Topics: Variables -- Changing and Counting & Booleans
Approach: WTP, WTS, HIW, LMTO
Main Ideas: Types of loops; Variables: ways to vary variables, using variables
Mantra: What Repeats? What Varies?

1. Admin
   Questions with HW2? Write or visit
   Office hours: 6-9 Tuesday, What times on Thu + Wed are good?

2. Today’s Two Main Projects
   a. Draw a row of boxes, each smaller than the one before
   b. Teach a sprite to count

3. Quick Look Back
   a. How to draw one box of side 50
   b. How to draw a flower of boxes each 30 degrees rotated
   c. How to draw a row of boxes that ends at the edge
   d. But what if we wanted the colors to change for each box? or the size to change?

4. Ideas So Far
   0. Big Idea: Problem ---> Algorithm/Design ---> Code
      a. repeat for n = 10...2
         if card[n] < card[n-1] then swap n, n-1
      Vocabulary/Anatomy of loops and conditionals variables
      b. Types of loops (different loop forms for different uses):
         infinite, fixed number: range vs list, conditional
      c. Conditional statements, conditional loops
         condition (a boolean expression) and action
         Terms: boolean expression,
         comparison operator (<, >, =),
         boolean operator (and, or, not)
      d. Nested loops, nested conditionals
      e. Variables - named boxes you can store numbers in
         clarify code, reduce work, increase reliability
         variables can be private or shared (local/global)

5. Today: Problem = Changing values, Solution = variables
   a. Problem 1: Flower with growing petals, row of shrinking boxes
   b. Look at the code, which numbers determine the size, angle, etc?
   c. How can we make those values change?
   d. Variables are the solution
      What is a variable? How do you use one? What operations?
   e. Try: The shrinking boxes:
      each box 10 pixels smaller, then 10% smaller, then 50%
   f. Overview: Variables allow attributes to change (size, color, position, ..)
      Flavors of change: fixed amount, fixed ratio, varying amount/ratio
      Flavors of change: change x by (_) vs set x to (_)
      Do variable workchart

6. Today: Problem = Counting Events, Solution = variables
   a. Problem 2: Counting clicks - like a voting machine or a museum guard
      Voting machine: click on a sprite to cast a vote, click `tally´ for total
      WTP, WTS, HIW, LMTO
      Solution: ver1: counting sprite; ver2: a second counting sprite, ver3: tally
   b. The idea of a counter - increase the value on each event
   c. What about something happening after each ten clicks?