Opening Exercise

Reduce my official UMPR photo to a manageable size...
Media Operations

- copy all
- copy region
- reflect
- rotate
- blend
- scale
The Programming Tool

manipulate pixels by their position in the image

the nested for loop

for (int x = startX; x < lastX; x++)
for (int y = startY; y < endY; y++)
operate on the pixel at (x, y)
Another Exercise

All of copy operations have copied rectangles.

Write a method named

copyRightTriangle( int x, int y, int width )

which copies the triangle below the diagonal of a square.
An Example

(70, 10), width = 185

You may assume we are copying to the same location in a new image.
Generalizing Our Copy Operations

How could we copy a triangle from a rectangle?

How could we copy some other triangle?

How could we copy a circular region?
Generalizing Our Copy Operations

How could we copy a triangle from a rectangle?

How could we copy some other triangle?

How could we copy a circular region?

... geometry and algebra!
Cool Image Effects
in Homework 1

"live" repaint

a dotted line

use of colored blocks
Homework 2

What are the high-level operations?

Design your solution in this way:
• create an empty method for each operation
• design, implement, and test each method one at a time