Attributes

Program State

Colour Representation

Hexadecimal

Chapter 3, Examples 3-12, 3-13, 3-14, 2-15, 3-16, 3-17, Comments (p. 36-37), Robot 1 (p. 38-39).
Which one has correct coding style?

point (10, 20);

point(10, 20);

point(10,20);

point(10, 20);
function setup() {
  createCanvas(100, 100);
  background(220);
  point(?, ?);
}
Drawing in Adobe Illustrator
Whenever we draw shapes

- we set two attributes (properties):
Whenever we draw shapes

- we set two attributes (properties):
  - stroke
  - fill
strokeWeight(weight)

https://editor.p5js.org/cs105/sketches/NkJs2dQiM
Setting Attributes changes the “State”

▪ e.g. once you set strokeWeight to 10, everything you draw after will have a strokeWeight of 10 until you change it again

▪ Order matters (remember “Sequential Control Flow”)

▪ Think of it like picking up a sharpie: everything you draw after will be that colour until you pick another sharpie
noStroke()

noFill()

strokeJoin(join)
// where join = BEVEL, MITER, or ROUND

strokeCap(cap)
// cap = SQUARE, PROJECT, or ROUND

https://editor.p5js.org/cs105/sketches/NkJs2dQiM
https://p5js.org/reference/
noStroke()

noFill()

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// where join = BEVEL, MITER, or ROUND

strokeCap(cap)
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How do we specify a colour?

- At a paint store?
- In art class?
- Over the phone?
This chart shows the dominant color names over the three fully-saturated faces of the RGB cube (colors where one of the RGB values is zero).

http://blog.xkcd.com/2010/05/03/color-survey-results/
How we see color (3:34)
https://www.youtube.com/watch?v=l8_fZPHasdo
Sub pixels for Colour

- each pixel is actually 3 subpixels: Red, Green, Blue (RGB)

1 pixel

what we see
Colour Models

Additive ("add all RGB colours to get white"):  
- RGB – used to specify colour on computer displays

Subtractive ("subtract all CMY colors to get white"):  
- CMY/CMYK – common in printing

Credit: Presentitude
Colour Models

Additive ("add all RGB colours to get white"):  
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Subtractive ("subtract all CMY colors to get white"):  
- CMY/CMYK – common in printing
RGB colour

- Vary amounts (intensity) of red green and blue sub-pixels
- R, G, B can be any value between 0 and 255
  - \(256 \times 256 \times 256 = 16,777,216\) distinct colours
- Gray shades are when R, G, and B all have same value
- Why 256? Bits and Bytes: [https://256stuff.com/256.html](https://256stuff.com/256.html)

- [https://www.google.com/search?q=online+color+picker](https://www.google.com/search?q=online+color+picker)
(live demos)

stroke(gray)

stroke(red, green, blue)

fill(gray)

fill(red, green, blue)

background(gray)

background(red, green, blue)

https://editor.p5js.org/cs105/sketches/NkJs2dQiM
voice_of_fire

https://editor.p5js.org/cs105/sketches/fSlyq4yKu
State

- How something is; its configuration, attributes, condition, or information content.
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- How something is; its configuration, attributes, condition, or information content.

Program State

- What line of the program is executed next? (i.e. Sequential Control Flow)
- Current settings of all drawing attributes (e.g. fill, stroke, strokeWeight, colorMode, etc.)
// draw "Voice of Fire"

function setup() {
    createCanvas(190, 250);
    noStroke();
    background(255); // white

    // draw blue stripes
    fill(10, 10, 100); // blue
    rect(50, 10, 90, 230);

    // red stripe on top
    fill(173, 21, 49); // red
    rect(80, 10, 30, 230);
}

// draw "Voice of Fire"

1 function setup() {
2    createCanvas(190, 250);
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function setup() {
  createCanvas(100, 100);
  background(220);
  line(0, 0, 99, 99);
  strokeWeight(10);
  line(0, 99, 99, 0);
  stroke(255, 0, 0); // red
}
Drawing in Adobe Illustrator

- Path properties:
  - X: 158.837
  - Y: 118.034
  - Width: 21.769 pt
  - Height: 38.776 pt
  - Angle: 0°

- Appearance:
  - Stroke: 6 pt
  - Opacity: 100%

- Quick Actions:
  - Offset Path
  - Join
  - Recolor
  - Arrange
(alpha transparency demos)

stroke(gray, alpha)

stroke(red, green, blue, alpha)

fill(gray, alpha)

fill(red, green, blue, alpha)

background(gray, alpha)

background(red, green, blue, alpha)

https://editor.p5js.org/cs105/sketches/NkJs2dQiM
rothko

https://editor.p5js.org/cs105/sketches/NkJs2dQiM
Hexadecimal Colour

Color Hex Color Codes

Color-hex gives information about colors including color models (RGB, HSL, HSV and CMYK), Triadic colors, monochromatic colors and analogous colors calculated in color page. Color-hex.com also generates a simple css code for the selected color. Html element samples are also shown below the color detail page. Simply type the 6 digit color code in the box above and hit enter.

Users Latest Favorite Colors

http://www.color-hex.com/
Hexadecimal Numbers

▪ (blackboard examples)

▪ See also:
  http://www.smashingmagazine.com/2012/10/04/the-code-side-of-color/
  https://whatis.techtarget.com/definition/hexadecimal
stroke('#hex')

fill('#hex')

background('#hex')

https://editor.p5js.org/cs105/sketches/NkJs2dQiM
p5 Colour Tutorial

- [https://p5js.org/learn/color.html](https://p5js.org/learn/color.html)
  - Note the section on “Custom Color Ranges” and changing colorModel to HSB

Color

In the digital world, when we want to talk about a color, precision is required. Saying "Hey, can you make that circle bluish-green?" will not do. Color, rather, is defined as a range of numbers. Let's start with the simplest case: black & white or grayscale. 0 means black, 255 means white. In between, every other number—50, 87, 162, 209, and so on—is a shade of gray ranging from black to white.
HSB

- **Hue**
  - color type

- **Saturation**
  - vibrancy of color

- **Brightness**
  - brightness of color
Resource for Review on LEARN