Fundamentals of Physical Computing

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Plan for Today

- Lab Review
- Creative Analog Devices
- Math Review
- ~~Affordances~~
- Processing
- Readings & Assignments

Lab Review

Creative Analog Device Results

Math

Computer Math

- Binary, Decimal, Octal, Hexadecimal
    - Why?
        - Understanding computers
        - Programming helper, communications essential
    - What?
        - It’s all notation

Decimal

- Place system
- Powers
- Adding and carries
- Finger counting, but is that base 10?

Binary

- Place system
- Notation: %010 010b 0b10
- Powers
- Adding and carries
- Finger counting!

Octal

- Place system
- Notation **0**73
- Powers
- Adding and carries
- Finger counting, not really

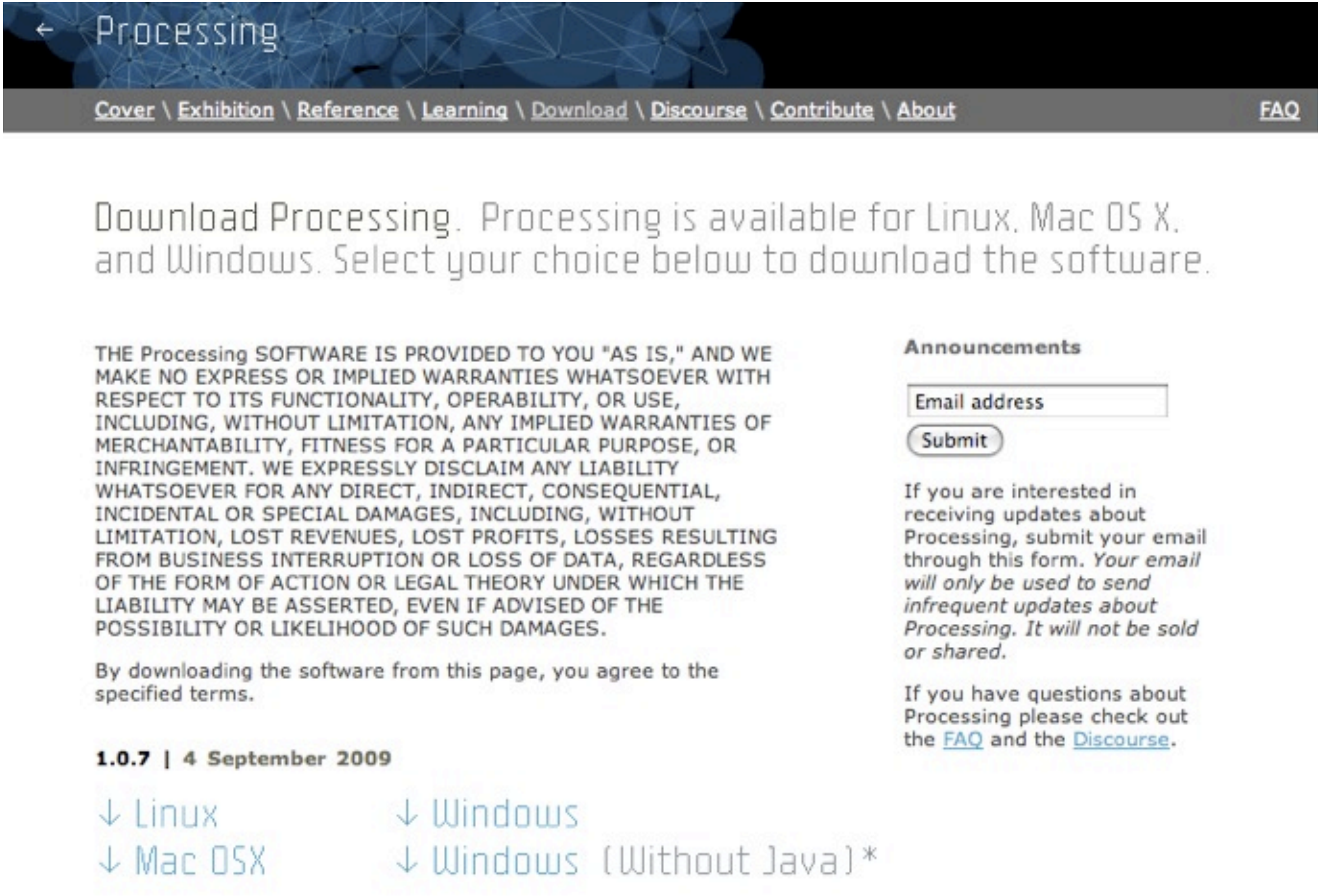
Hexadecimal

- Place system
- Notation: extra digits, 0x10, #FFFFFF
- Powers
- Adding and carries
- Finger counting?
- Switches yes: 0xFF = 1111 1111 and 0x3C = 0011 1100

Programming

Processing

Downloading Processing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FAQ

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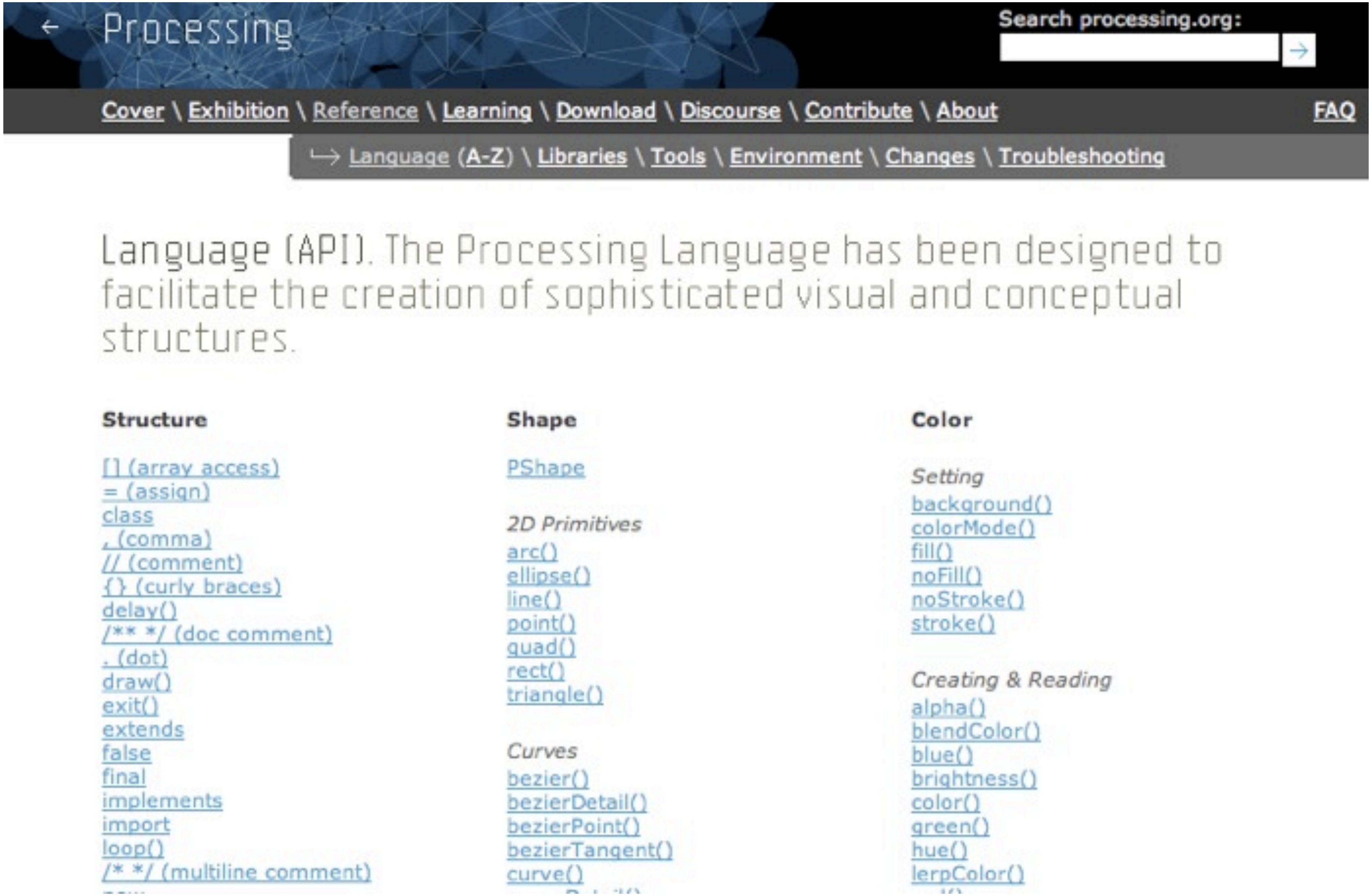
↓ Linux
↓ Mac OSX
↓ Windows
↓ Windows (Without Java)*

Announcements

If you are interested in receiving updates about Processing, submit your email through this form. *Your email will only be used to send infrequent updates about Processing. It will not be sold or shared.*

If you have questions about Processing please check out the FAQ and the Discourse.

Processing Web Site



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FAQ

↳ Language (A-Z) \ Libraries \ Tools \ Environment \ Changes \ Troubleshooting

Language (API). The Processing Language has been designed to facilitate the creation of sophisticated visual and conceptual structures.

Structure

[] (array access)
= (assign)
class
, (comma)
// (comment)
{} (curly braces)
delay()
/** */ (doc comment)
. (dot)
draw()
exit()
extends
false
final
implements
import
loop()
/* */ (multiline comment)

Shape

PShape

2D Primitives

arc()
ellipse()
line()
point()
quad()
rect()
triangle()

Curves

bezier()
bezierDetail()
bezierPoint()
bezierTangent()
curve()

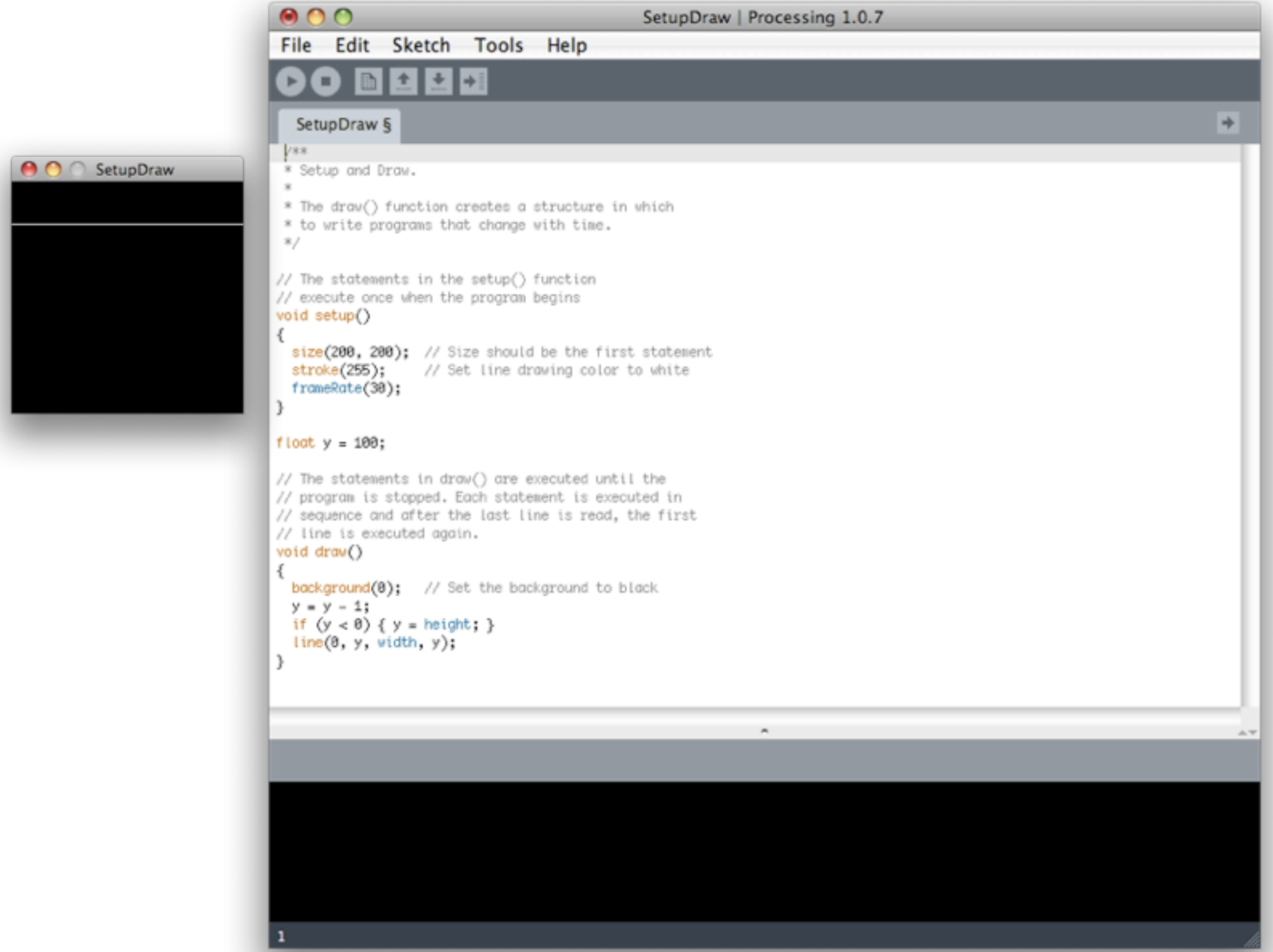
Color

Setting

background()
colorMode()
fill()
noFill()
noStroke()
stroke()

Creating & Reading

alpha()
blendColor()
blue()
brightness()
color()
green()
hue()
lerpColor()



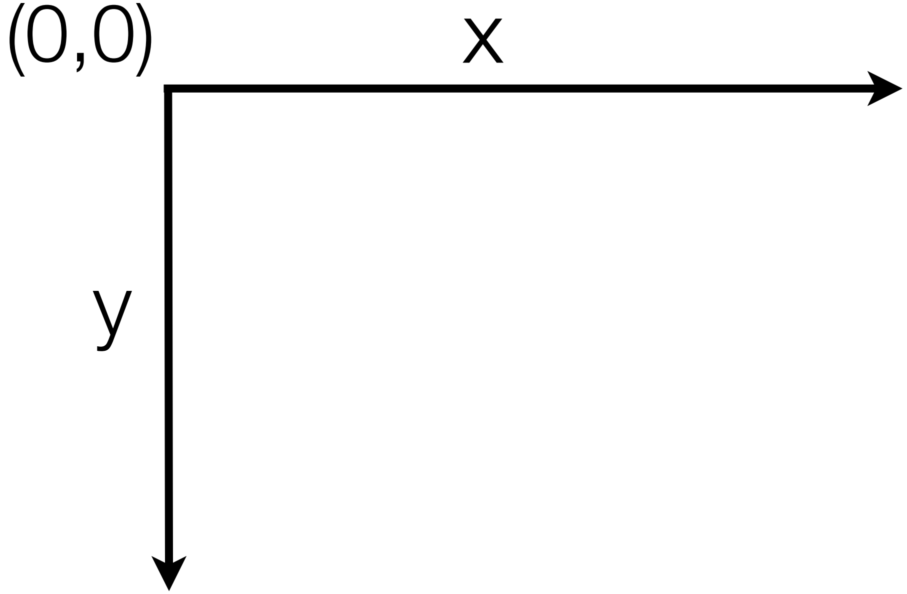
```
/**
 * Setup and Draw.
 *
 * The draw() function creates a structure in which
 * to write programs that change with time.
 */

// The statements in the setup() function
// execute once when the program begins
void setup()
{
  size(200, 200);  // Size should be the first statement
  stroke(255);     // Set line drawing color to white
  frameRate(30);
}

float y = 100;

// The statements in draw() are executed until the
// program is stopped. Each statement is executed in
// sequence and after the last line is read, the first
// line is executed again.
void draw()
{
  background(0);   // Set the background to black
  y = y - 1;
  if (y < 0) { y = height; }
  line(0, y, width, y);
}
```

Coordinate System

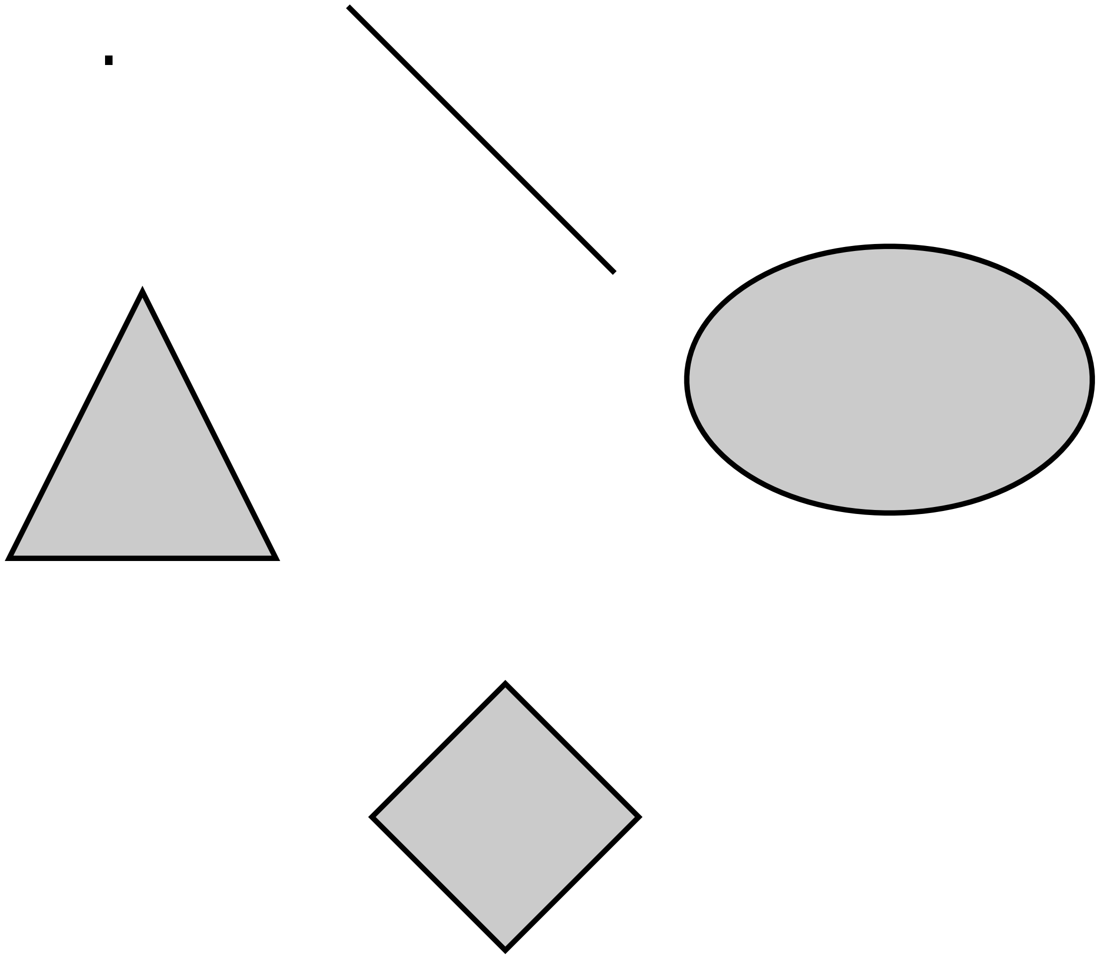


(5, 100) ?

(75,10) ?

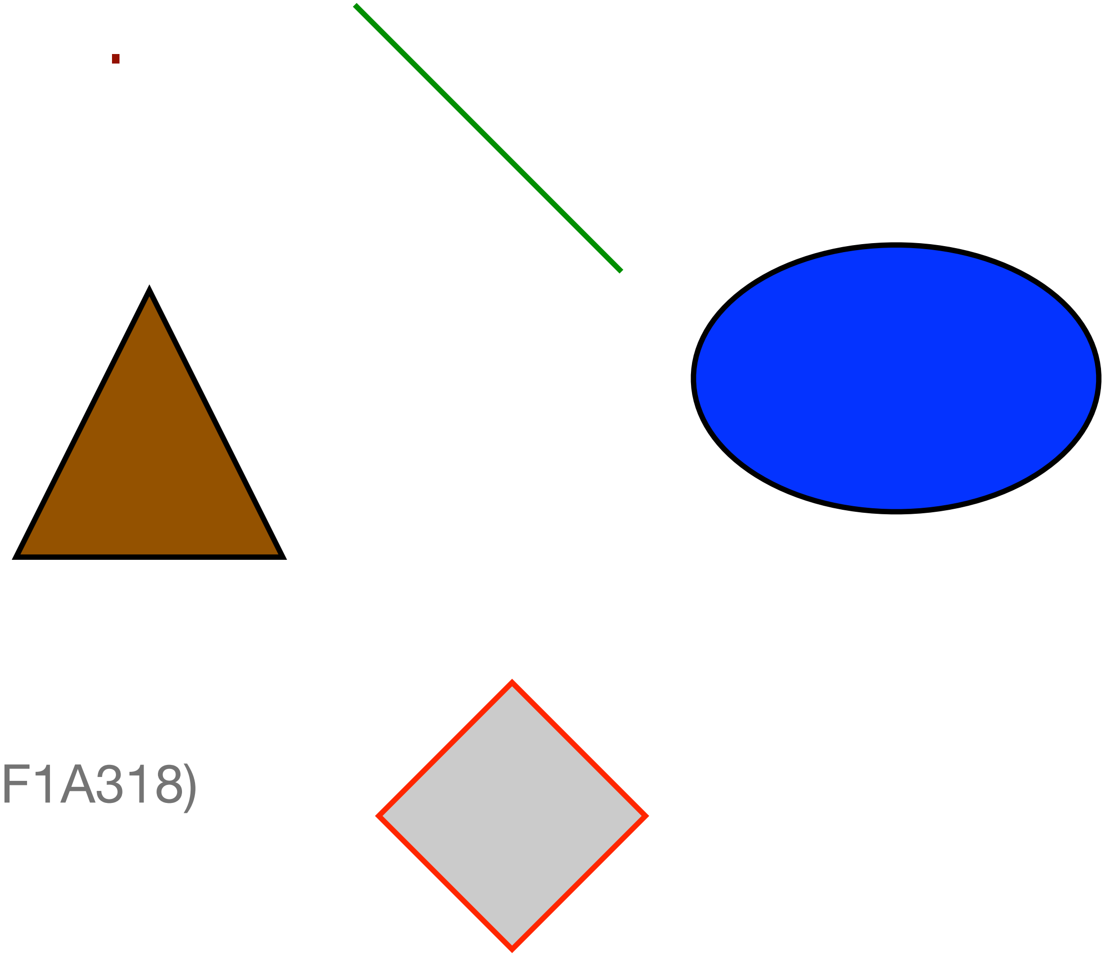
Drawing Shapes

- Primitives:
    - point
    - line
    - triangle
    - quad
    - rect
    - ellipse



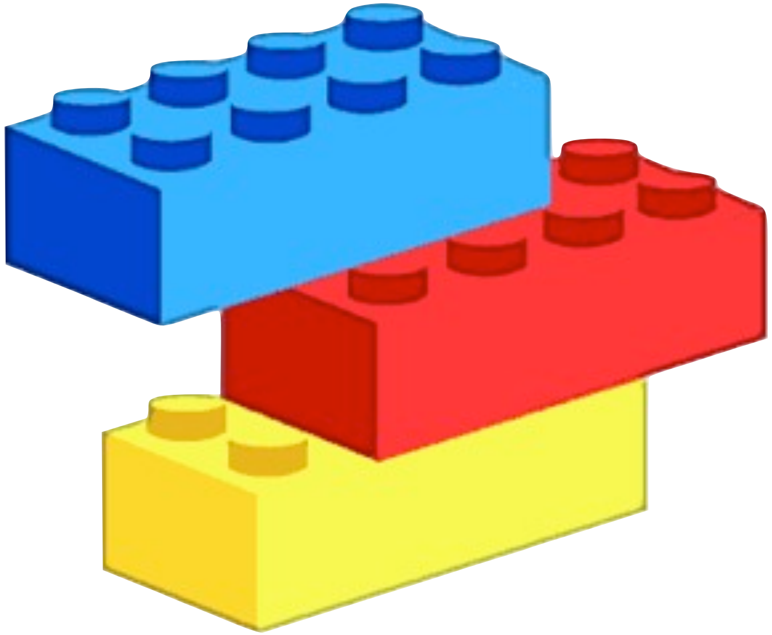
Colors

- fill( )
- stroke( )
- background( )
- (32)   or (213, 5,118) or (#F1A318)

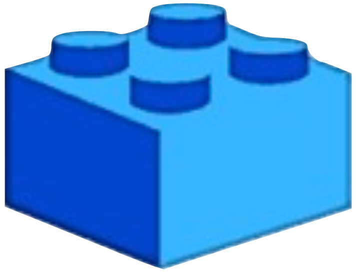


Structure

- setup( )
- draw( )



- functions and loops use curly brackets { }
- lines end with semicolons ;



Variables

- int
- float
- color
- boolean
- mouseX
- mouseY
- mousePressed

Conditionals

- if (mouseX > 50)

- if (mousePressed)

- if (mouseX > 50 && mouseY > 4)

Comments and Console

- // comment
- /* comment */
- print & println

Readings and Assignments

- Readings
    - Physical Computing, chapter 5
- Assignment
    - Programming Lab