

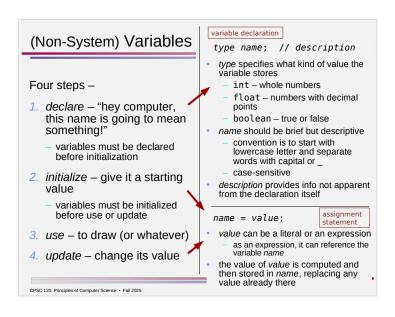
## Structural Pattern - Animation

Where does stuff go?

Animation variables are usually -

- declared at the very beginning of the sketch, before setup() and draw()
- initialized in setup()
- used and updated in draw()

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## **Animation Example** for a rectangle moving to the // rectangle moves to the What changes (or has the right... // right potential to change) from one frame to the next? int x; // x coordinate of // the left side → one variable for each x position of the thing identified void setup () { rectangle // open window size(800, 400); For each variable -// initialize variables what kind of value is it? number - either type, for the declaration whole number or void draw () { whole numbers → int number with // draw one frame decimal point numbers with decimal points background(255); → float rectMode(CORNER): true or false → boolean stroke(0); fill(255, 0, 0); what's the starting point? on the left side rect(x, 200, 60, 20); → initialization x is 0 (CORNER // update variables mode) x = x+1: how does the value change x gets bigger from one frame to the next? add 1 → update

```
size(200,200);
Pattern Summary
                                                    background(255);
                                                    rectMode(CENTER);
                                                    fill(255,0,0);
rect(100,100,100,100);

    nothing changes (static picture)

       → static mode sketch
                                                    void setup () {
  size(400, 400);

    something changes based on

                                                    void draw () {
  background(255);
   the mouse position
      → active mode sketch (setup(),
draw()) using mouseX, mouseY
                                                      rectMode(CORNER);
fill(255,0,0);
                                                      rect(mouseX,mouseY,50,50);

    something changes over time

       → active mode sketch (setup(),
                                                    int x;
      draw()) with animation variables
                                                    void setup () {
  size(400, 400);

    do something when the mouse

   is clicked (or pressed or
                                                    void draw () {
  background(255);
  released) or a key is pressed
                                                      rectMode(CORNER);
       → active mode sketch (setup(),
                                                      fill(255,0,0);
rect(x,100,50,50);
      draw()) with event handlers
                                                      x = x+1;
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```