Uni Studies 3:
Intro to Processing 2

Assoc. Professor Donald J. Patterson
Uni Stu 3 Fall 2012

Intro to Processing

http://processing.org/

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Intro to Processing

- What the heck is Processing?
  - A programming language
  - An environment for running the programs

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- What is it for?
  - It is for people who want to create
    - images
    - animations
    - interactions

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Intro to Processing

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  - A programming language
  - An environment for running the programs
- What is it for?
  - It is for people who want to create
    - images
    - animations
    - interactions
- Who is it for?
    - students
    - artists
    - designers
    - researchers
    - hobbyists

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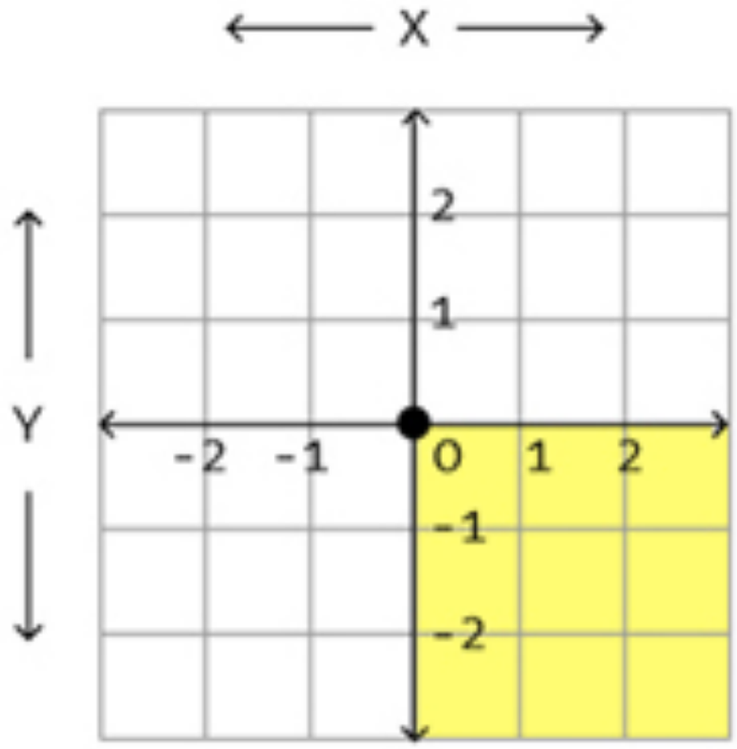
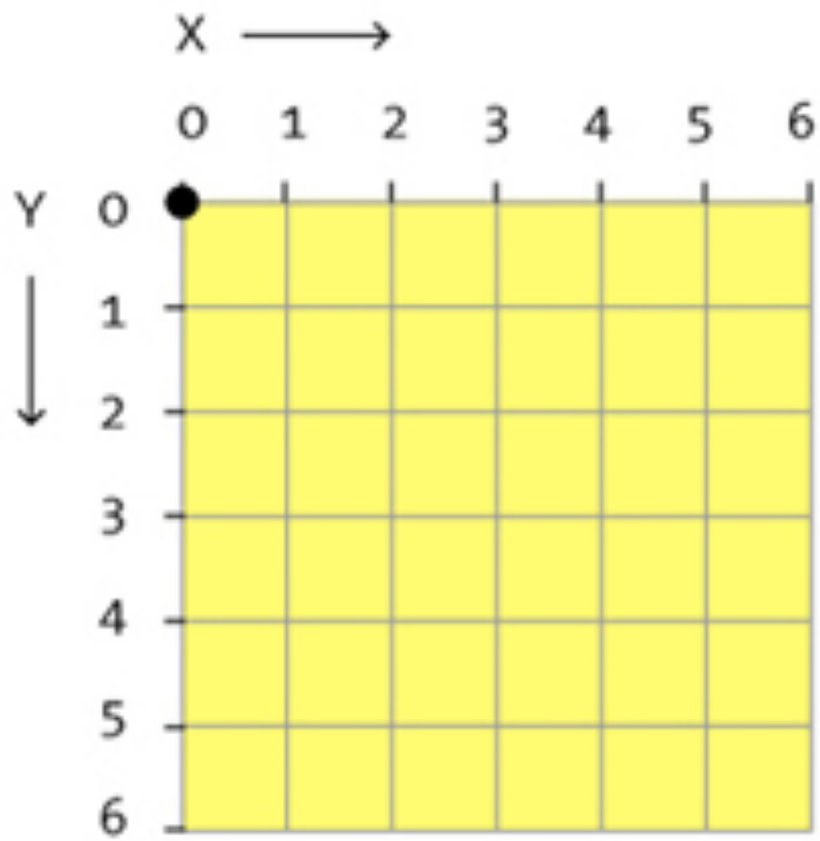
Intro to Processing

- The computer screen is like a big sheet of graph paper



Eighth Grade



Computer

- The cross-points refer to pixels.

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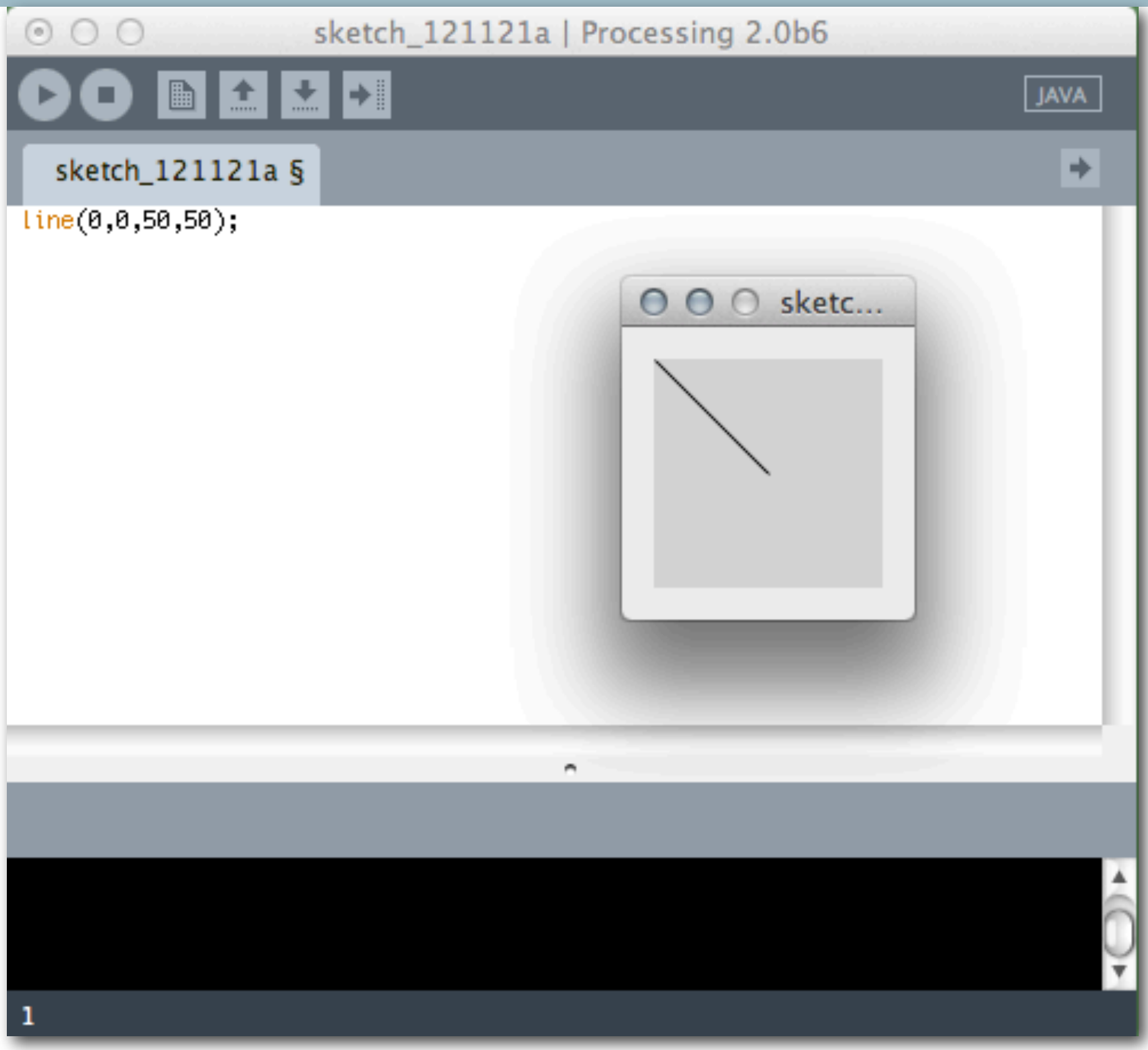
Intro to Processing



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Intro to Processing

- How do simple shapes get drawn on the computer?

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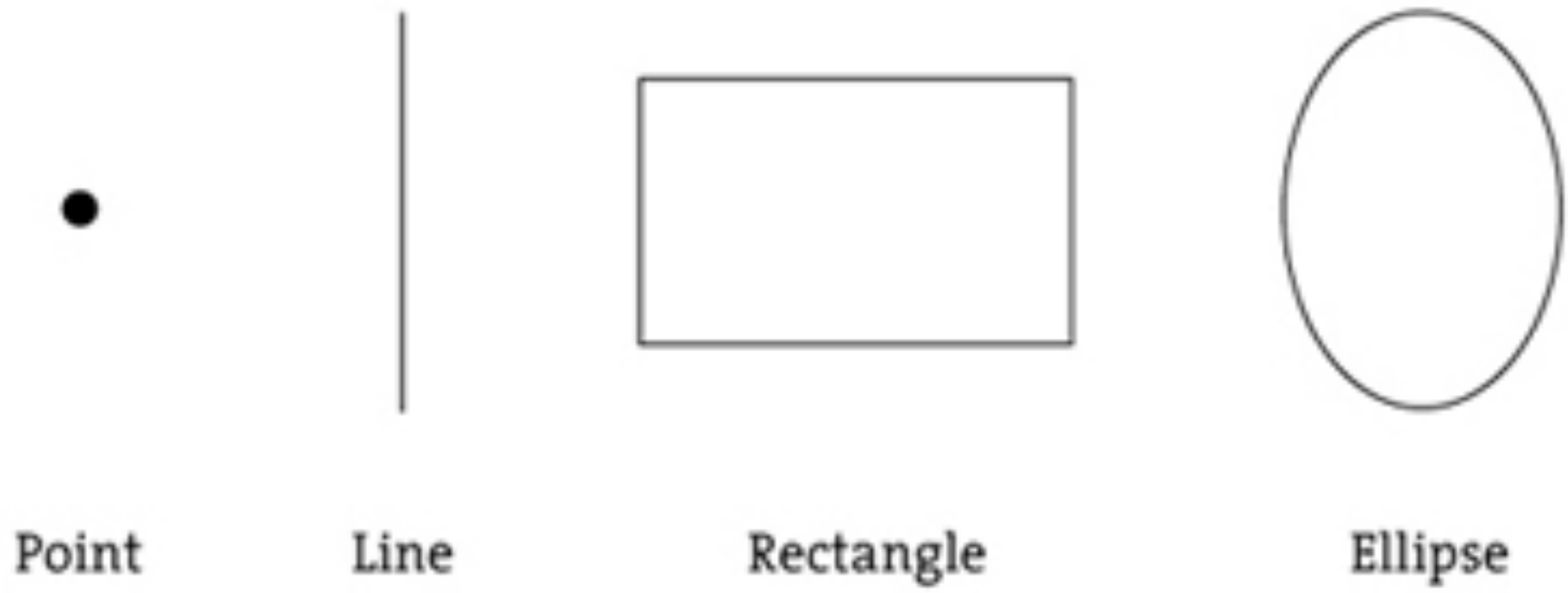

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Intro to Processing

- a point
  - point (4,5)

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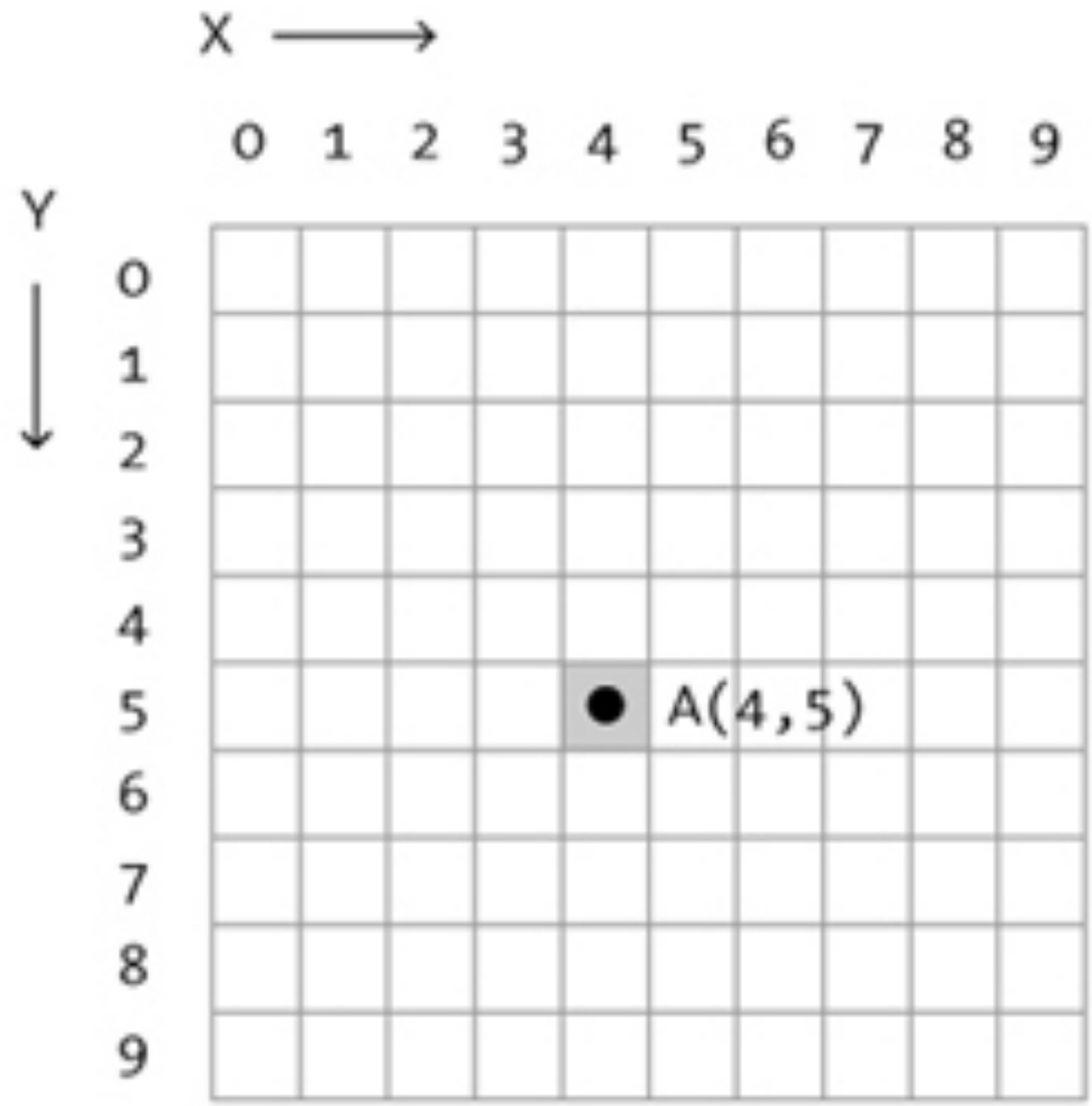

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Intro to Processing

- a line
  - line (1,2,5,2)

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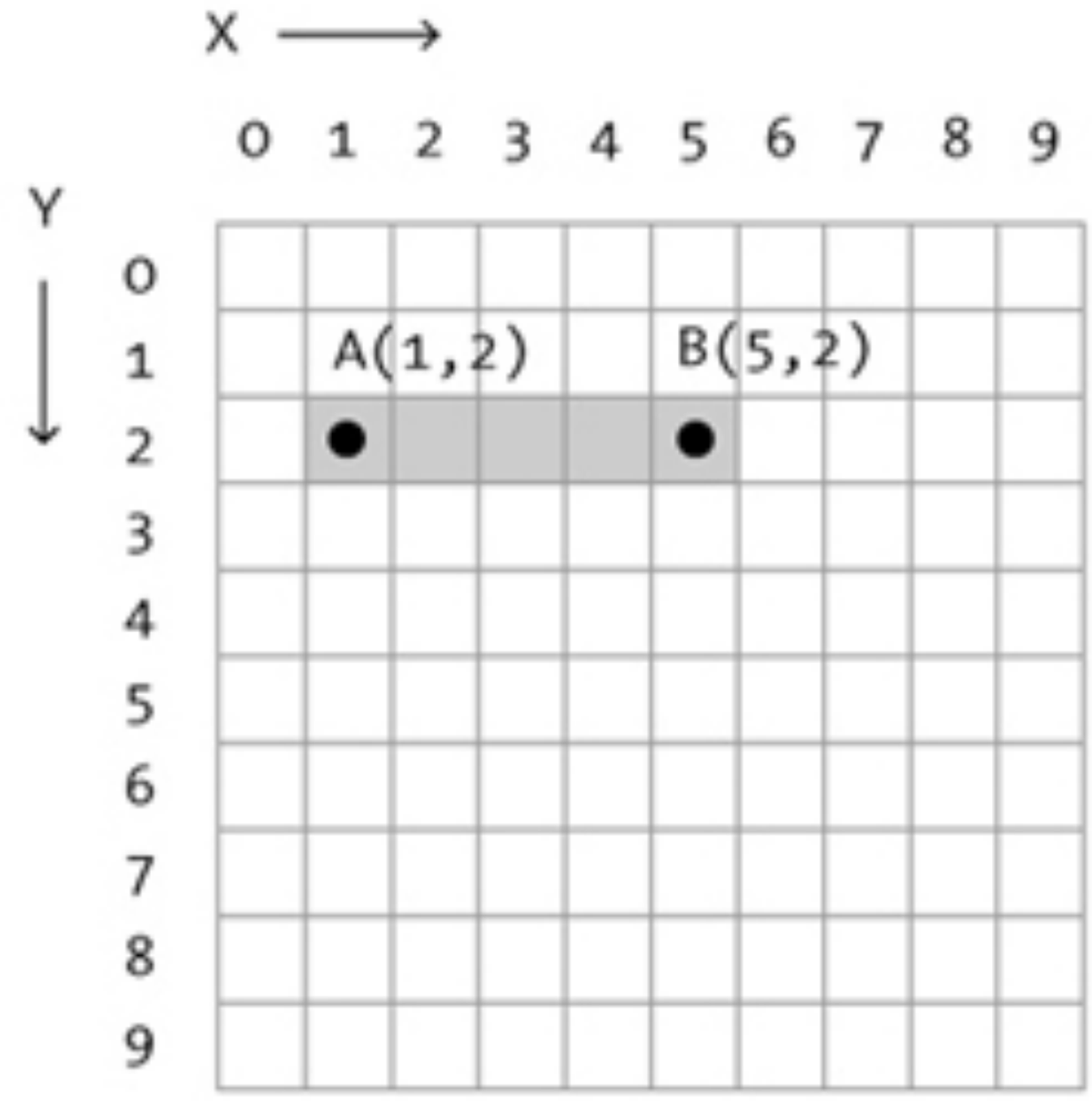

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Intro to Processing

- a rectangle
  - rect (2,2,7,5)

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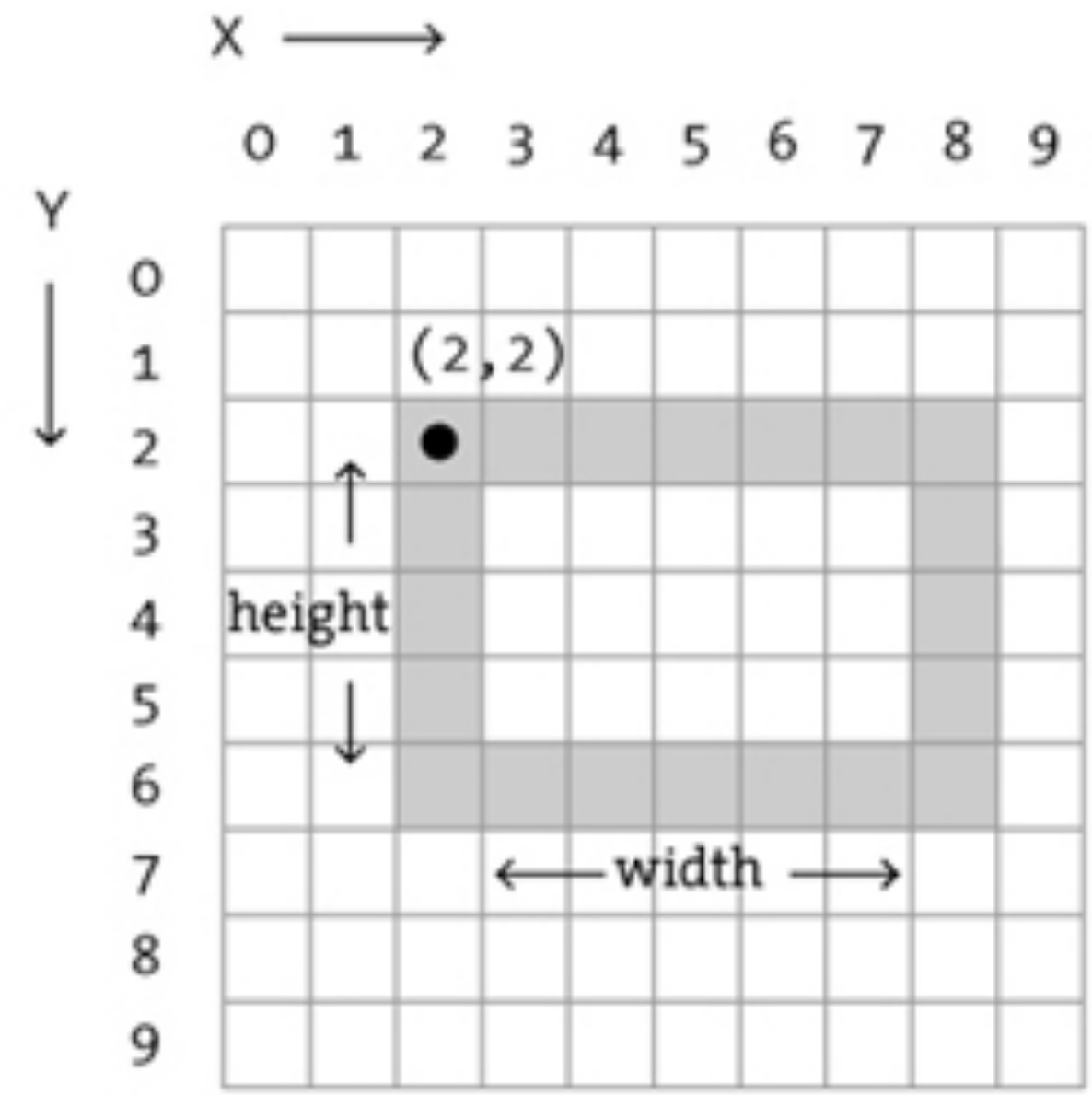

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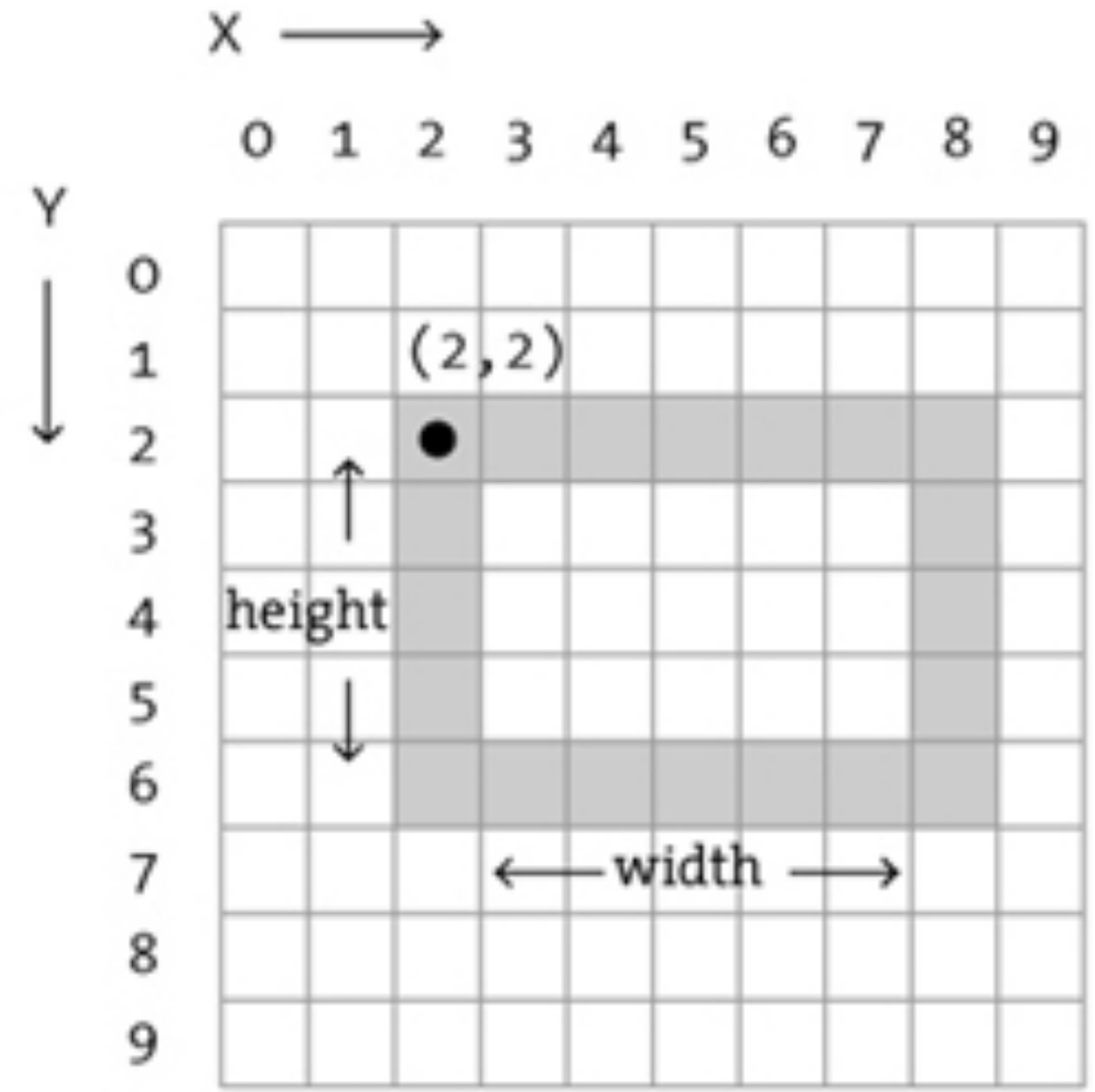
Intro to Processing

- a rectangle
  - rect (2,2,7,5)

Watch Out! 7 is width and 5 is height!



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Intro to Processing

- a rectangle
  - rectMode(CENTER)
  - rect (4,4,7,3)

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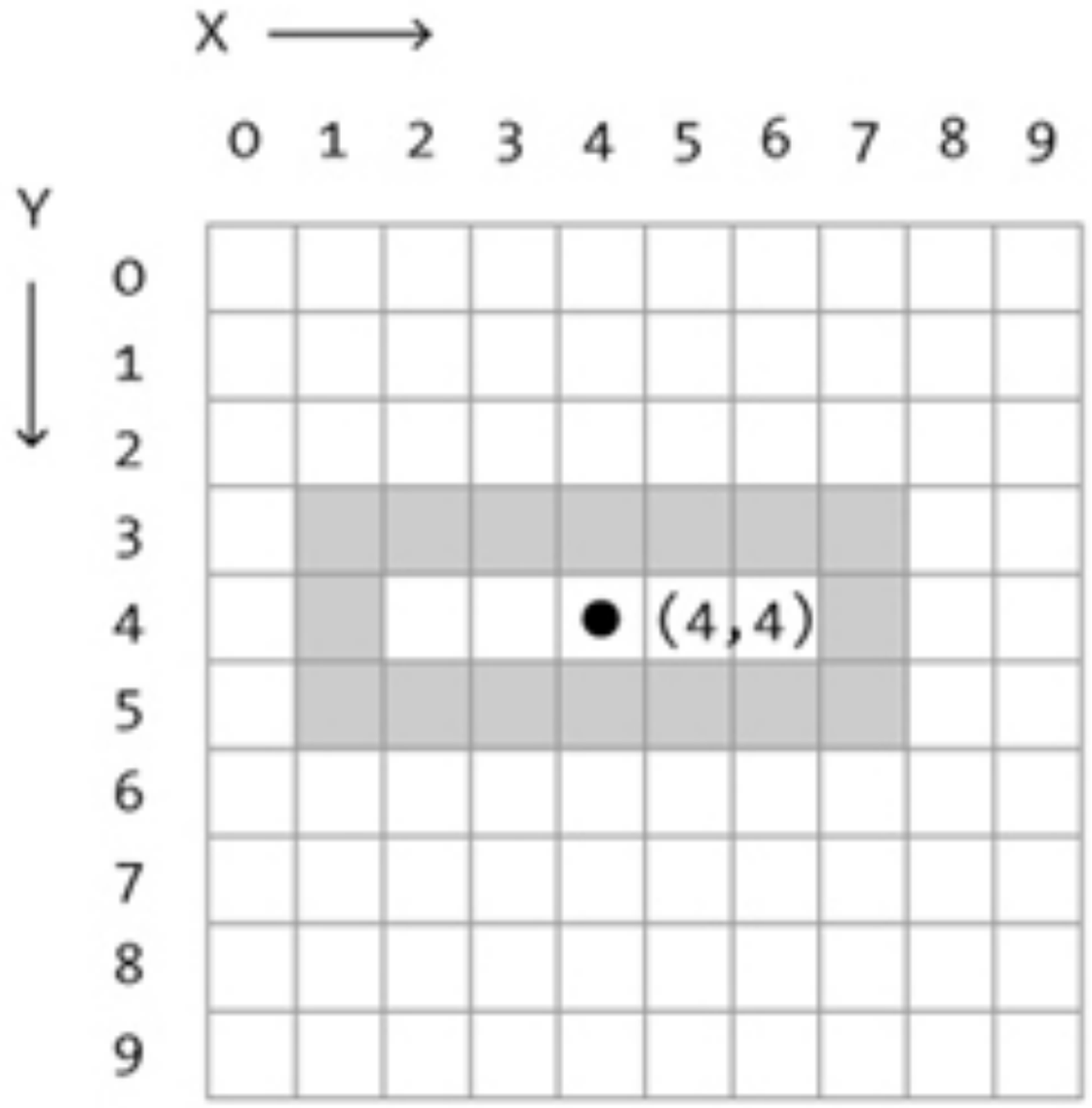

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Intro to Processing

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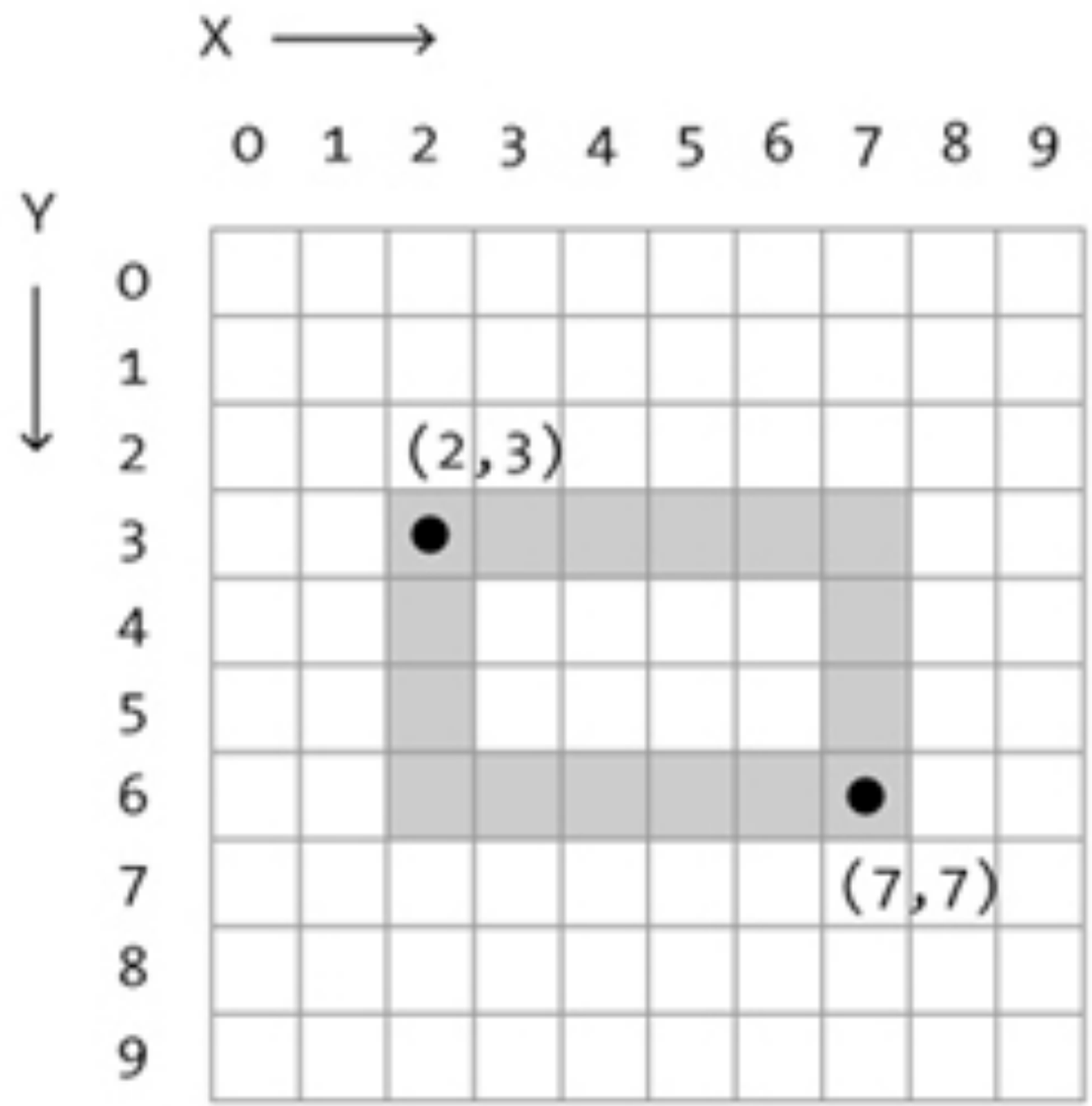
  - rectMode(CORNER)
  - rect (2,3,7,7)



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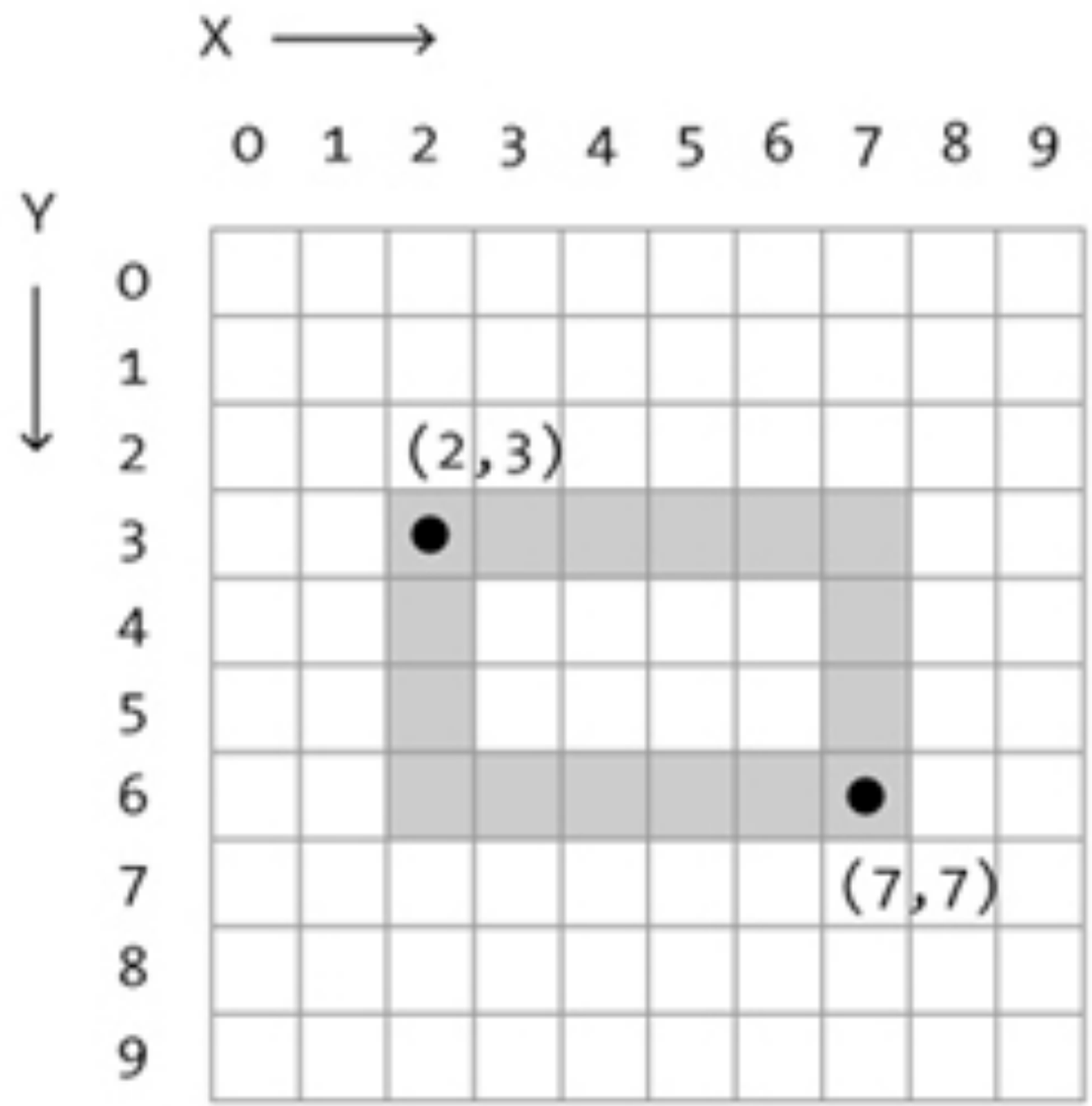

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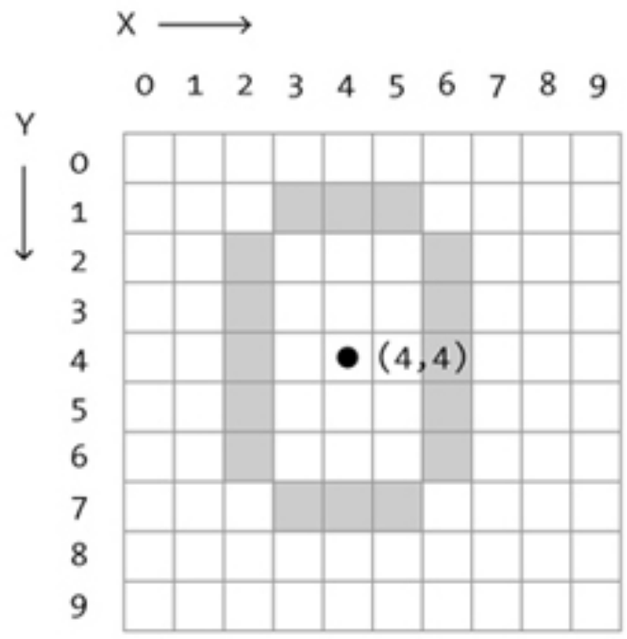
Intro to Processing

- an ellipse
  - ellipseMode(CENTER)
  - ellipse(4,4,5,7)



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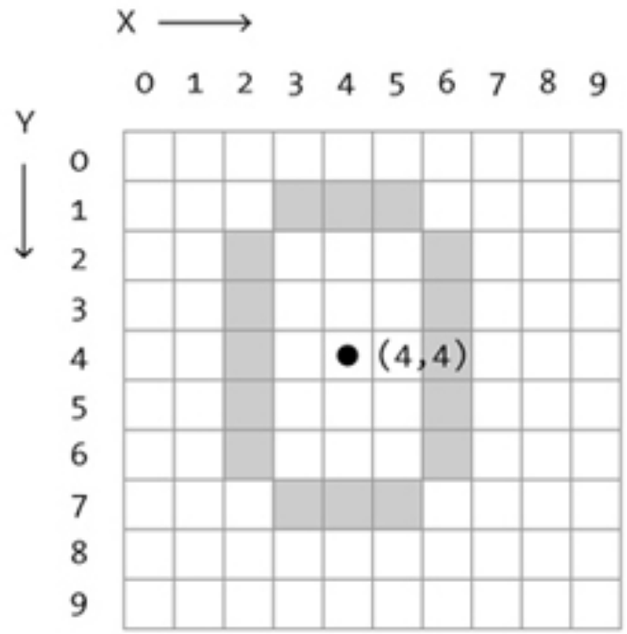

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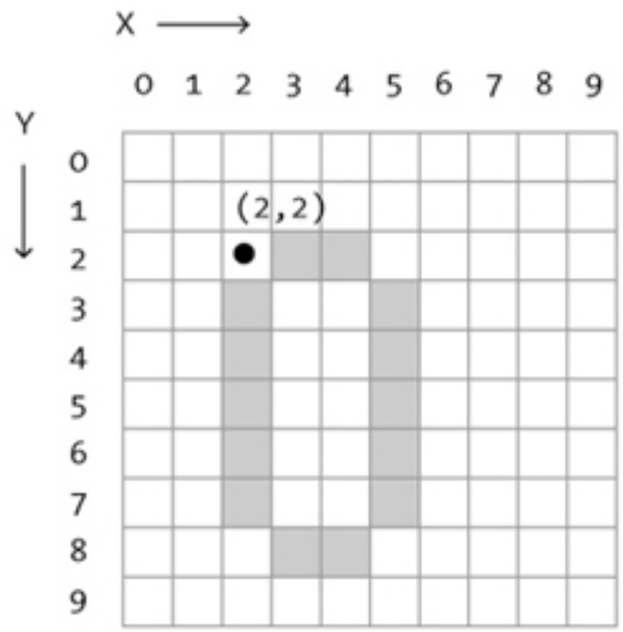

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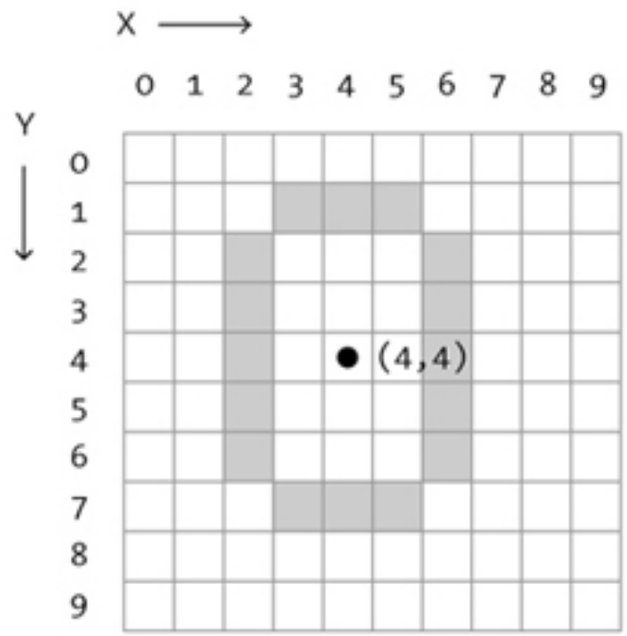

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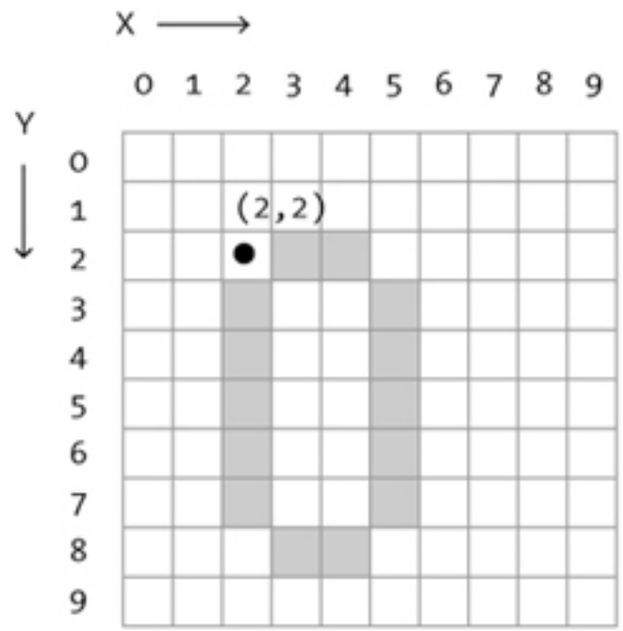

Watch Out! 4 is width and 7 is height!

http

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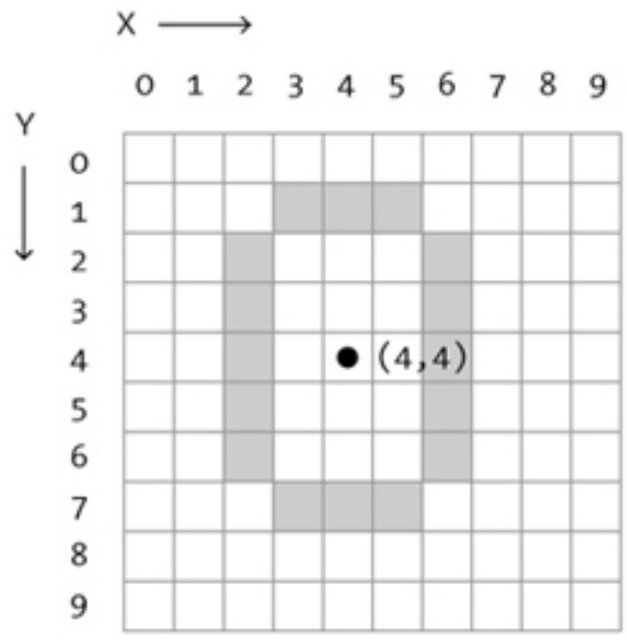

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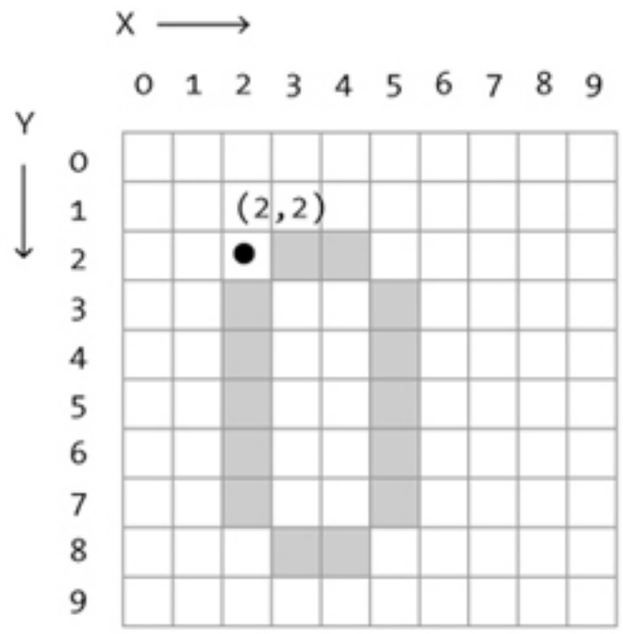

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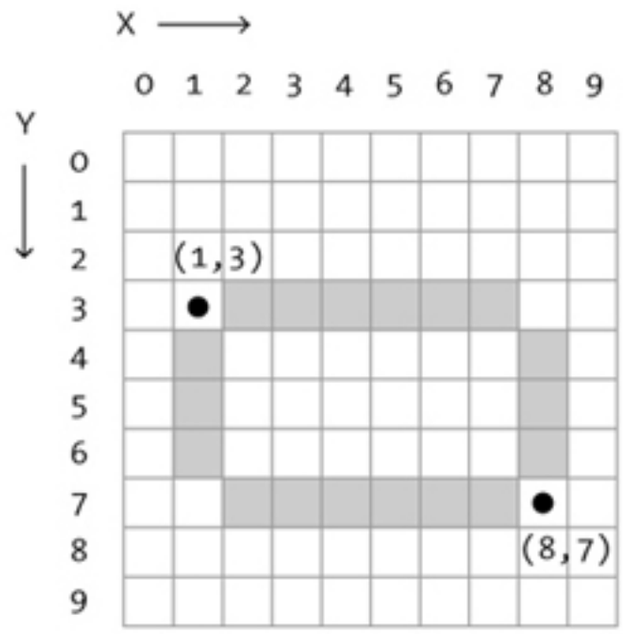
  - ellipse(1,3,8,7)



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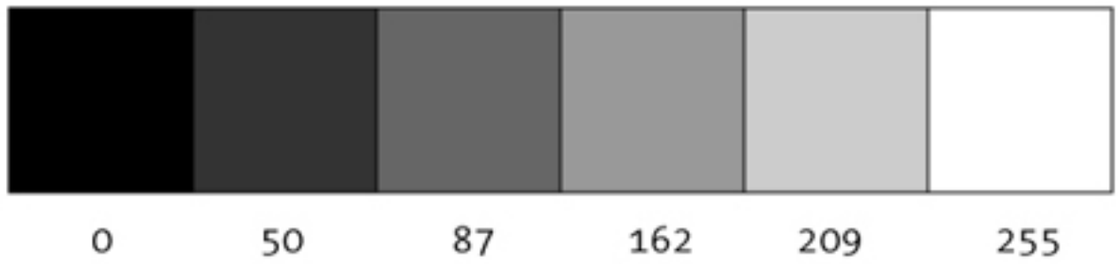
http

Intro to Processing

- when describing color to a computer you must be precise
  - Grayscale color



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Intro to Processing

- Three examples of commands that use color
  - Set the background color
    - background(<color>);
  - Pick the pen color that you are going to draw with
    - stroke(<color>);
  - Pick the fill color that you are going to draw with
    - fill(<color>);

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Intro to Processing

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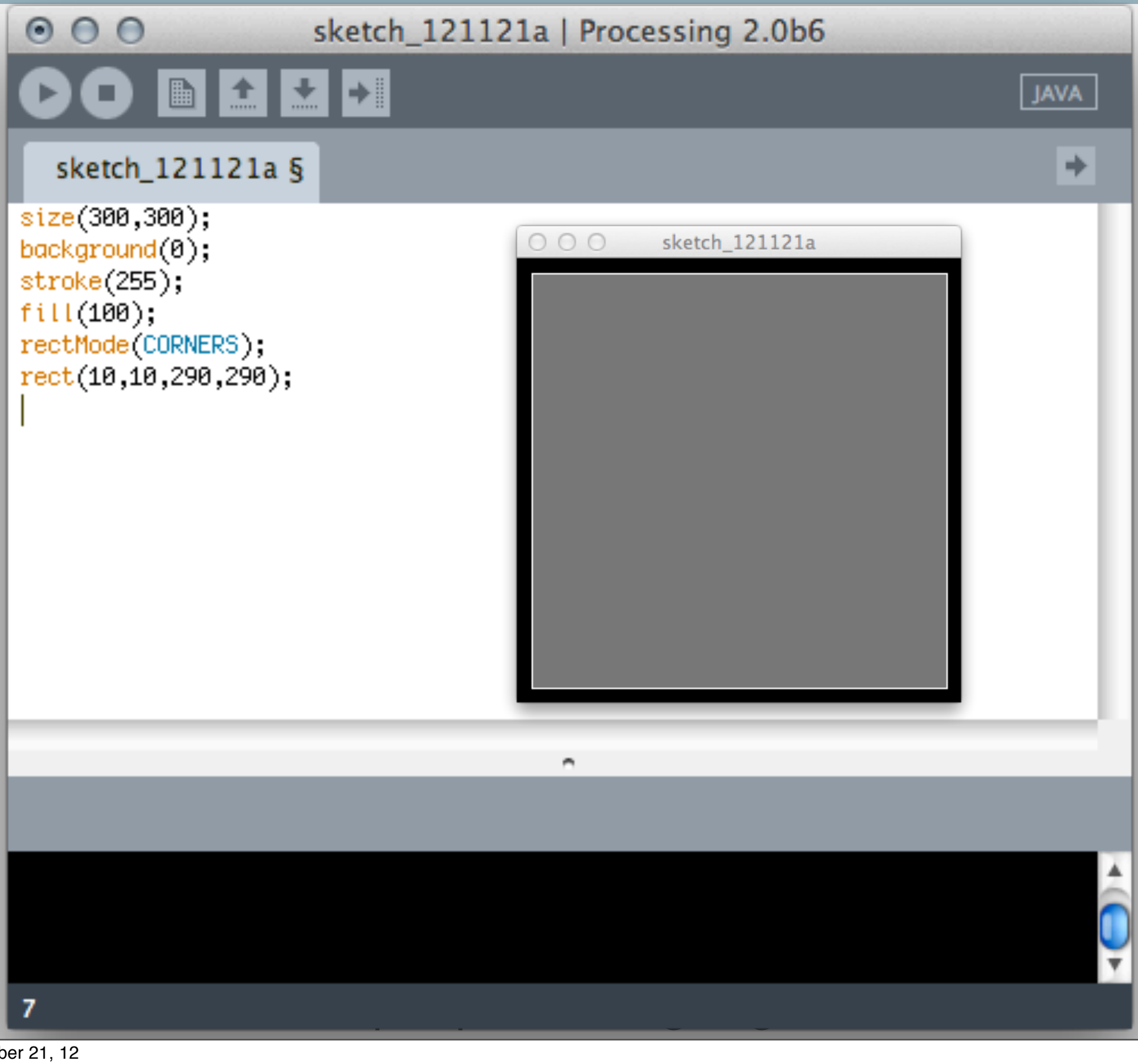

Intro to Processing

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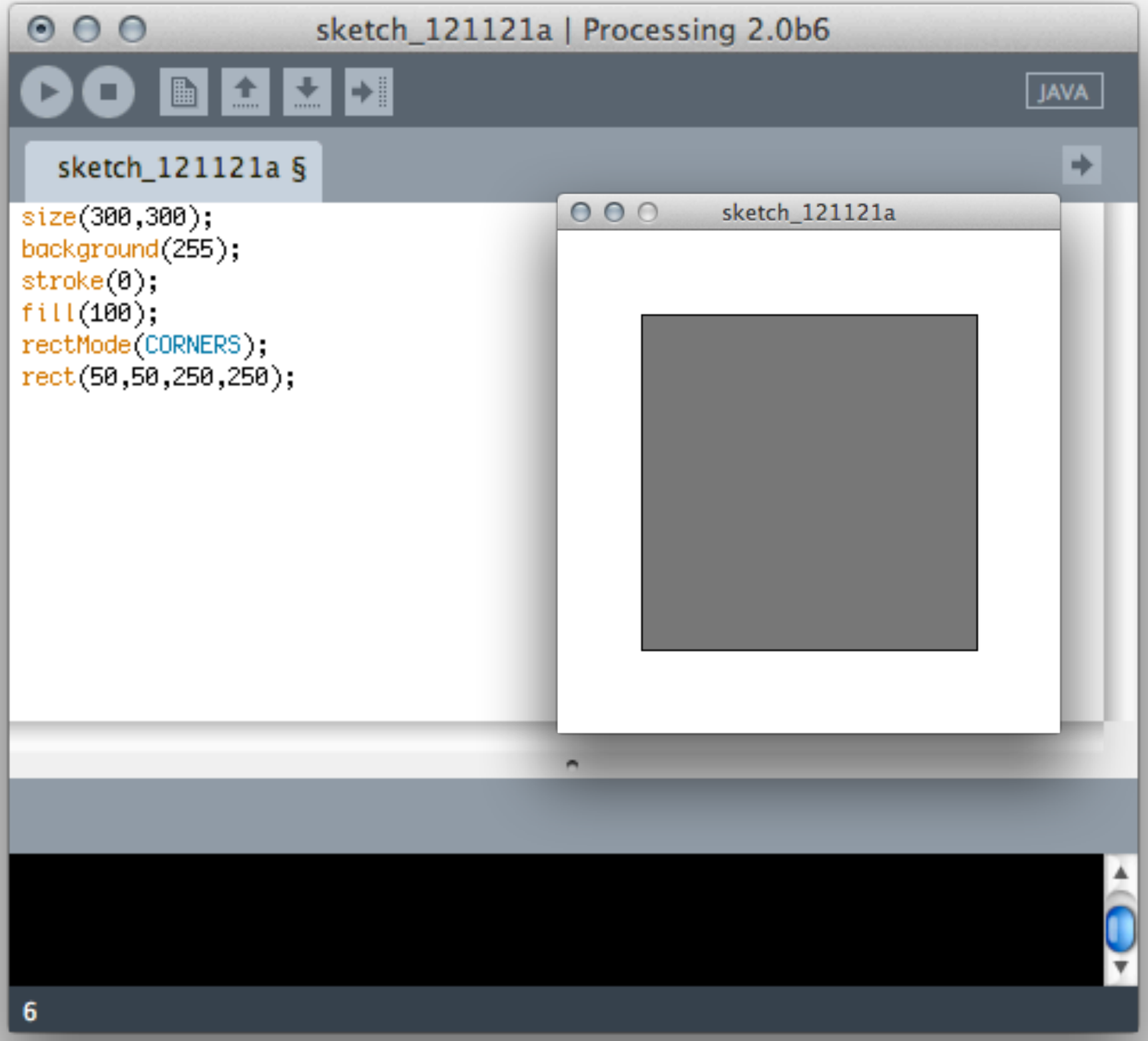

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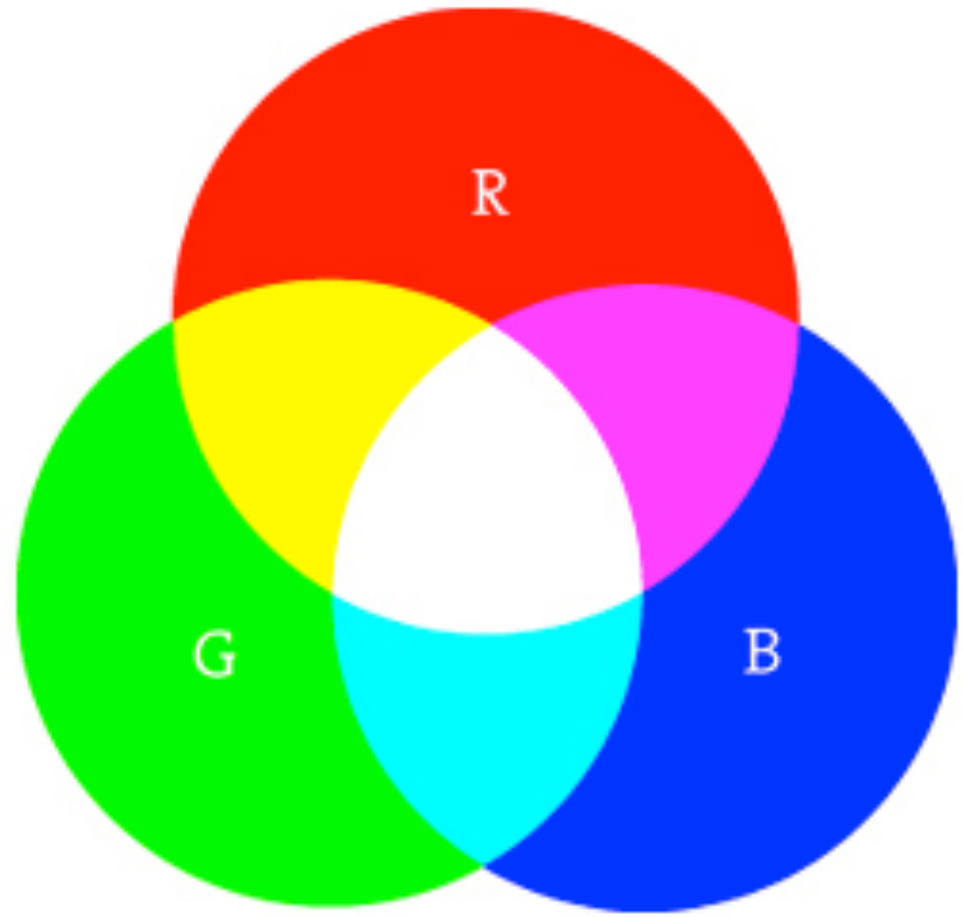
Intro to Processing

- when describing color to a computer you must be precise
  - RGB color
    - Red
    - Green
    - Blue



- Red + Green = Yellow
- Green + Blue = Cyan
- Red + Blue = Magenta

- Red + Green + Blue = White
- no color = Black

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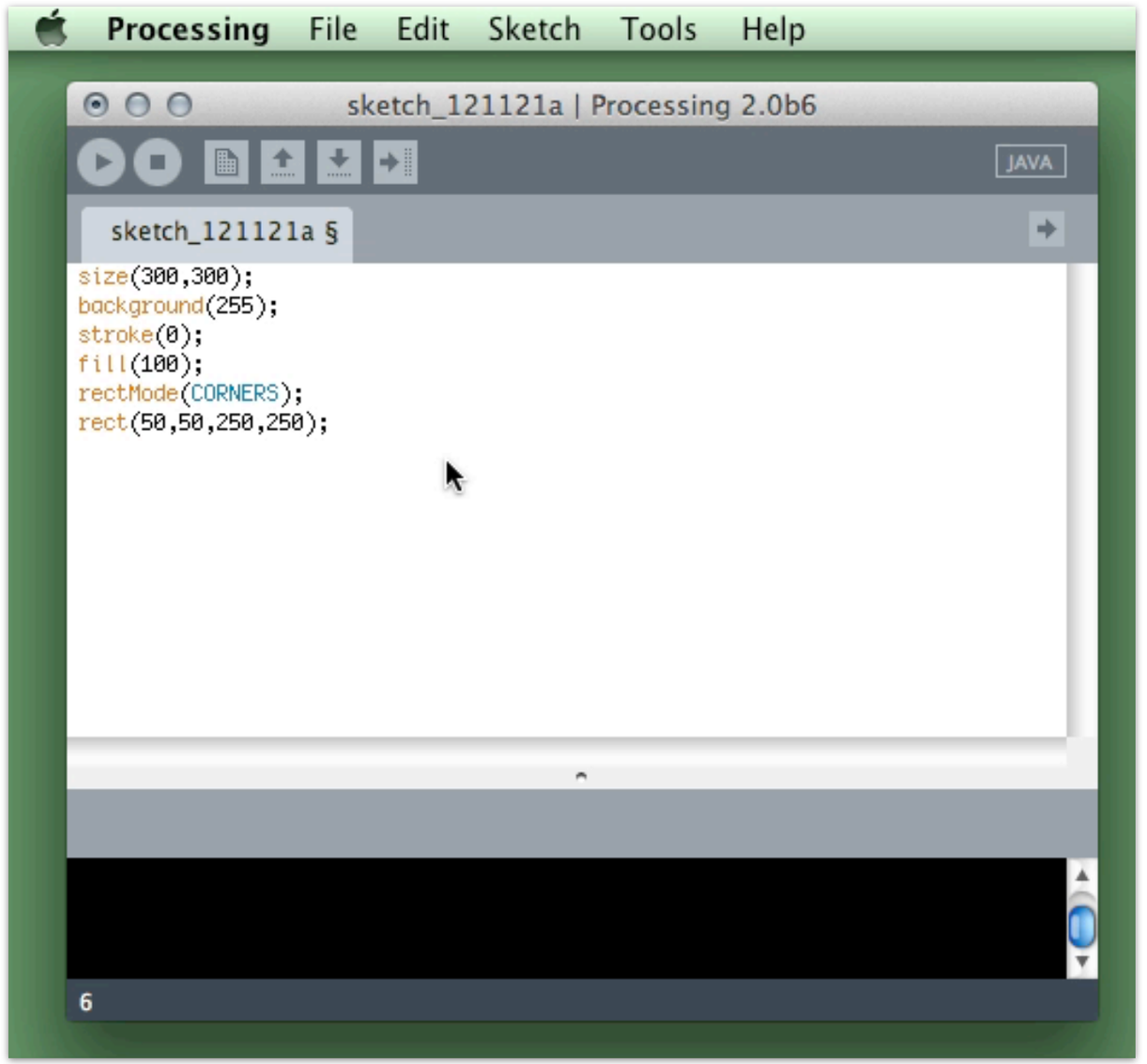

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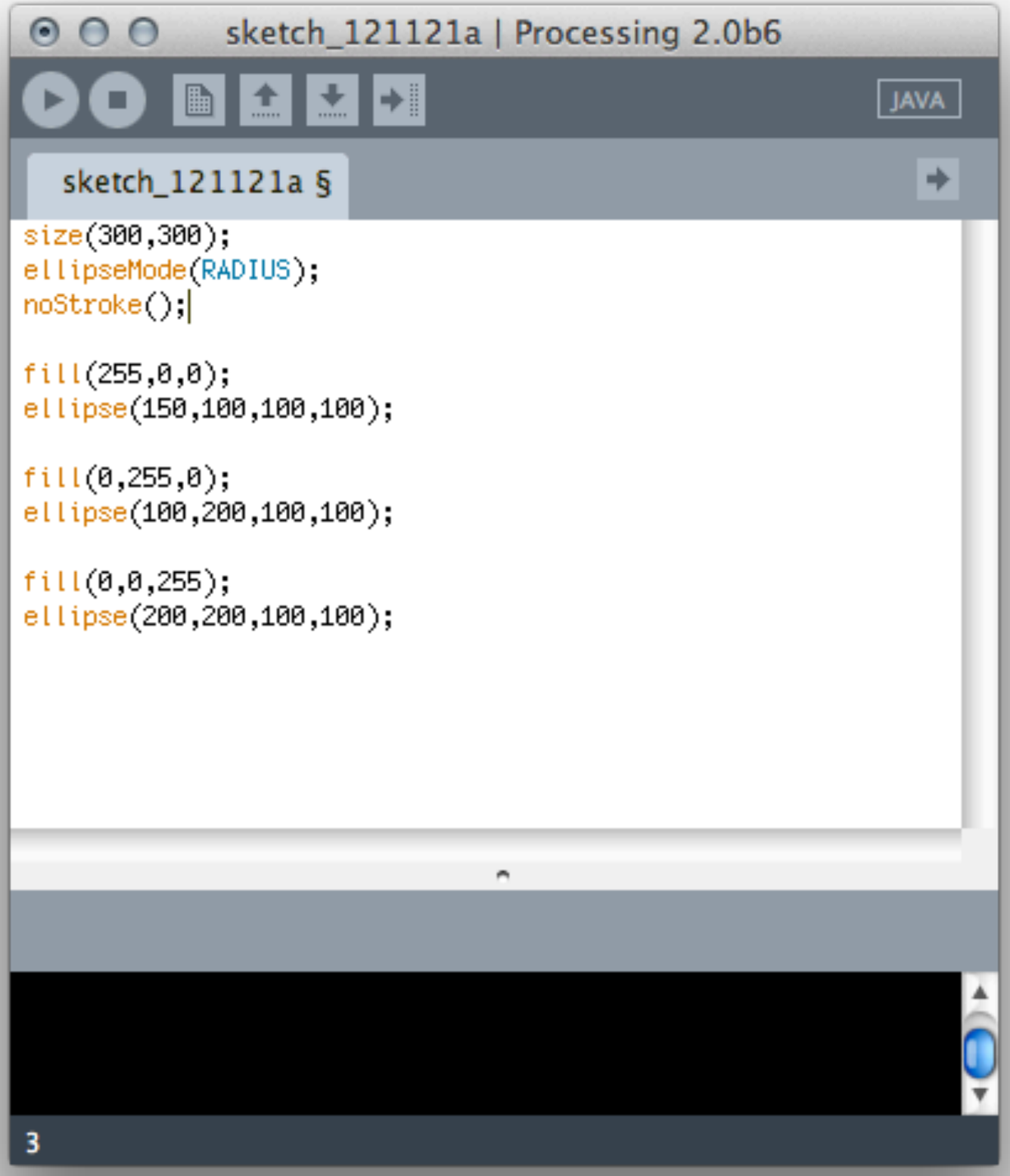

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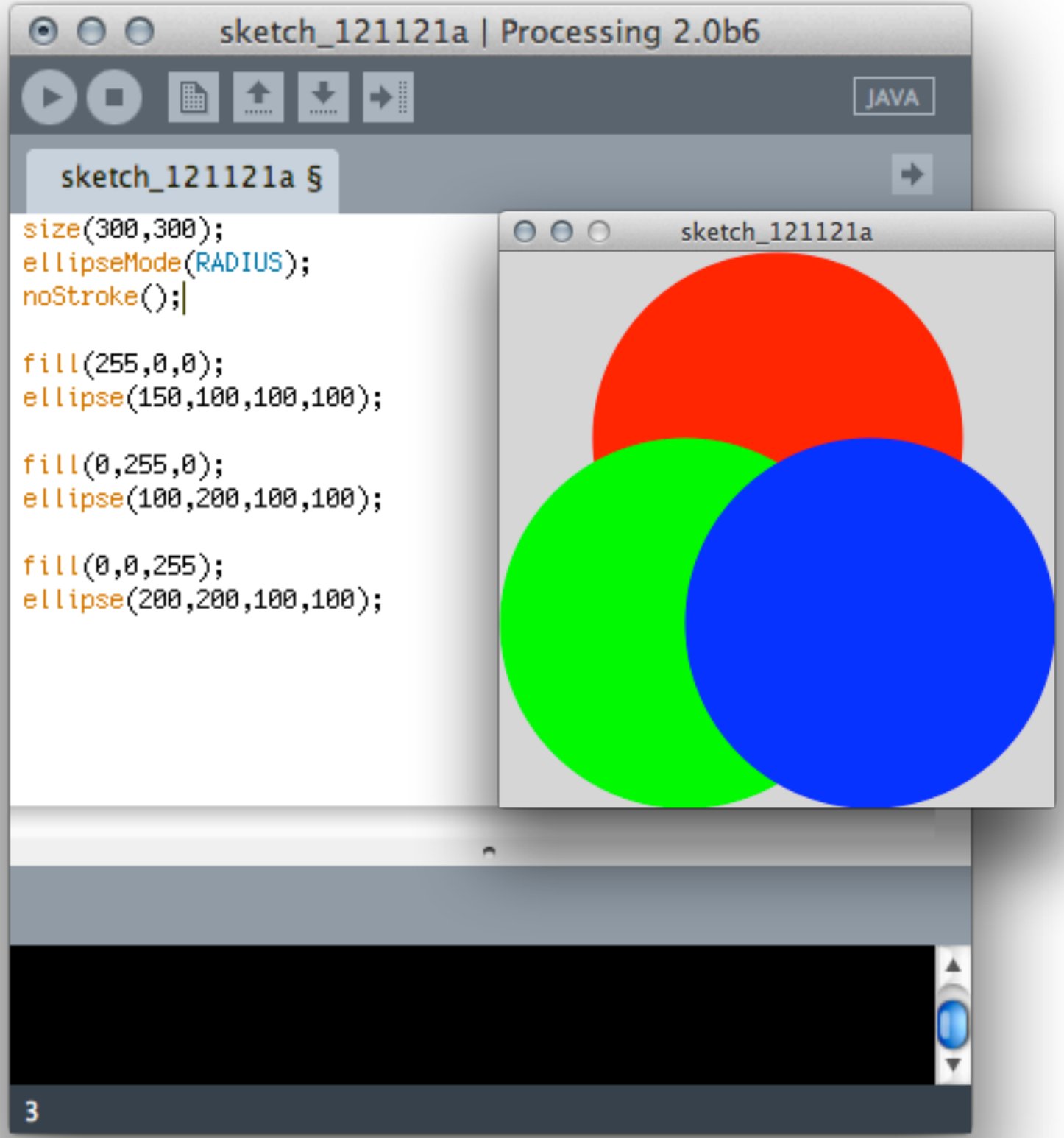

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Intro to Processing

- when describing color to a computer you must be precise
  - alpha transparency
    - allows for colors to blend when on top of each other
    - 0 is completely transparent
    - 255 is completely opaque

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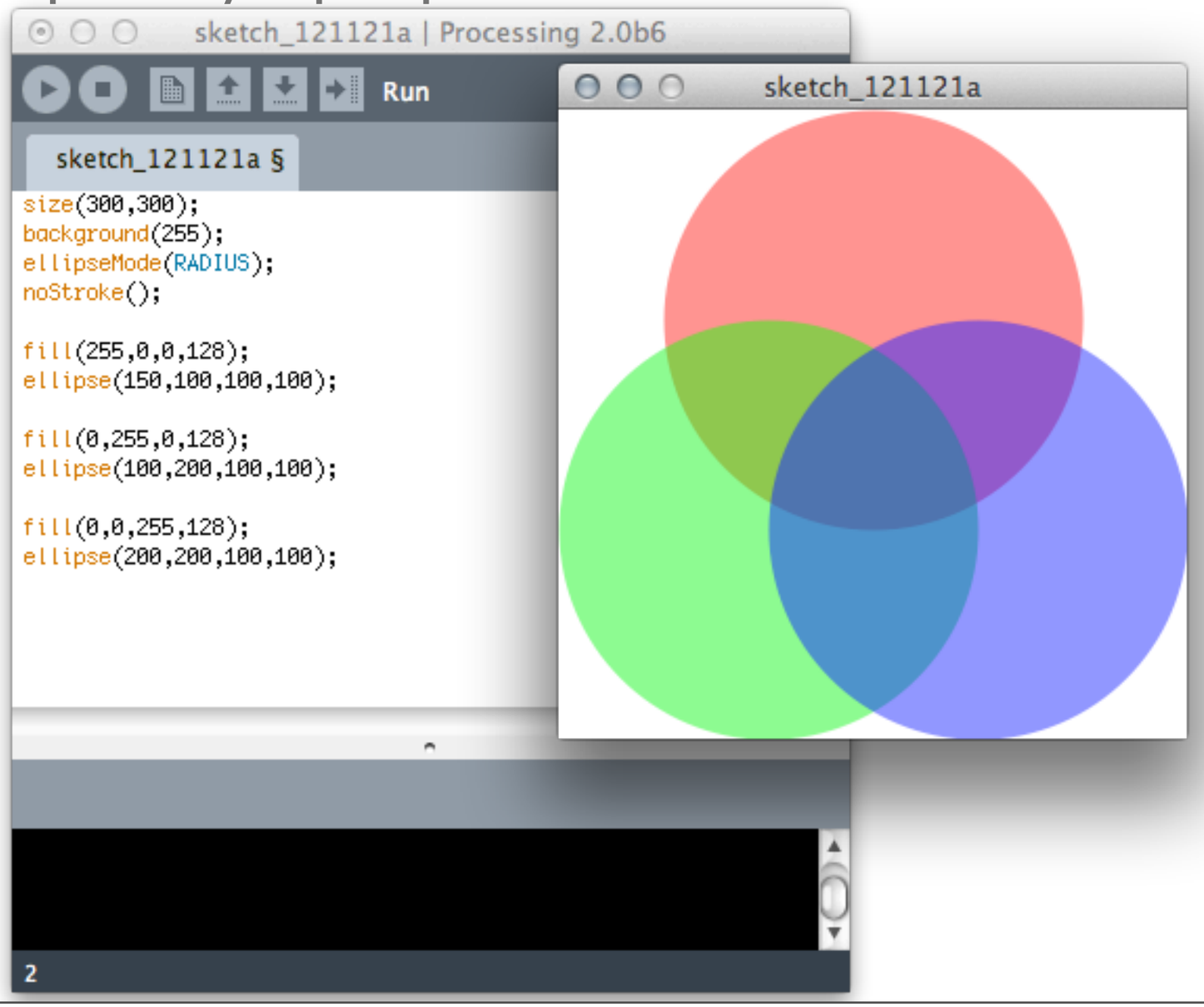

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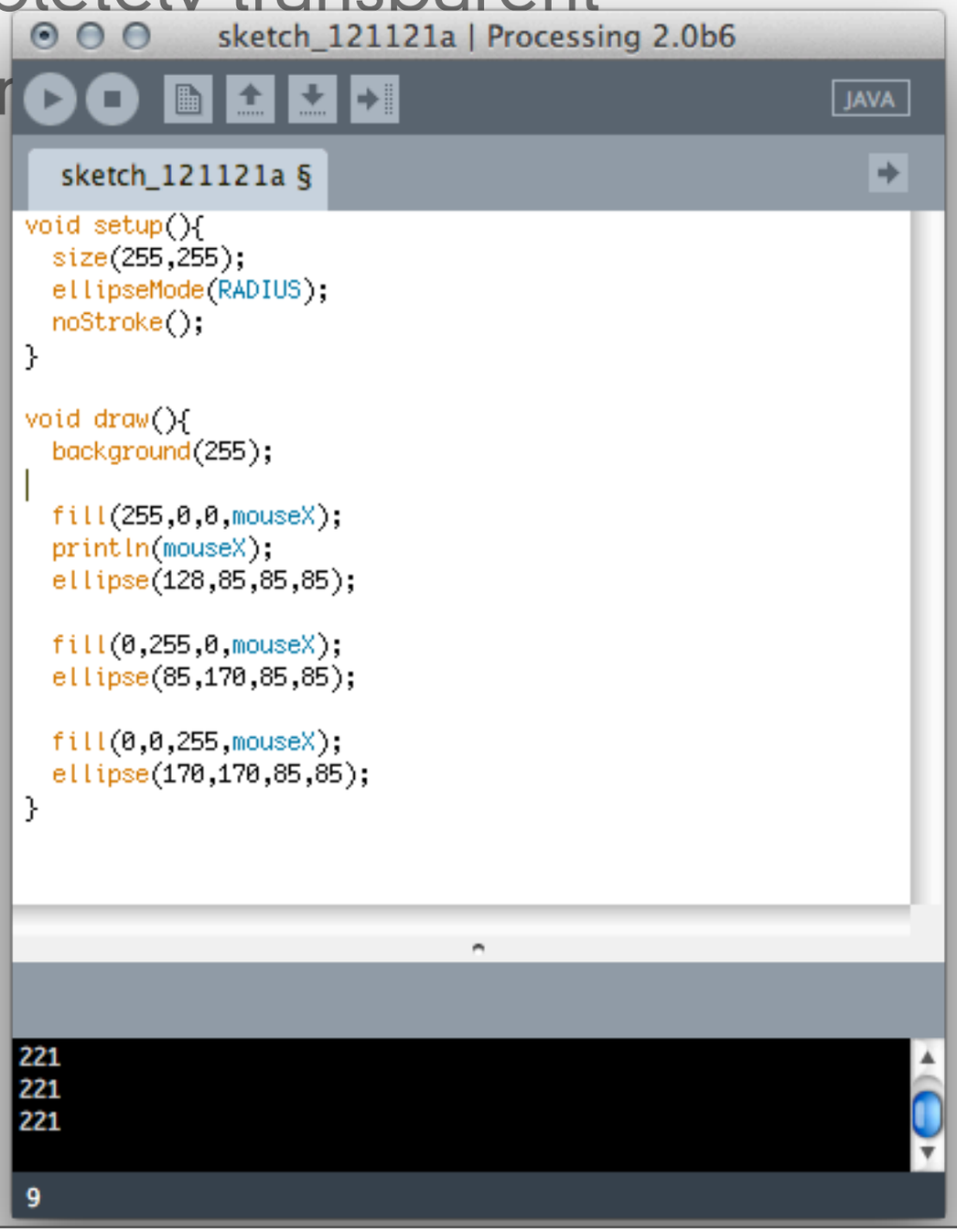

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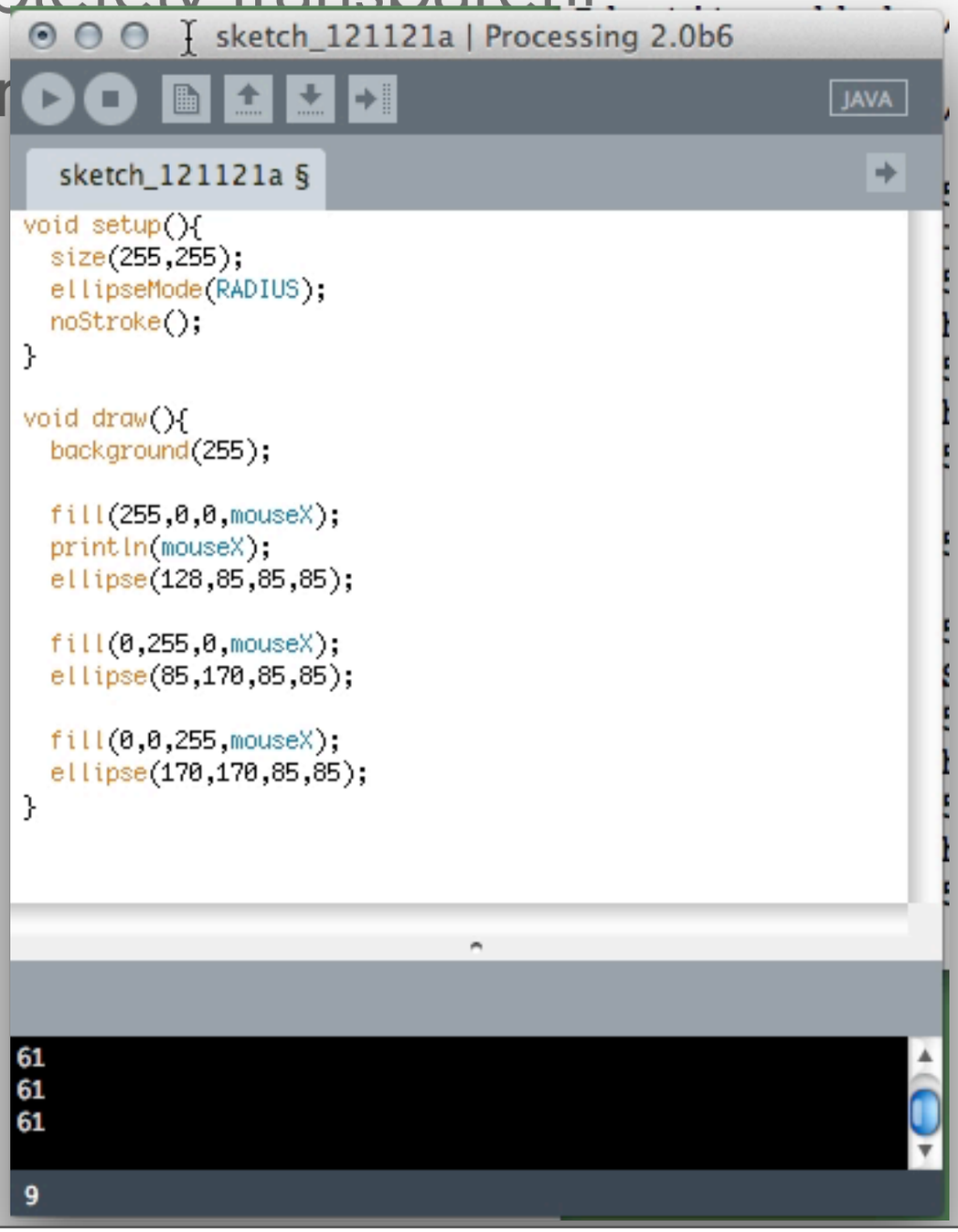

Intro to Processing

- Text
  - String
    - A collection of letters that are put between quotes
    - They get treated as one object
      - “Hello World” is a String
- Displaying text in the message console
  - println(“Hello World”)

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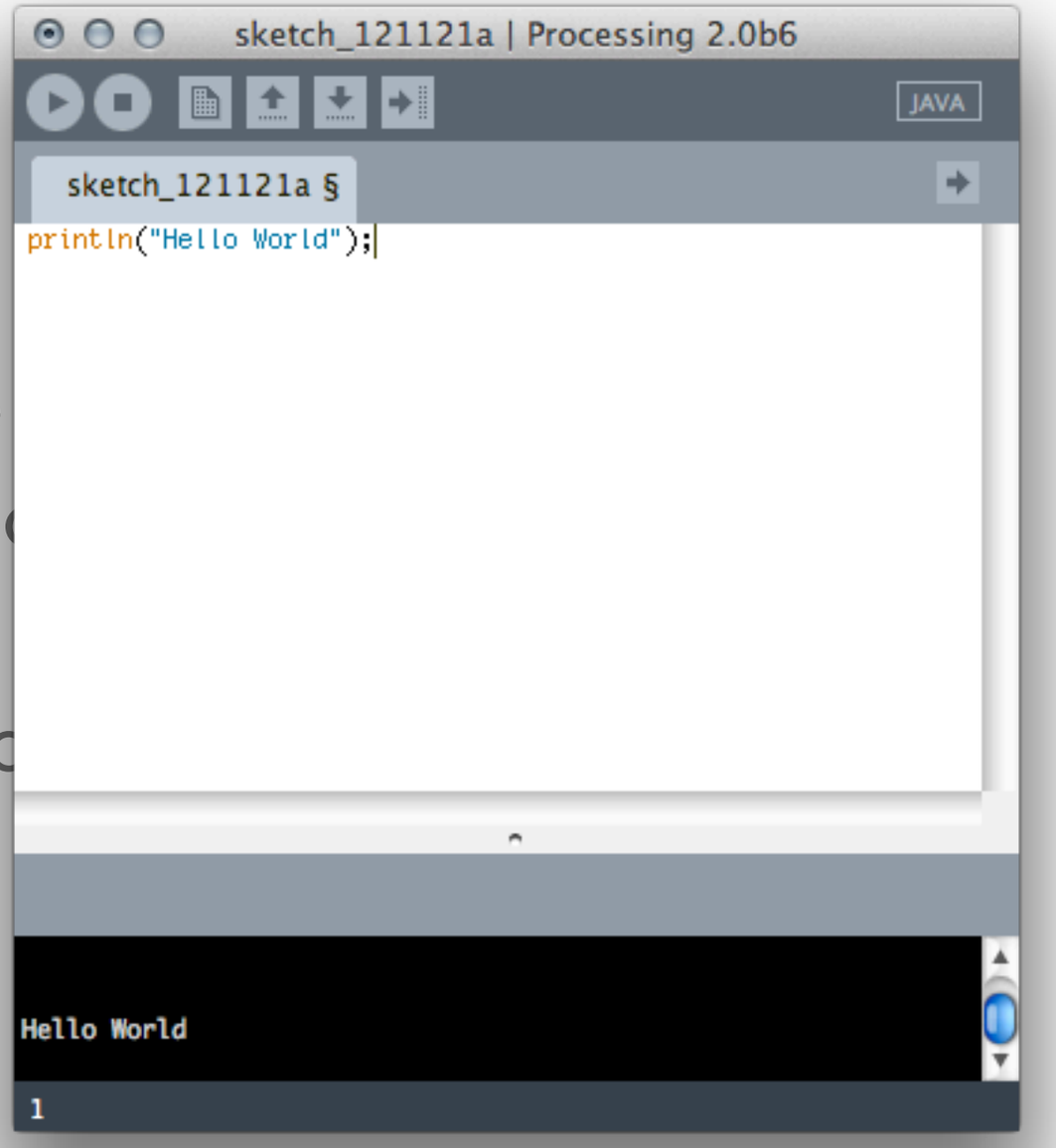

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Intro to Processing

- Displaying text in a sketch
  - Find out what fonts are available to you
    - PFont.list()

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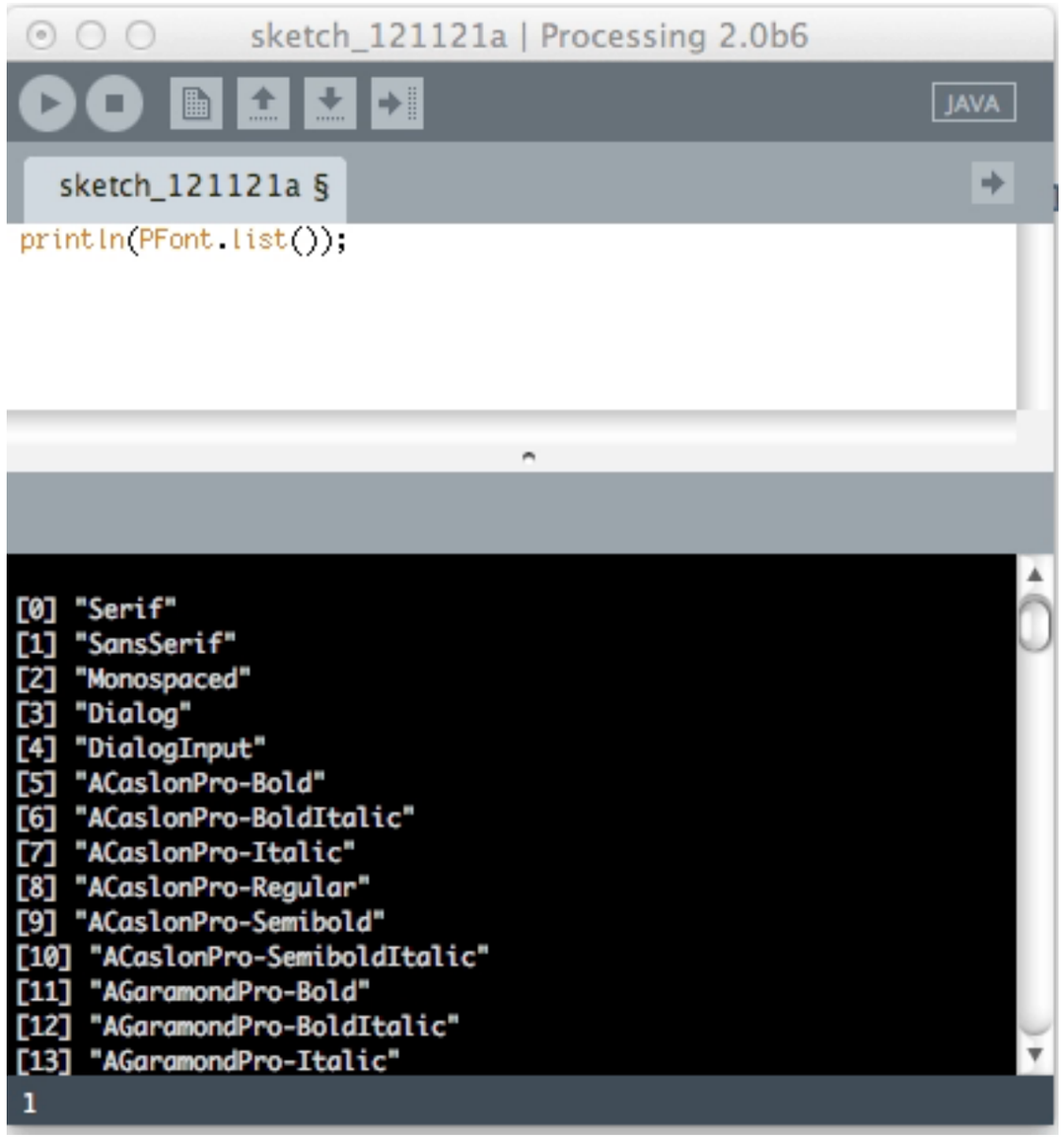

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Intro to Processing

- Create a font to use in setup()
  - createFont()
- Specify the way to write the font to in draw()
  - textFont()
  - fill()
- Specify the string and the placement in draw()
  - text(“Hello World!”, 50, 50)

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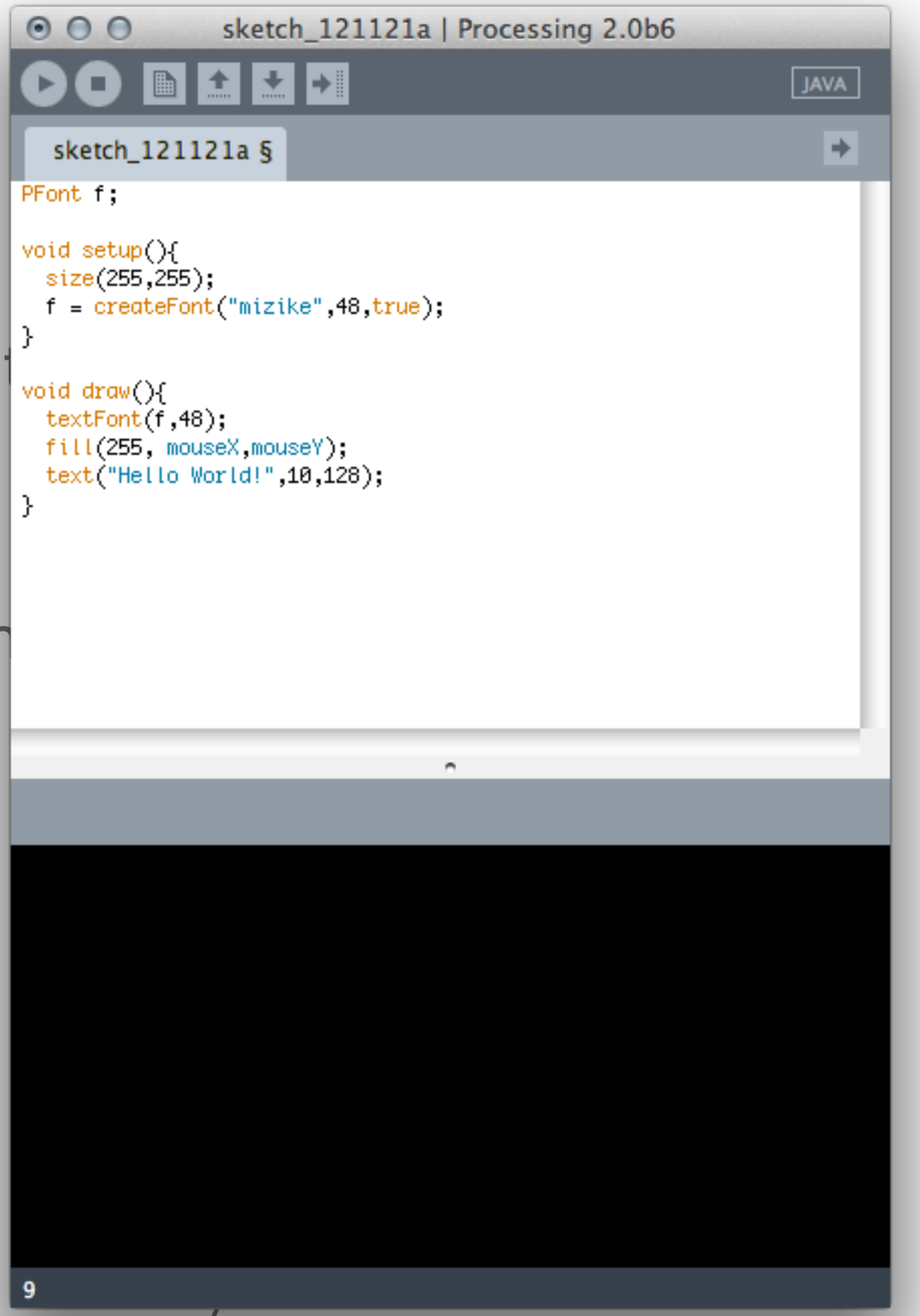

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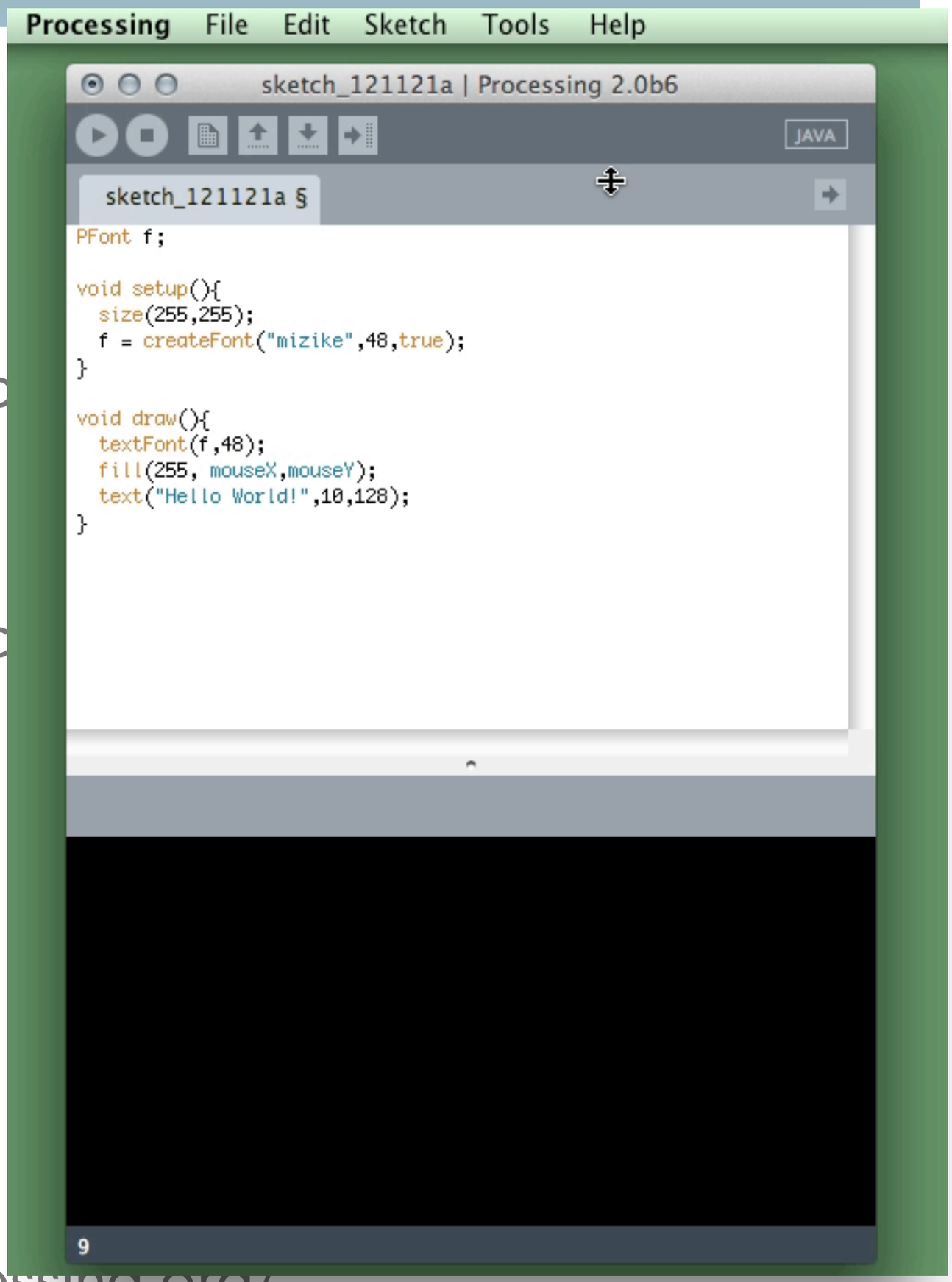

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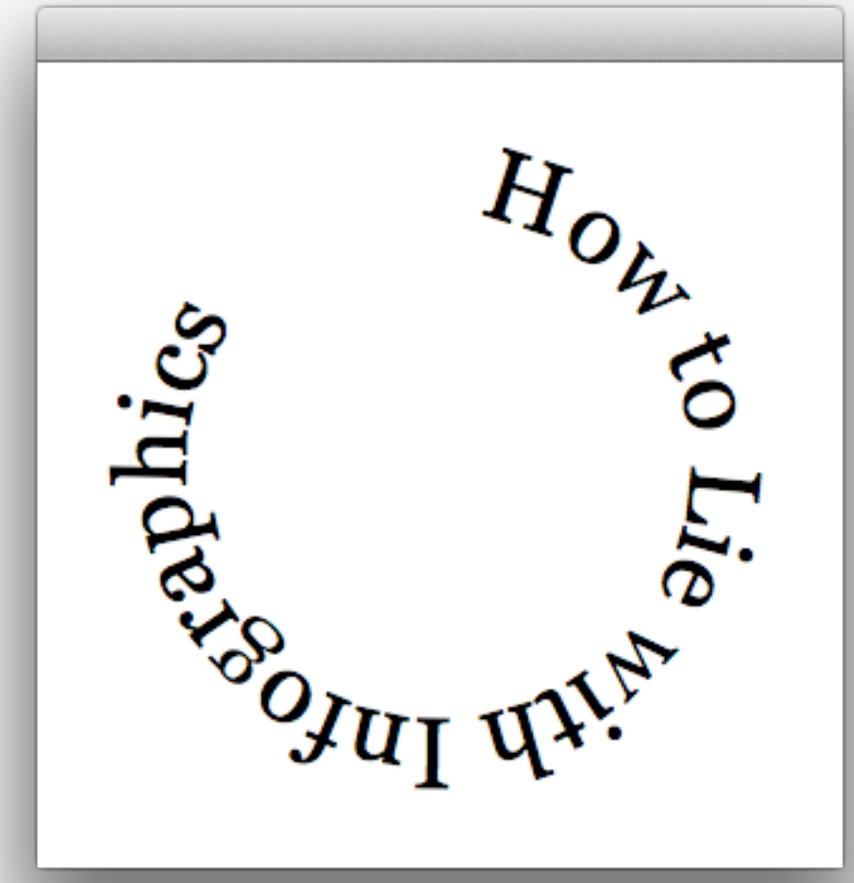
Intro to Processing

- Going nuts!




```
void setup() {
  size(320, 320);
  f = createFont("Georgia",40,true);
  textFont(f);
  // The text must be centered!
  textAlign(CENTER);
  smooth();
}

void draw() {
  background(255);

  // Start in the center and draw the circle
  translate(width / 2, height / 2);
  noFill();
  stroke(0);

  // We must keep track of our position along the curve
  float arclength = 2*mouseX;

  // For every box
  for (int i = 0; i < message.length(); i++)
  {
    // Instead of a constant width, we check the width of each character.
    char currentChar = message.charAt(i);
    float w = textWidth(currentChar);

    // Each box is centered so we move half the width
    arclength += w/2;
    // Angle in radians is the arclength divided by the radius
    // Starting on the left side of the circle by adding PI
    float theta = PI + arclength / r;

    pushMatrix();
    // Polar to cartesian coordinate conversion
    translate(r*cos(theta), r*sin(theta));
    // Rotate the box
    rotate(theta+PI/2); // rotation is offset by 90 degrees
    // Display the character
    fill(0);
    text(currentChar,0,0);
    popMatrix();
    // Move halfway again
    arclength += w/2;
  }
}
```

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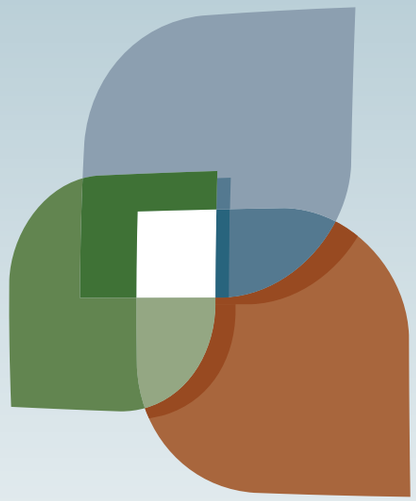

LUCI

Wednesday, November 21, 12