**Topics:** Scratch Projects, Shell Loops, Convert

**Approach:** Discussion, Explanation, Discussion

**Main Ideas:**

1. Admin
   - HW3 Due tonight

2. Scratch Projects
   - a. Evaluating Software
     - problem --> procedure --> code
     - What is the problem? What is a solution?
     - How can one express the solution in a limited language?
     - Use of variables, loops, conditionals, limited commands
   - b. Three presentations
     - Problem, Procedure, Code:
     - Tricky parts, Easy parts
     - Questions from audience

3. Loops in the shell: A Solution to a Laziness/Impatience Problem
   - a. Making the photo album webpage required repetition
     - convert -resize 100x100 1.jpg ../small/1.jpg
     - ...
     - convert -resize 100x100 6.jpg ../small/6.jpg
   - b. Tedious, Boring Work. Can we use loops in Unix commands?
     - Yes: we meet the Old MacDonald loop in sh
   - c. Writing scripts
   - d. Using Scripts to convert, rename
   - e. Using wildcards in loops
   - f. Using loops to print messages

4. Convert for cool visual effects
   - a. convert does more than resize
   - b. man convert, or http://www.imagemagick.org/script/convert.php
   - c. Look at swirl, blur, implode, edge, charcoal, emboss, ..
   - d. Using this to plan for an animated web page

5. Convert and Loops
   - a. One image, many operations
   - b. Many images, many operations