Topics: Problems to Procedures II

Approach: Discussion, Explanation, Discussion

Main Ideas:

1. Admin
   - Pick Lab times NOW Tues 3:00, 4:30, 6:00
   - Info Sheets - if new, complete one today

2. Quick recap of day 1 and an agenda for today
   - Day 1
     - Computer Science: Problems and Procedures machines can perform
     - Learning how computers and the Internet work
     - Learning to 'speak' algorithms: devise, read, discuss
     - Algorithm: a sequence of steps to solve a problem
     - Representing information as lists of numbers
   - Today
     - A procedure for setting up a website
     - Find smallest number in a list (using cards)
     - Introduction to Scratch

3. Problem: How do I set up a website and post pictures
   - We do a live demo for Windows users
   - We include translation for Mac OSX users

4. Problem: Finding lowest card in a hand
   - Some algorithms for sorting 10 cards used "find lowest card"
   - What is an algorithm for doing that?
   - Now, what if you only had this system:
     - Limited to a desk with 10 spaces (numbered 1,2,...10)
     - Problem: get the lowest card into space 1
   - Operations are:
     - move card from space n to space m
     - swap cards in spaces n and m
     - compare card in space n to card in space m
     - if first is bigger then ...
     - repeat ..
     - variables ..
   - Other problems: find max, reverse order, median

5. From cards to cats
   - Scratch is a programming system
   - A limited number of operations, infinite number of combinations
   - You devise algorithms to create animations and games
   - You express the algorithms by assembling puzzle pieces

   Here is a problem, devise an algorithm:
   - Get cat to walk back and forth across the screen
   - each time it gets to edge of screen, play a note
   - each time it passes the middle of the screen, say "Hello"