Announcements

TA applications due by 4/13?
Today’s Plan

- Images
- 2-Dimensional arrays
- For loops – Iteration over Arrays
SImages, Files, and Layouts

- SImage Class
- JFileChooser
- BorderLayout
Digital Images
Images

Methods for getting dimensions and brightness values:

```java
int width = pic.getWidth();
int height = pic.getHeight();
int [][] pixels = pic.getPixelArray();
int [][] redPixels = pic.getPixelArray(SImage.RED);
```
**Visualizing 2-D Arrays**

$p[x][y]$  

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>p[0][0]</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>p[1][2]</td>
<td>p[3][1]</td>
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<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p[2][3]</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p[4][3]</td>
</tr>
</tbody>
</table>
It's not matrix notation!

<table>
<thead>
<tr>
<th></th>
<th>c</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
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<td>r</td>
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<td></td>
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</tr>
<tr>
<td>1</td>
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<td>m[1][1]</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
<td></td>
<td>m[3][2]</td>
<td></td>
<td>m[2][4]</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>m[4][3]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>m[4][5]</td>
<td></td>
</tr>
</tbody>
</table>
Images

Many options for construction

SImage pic = new SImage( "cow.jpeg" );
pic = new SImage( width, height, shade );
pic = new SImage( pixelArray );
pic = new SImage( reds, greens, blues );
SOL LEWITT: A WALL DRAWING RETROSPECTIVE

Sol LeWitt: A Wall Drawing Retrospective comprises 105 of LeWitt’s large-scale wall drawings, spanning the artist’s career from 1969 to 2007. These occupy nearly an acre of specially built interior walls that have been installed—per LeWitt’s own specifications—over three stories of a historic mill building situated at the heart of MASS MoCA’s campus. The 27,000-square-foot structure, known as Building #7, has been fully restored for the exhibition by Bruner/Cott & Associates architects, which has closely integrated the building into the museum’s main circulation plan through a series of elevated walkways, a dramatic new vertical lightwell, and new stairways.
A Square Divided Horizontally and Vertically into Four Equal Parts, Each with a Different Direction of Alternating Parallel Bands of Lines
A Better Loop FOR Arrays

```java
int x = 0;
while (x < image.getWidth()) {
pixels[x][0] = 0;
pixels[x][99] = 0;
x = x + 1;
}

for (int x = 0; x < image.getWidth(); x=x+1) {
pixels[x][0] = 0;
pixels[x][99] = 0;
}
```
A Better Loop FOR Arrays

prep_for_loop_test;
while (condition) {
    loop_body_statements
    prep_for_next_loop;
}

for (prep_for_loop_test; condition; prep_for_next_loop) {
    loop_body_statements
}
Another Handy Abbreviation

```java
for (int x = 0; x < image.getWidth(); x=x+1) {
    pixels[x][0] = 0;
    pixels[x][99] = 0;
}
```

```java
for (int x = 0; x < image.getWidth(); x++) {
    pixels[x][0] = 0;
    pixels[x][99] = 0;
}
```
And Another

for (int x = image.getWidth()-1; x >= 0; x=x-1) {
    pixels[x][0] = 0;
    pixels[x][99] = 0;
}

for (int x = image.getWidth()-1; x >= 0; x--) {
    pixels[x][0] = 0;
    pixels[x][99] = 0;
}