Announcements

- Assignment 6 out today
- Topic today is 2D arrays – Read Chap 7.6-7

Two-Dimensional Arrays

```java
int[][] values = new int[20][15];
• Declares an array with 20 rows, 15 cols
• Sum up all the values
int sum = 0;
for (int k=0; k<20; k++){
    for (int j=0; j<15; j++)
    {
        sum += values[k][j];
    }
}
```

Classwork Today

- APT – Pixmap
  – Read in 1D array and convert to 2D array
  – Print 2D array
  – Expand the 2D array
  – Print 2D array again
  – Convert new 2D array back to 1D array
Idea

• Each item in 2D array is replaced by 3 rows and 4 cols of that item

1D array: 1 2 3 4
2x2

2D array:

1 2
3 4

Expand 3x4

2D array expanded:

1 1 1 1 2 2 2 2
1 1 1 1 2 2 2 2
1 1 1 1 2 2 2 2
3 3 3 3 4 4 4 4
3 3 3 3 4 4 4 4
3 3 3 3 4 4 4 4

Assignment 6 - Pixmap

• Wrapped up our 2-D array into a class

• Pixmap
  – private String myFileName;
  – private BufferedImage myImage;
  – private Dimension mySize;

• Create a pixmap

• Get and Set a color from one pixel
  – public Color getColor (int x, int y)
  – public void setColor (int x, int y, Color value)

Other Pixmap methods

• public String getName ()
• public boolean isInBounds (int x, int y)
• public Dimension getSize ()
• public void setSize (int width, int height)

• NOTE: Look at code for “Negative” – it’s already been done for you

Mirror Vertically and Horizontally

• Mirror vertically
  – Think about writing a swap method

• Mirror horizontally
**Emboss a Picture**

**Expand**

- Example –
  - Expand by 3 rows and 2 columns

**Filter - Blur**

- Example – Blur 9 x 9

**Edge Detection**

- Example – edge detect 5x5