

PA4: ResizableBalls

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Overview

- Demo PA4
- Walk through an example

Stage 1: Creating quadrants

```
public class ResizableBallController
    extends WindowController
{
    private Line xLine, yLine;
    private double widthProportion, heightProportion;
    public void begin()
    {
        //instantiate lines and any other
        //necessary variables
    }
    ...
}
```

Stage 2: Manipulating quadrants

- **Useful methods**

- `public void onMousePress(Location point)`
- `public void onMouseDrag(Location point)`
- `public void onMouseRelease(Location point)`
- `public void onMouseClick(Location point)`

- **Important!**

- `onMousePress != onMouseClick`

Stage 2: Manipulating quadrants

- **To resize quadrants when window size changes:**

```
public void paint (java.awt.Graphics g)
{
    super.paint( g );

    //Reset the locations of the lines, using
    //the proportion variable

    //Can't use Line.moveTo(...)
    //Shift by calling Line.setEndpoints(...)

    //Also useful: canvas.getWidth()
    //and canvas.getHeight()
}
```

Summary so far

- **Two Classes:**
 - **ResizableBallController**
 - To set up canvas, handle mouse events, move lines, and instantiate ResizableBalls
 - **ResizableBall**
 - To handle all ball functionality

Stage 3: ActiveObject

```
public class ResizableBall extends ActiveObject {  
    //Need variables  
  
    //FilledOval: ball  
    //Location: center of ball  
    //Constants such as size/growth rate  
    //Whatever else you decide you need  
  
    //Need constructor that calls start()  
    //Need run() method  
}
```

Stage 3: ActiveObject

- **Constructor:**

```
public ResizableBall(  
    double xLoc,  
    double yLoc,  
    double size,  
    DrawingCanvas canvas,  
    Line hLine,  
    Line vLine)
```

- **Make sure to save the location, lines**
- **Why do you need to pass in lines?**

Stage 3: `ActiveObject`

- As the last line in your constructor, include this line:
`start();`
- This will cause the `run()` function to begin running, to manipulate the resizing/coloring of your `ResizableBall`

Stage 3: ActiveObject

```
public void run()
{
    //Infinite loop, so this always runs
    while(true)
    {
        //Need to update things that might change
        //i.e., size and color

        //Determine if color should change, based
        //on lines. Use o.setColor(____);

        //Update the size, to smaller or larger
        //Make sure to edit the location, as well
        pause(50);
    }
}
```

Things to remember

- Create constants, and use them. For example:
 - PAUSE_TIME
 - MAX_BALL_SIZE
- Feel free to create separate methods to separate out your code a bit. For example:
 - updateBallSize()
 - updateBallColor()
- Start early!