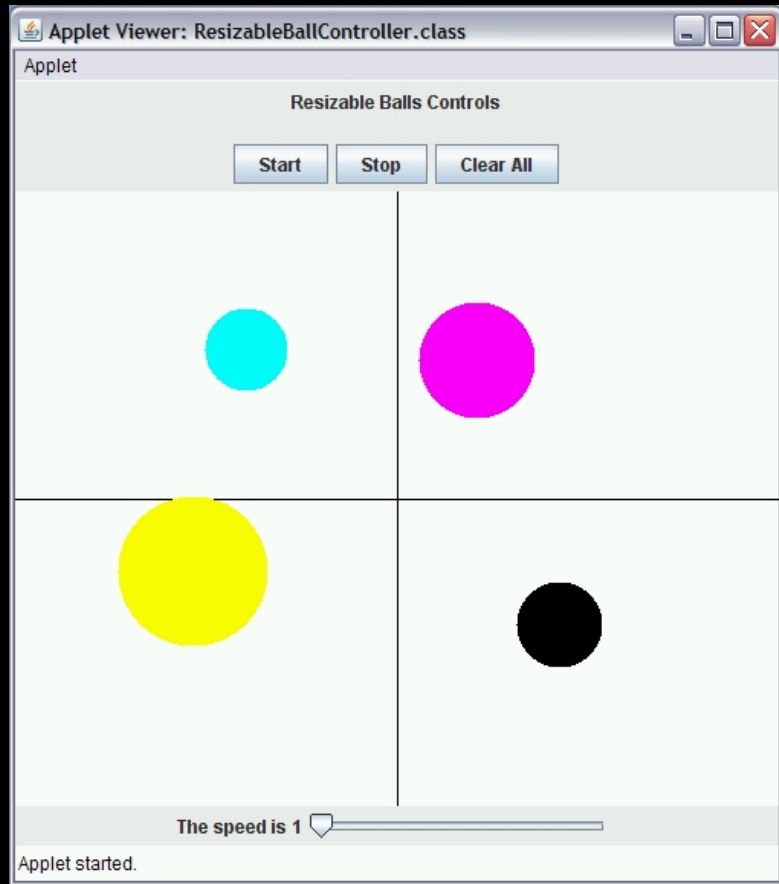


# PA6: Resizable Balls Deluxe!

By Jake And Tiffany



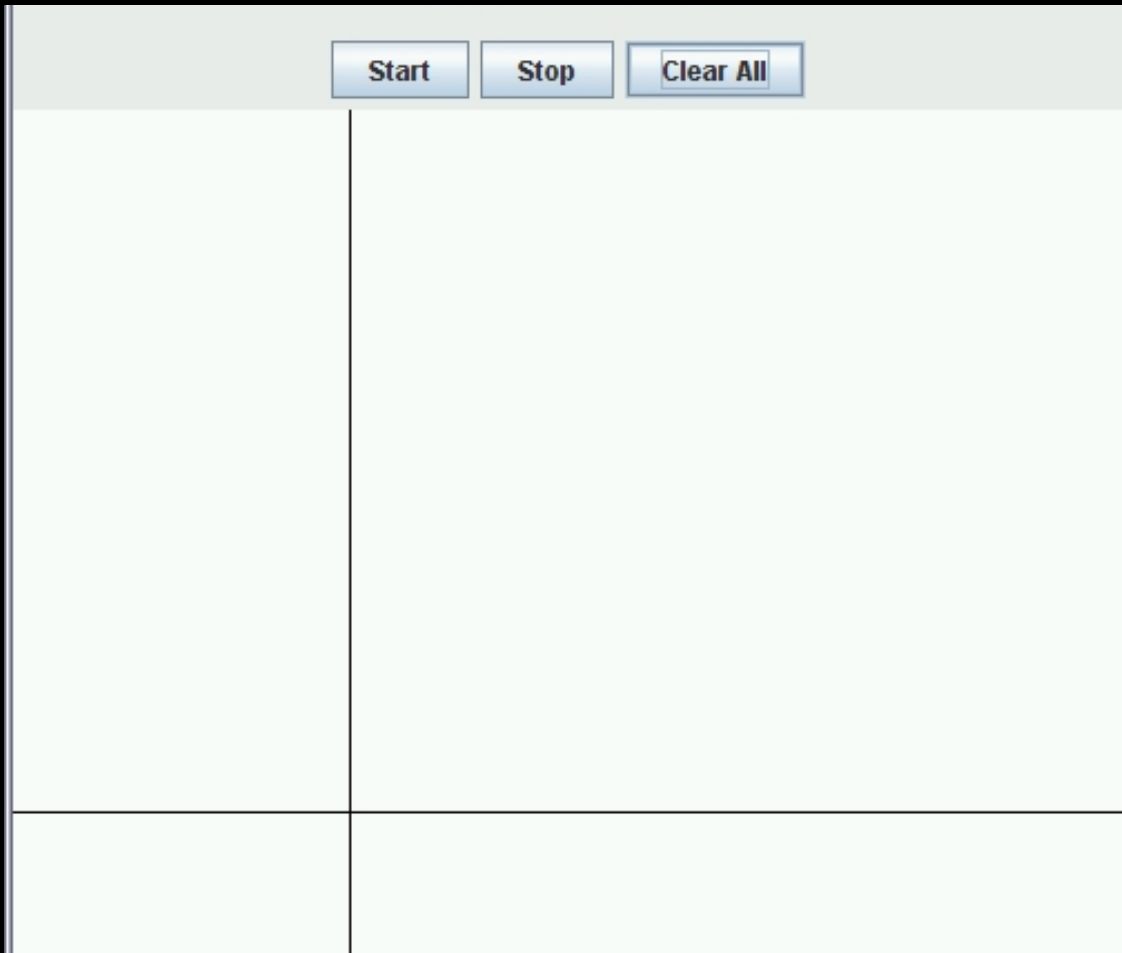
Step 1

**FIX PA4**

Step 2

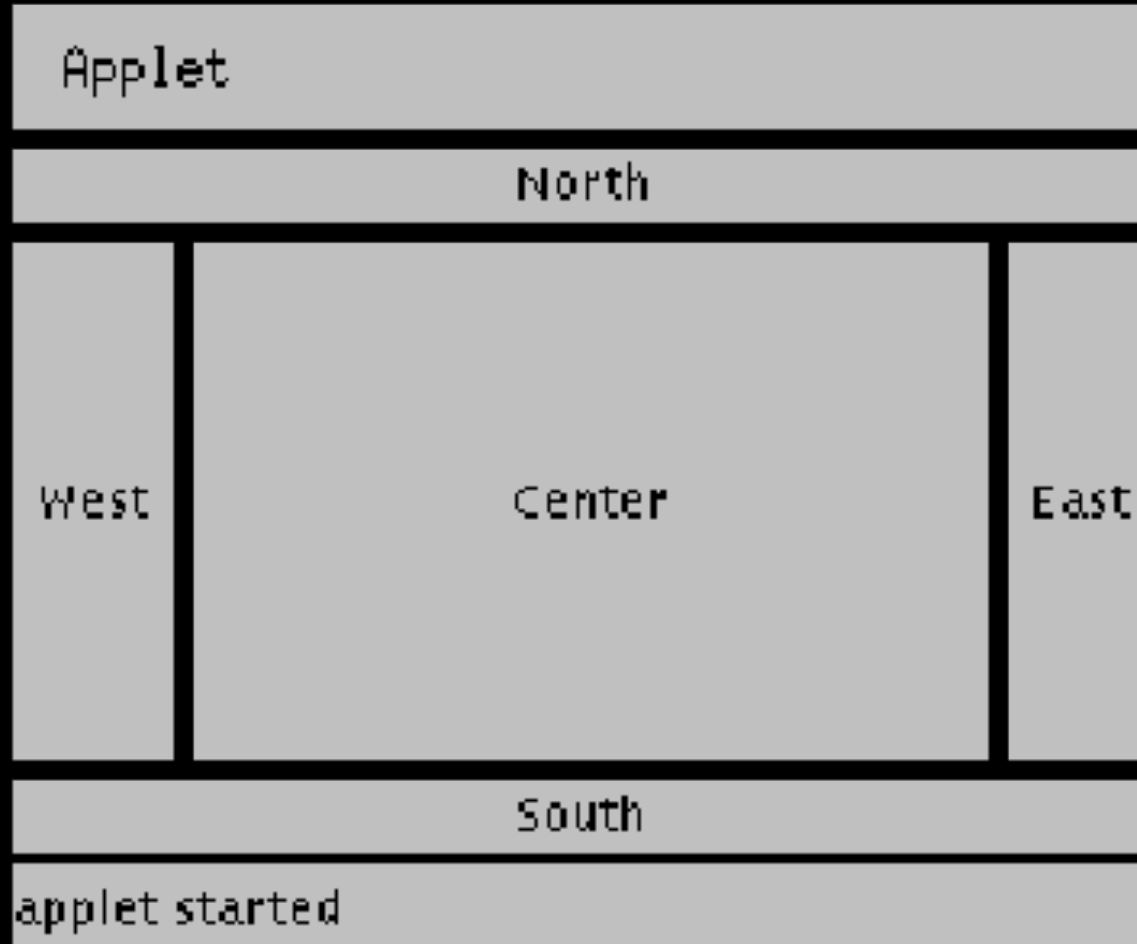
**THE GUI**

# The Elements



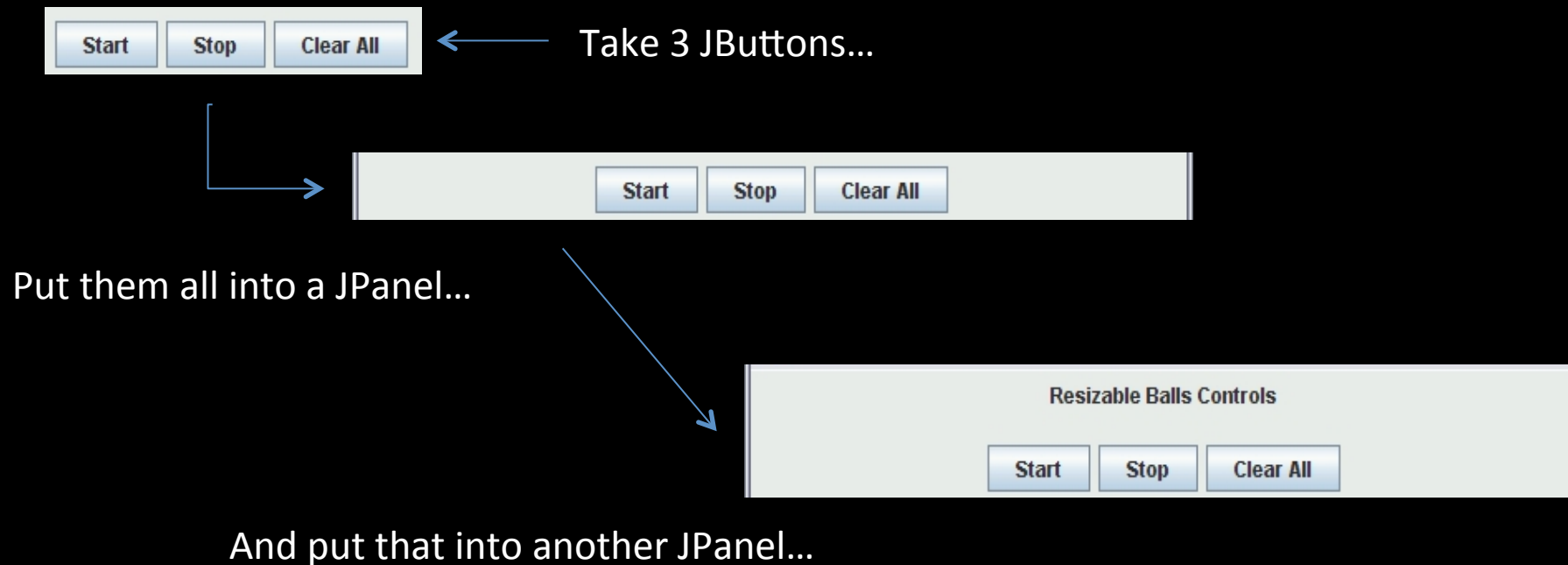
- JPanel
- JLabel
- JButton
- Jslider

# The Layout



# Component-ception

- Put JComponents (JLabel, JText, JButton, etc) into a JPanel to group them together!



# Questions

- For more info on JPanels:

<http://docs.oracle.com/javase/tutorial/uiswing/components/label.html>



Step 3

**THE CONTROL**

# Sending Messages

- We need to be able to tell the balls that these buttons have been clicked, and they need to act accordingly.
- Loop through a list of balls?
  - Too slow, only talking to one ball at a time
- Trigger an event, and have balls listen to event
  - Fast, takes advantage of the fact that each ball has its own thread

# MouseListener

Method Summary	
void	<a href="#"><code>mouseClicked(MouseEvent e)</code></a> Invoked when the mouse button has been clicked (pressed and released) on a component.
void	<a href="#"><code>mouseEntered(MouseEvent e)</code></a> Invoked when the mouse enters a component.
void	<a href="#"><code>mouseExited(MouseEvent e)</code></a> Invoked when the mouse exits a component.
void	<a href="#"><code>mousePressed(MouseEvent e)</code></a> Invoked when a mouse button has been pressed on a component.
void	<a href="#"><code>mouseReleased(MouseEvent e)</code></a> Invoked when a mouse button has been released on a component.

Point `getLocationOnScreen()` – returns location of mouse event

# MouseMotionListener

## Method Summary

void [`mouseDragged`](#)([`MouseEvent`](#) e)

Invoked when a mouse button is pressed on a component and then dragged.

void [`mouseMoved`](#)([`MouseEvent`](#) e)

Invoked when the mouse cursor has been moved onto a component but no buttons have been pushed.

# ActionListener

## Method Summary

void	<a href="#"><code>actionPerformed</code></a> ( <a href="#"><code>ActionEvent</code></a> e) Invoked when an action occurs.
------	--

# ChangeListener

## Method Summary

void	<a href="#"><code>stateChanged</code></a> ( <a href="#"><code>ChangeEvent</code></a> e) Invoked when the target of the listener has changed its state.
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Start Early!

Questions?