# GENERATIVE ART WITH PROCESSING

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FAB LAB .BERLIN

# INTRODUCTION

Me

http://imanolgomez.net/

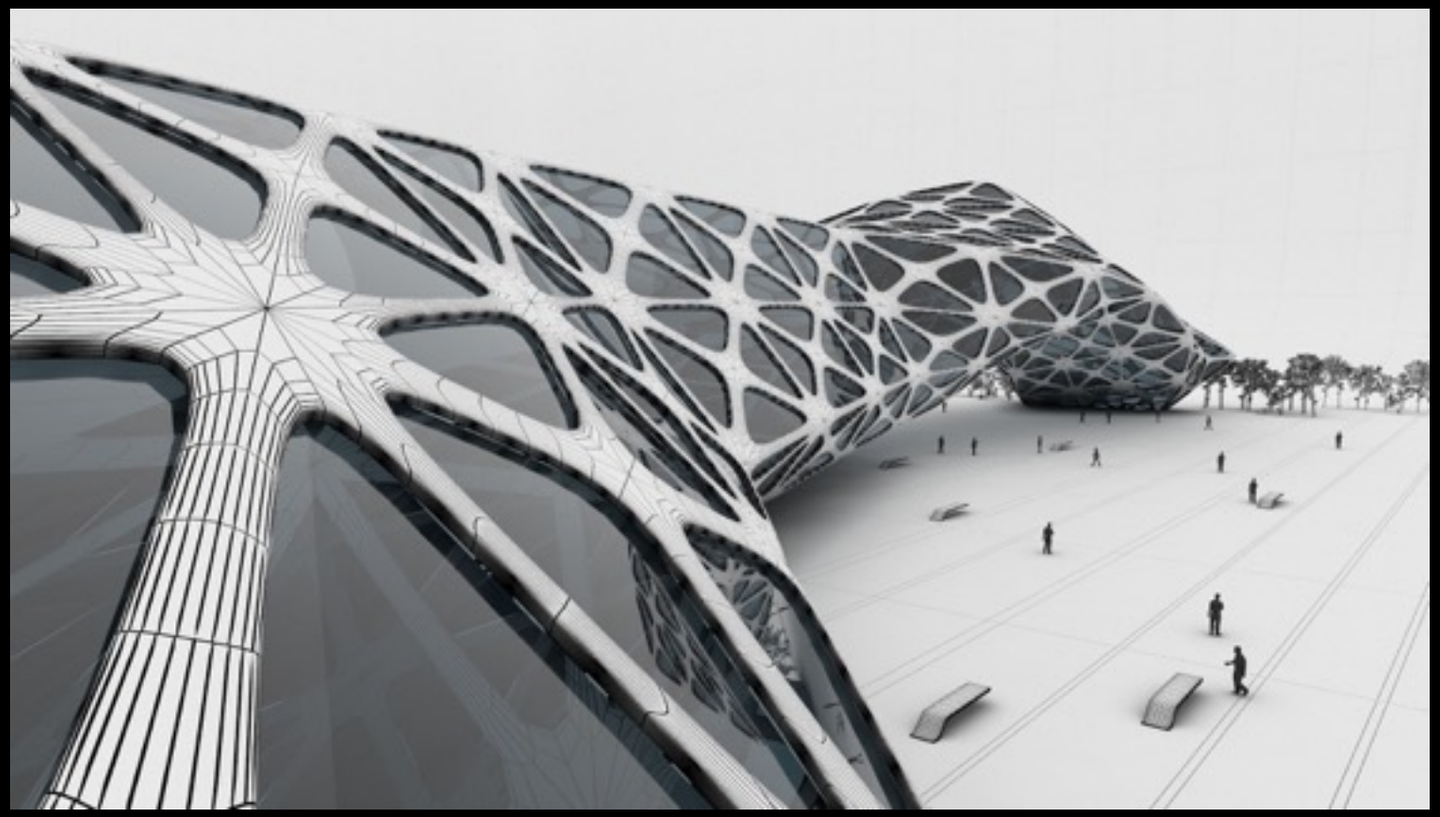
# Casey Reas

# Quayola

# Riyoji Ikeda

# Projects

# Architecture



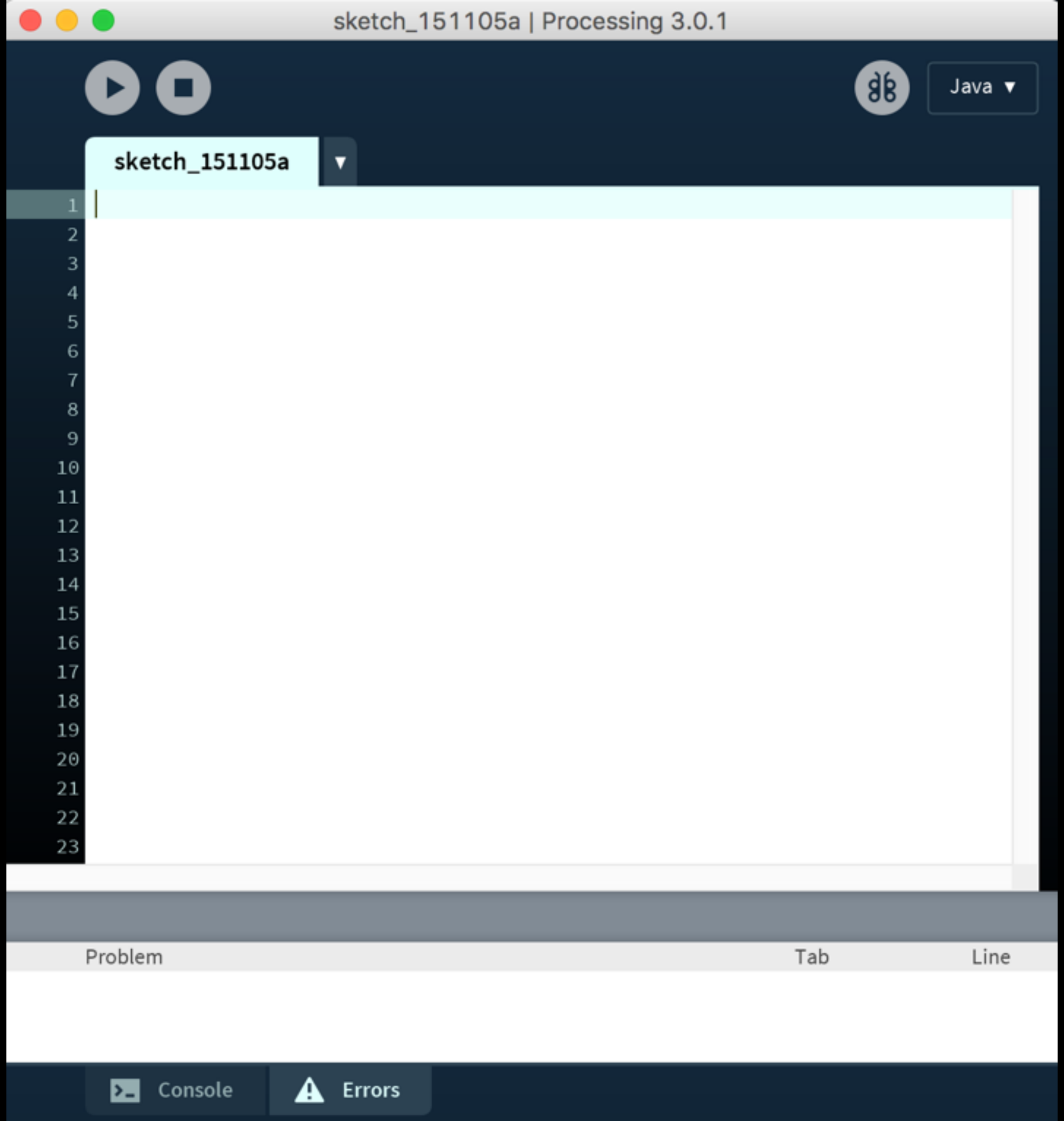
# Jewellery

# Creative Coding

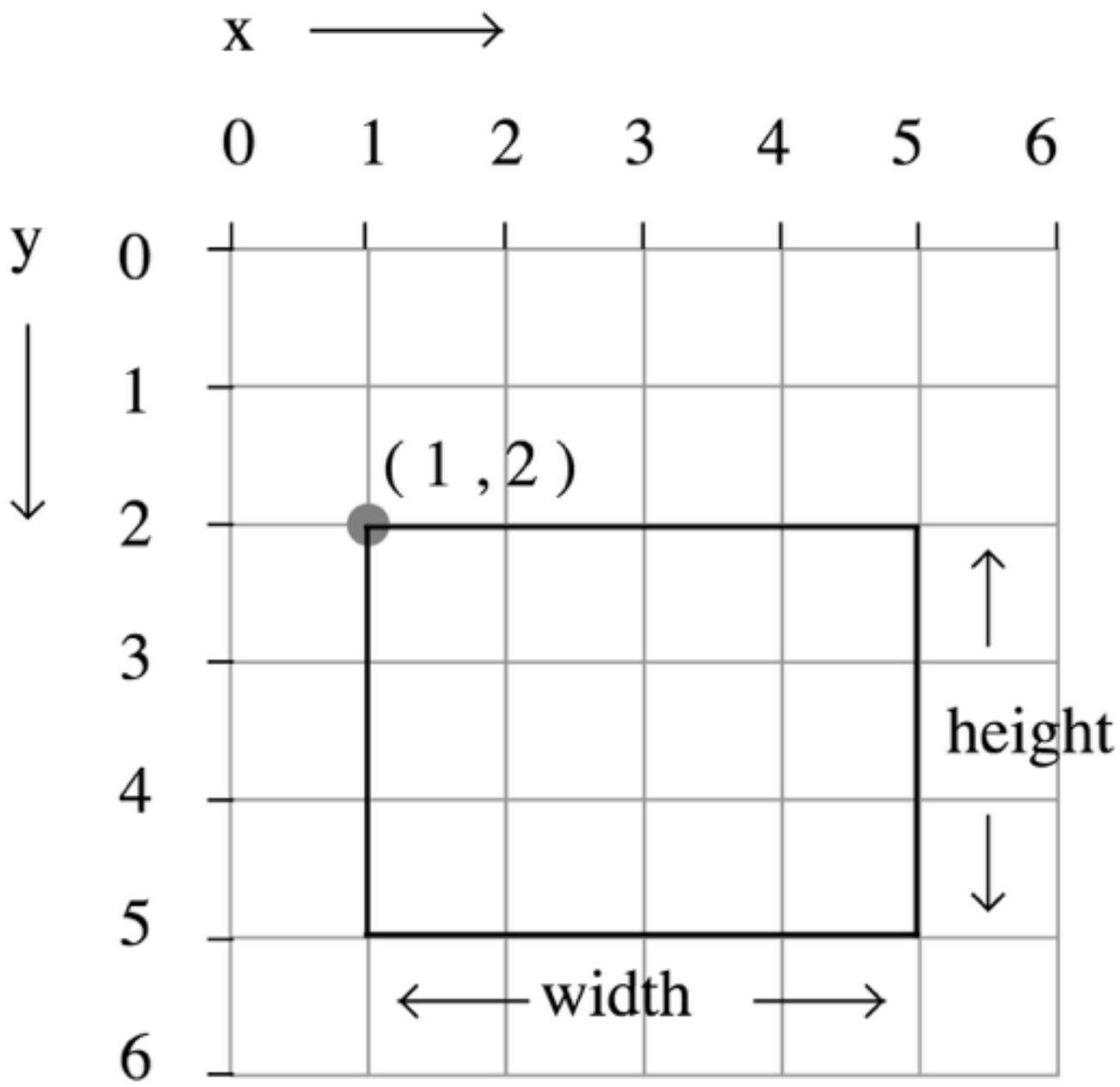
# processing.org

https://github.com/ImanolGo/GenerativeArtWorkshop

# Getting Started


sketch_151105a | Processing 3.0.1
Java
sketch_151105a
Problem
Tab
Line
Console
Errors

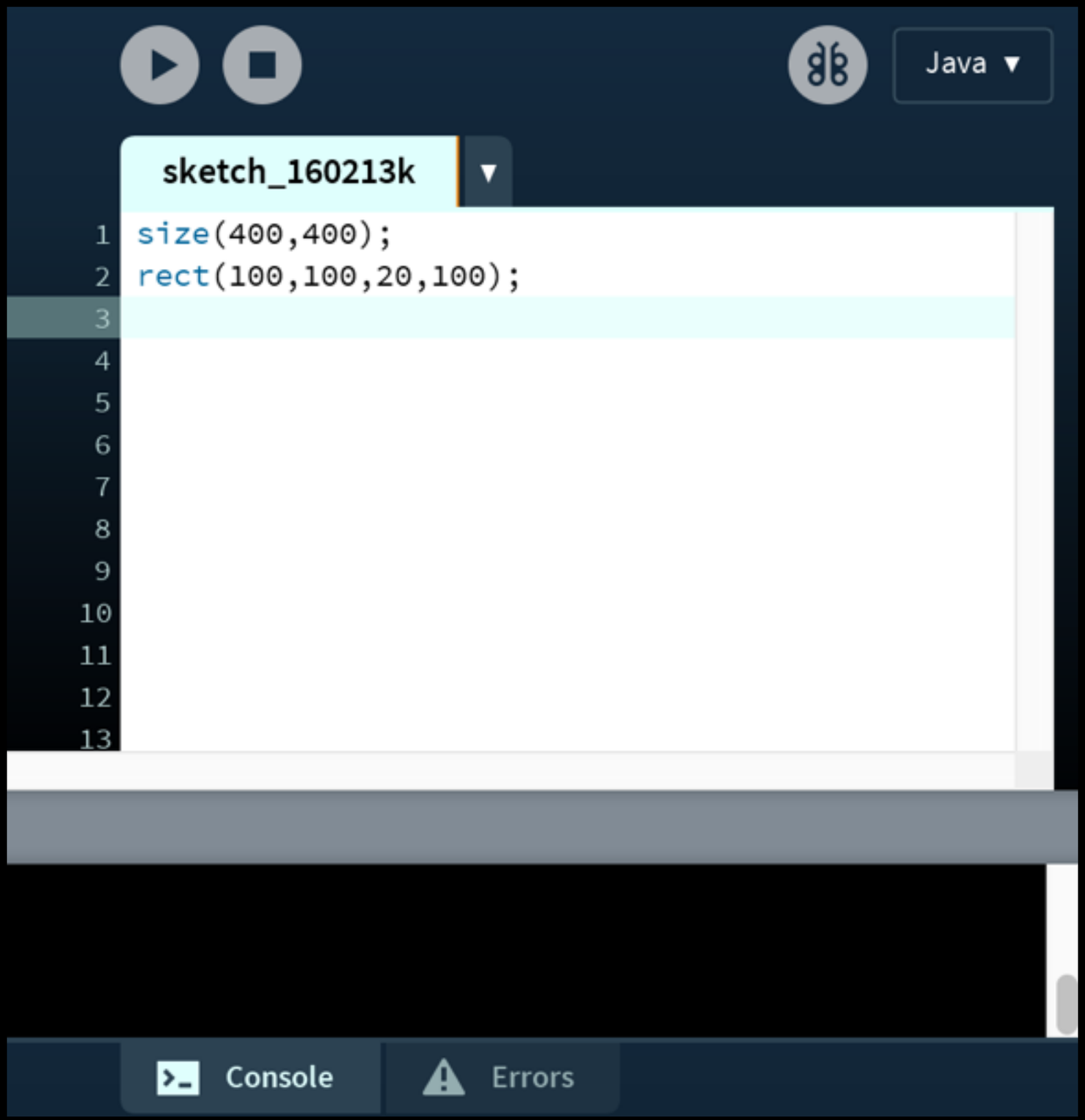
# I. Shapes

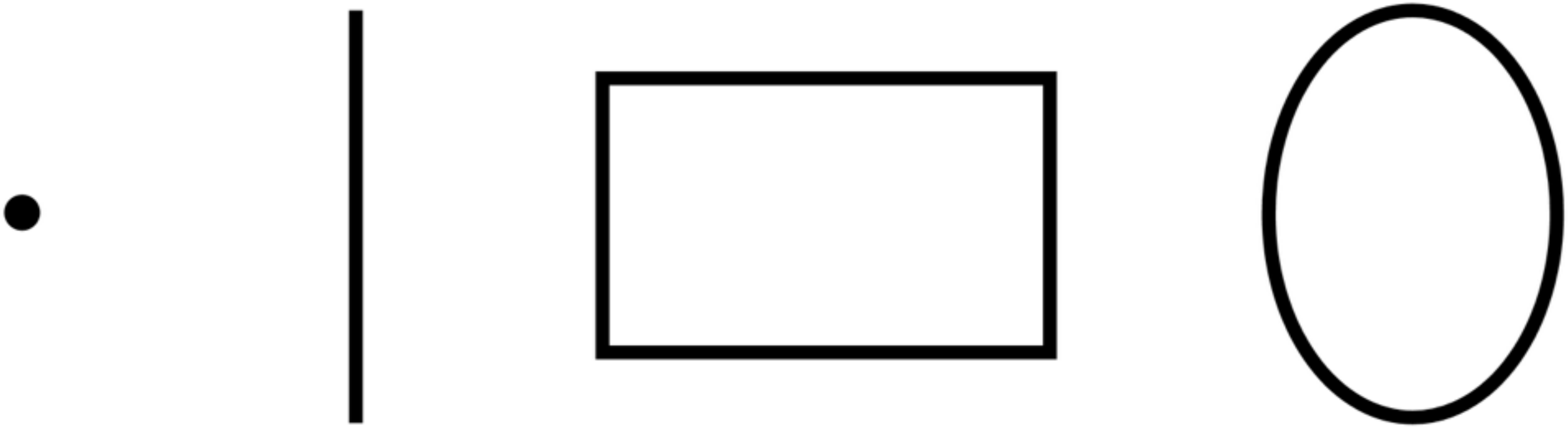



rect( x , y , width , height ) ;

Example: rect ( 1 , 2 , 4 , 3 ) ;

# size(), rect()

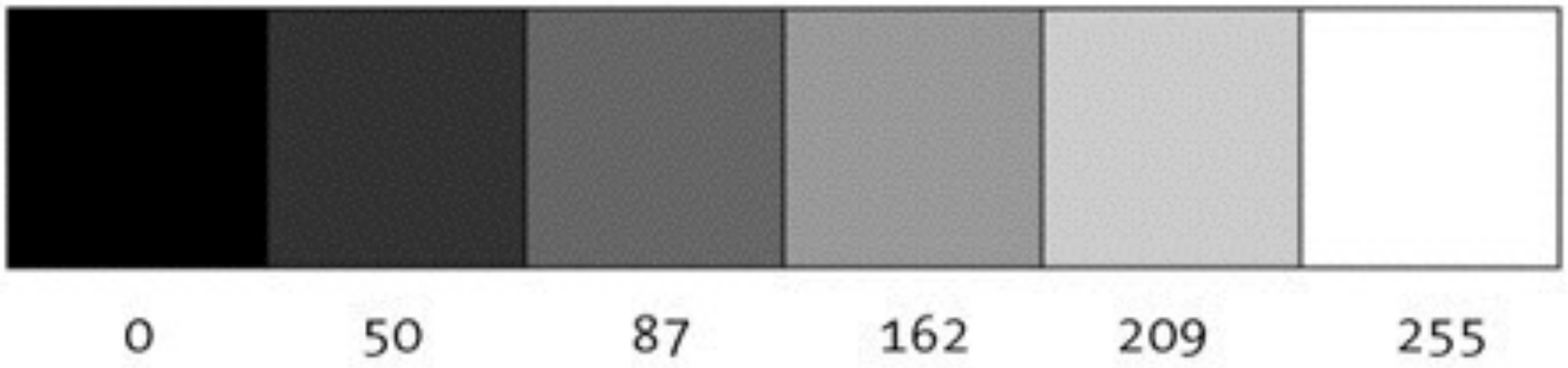

Java
sketch_160213k
size(400,400);
rect(100,100,20,100);
Console
Errors



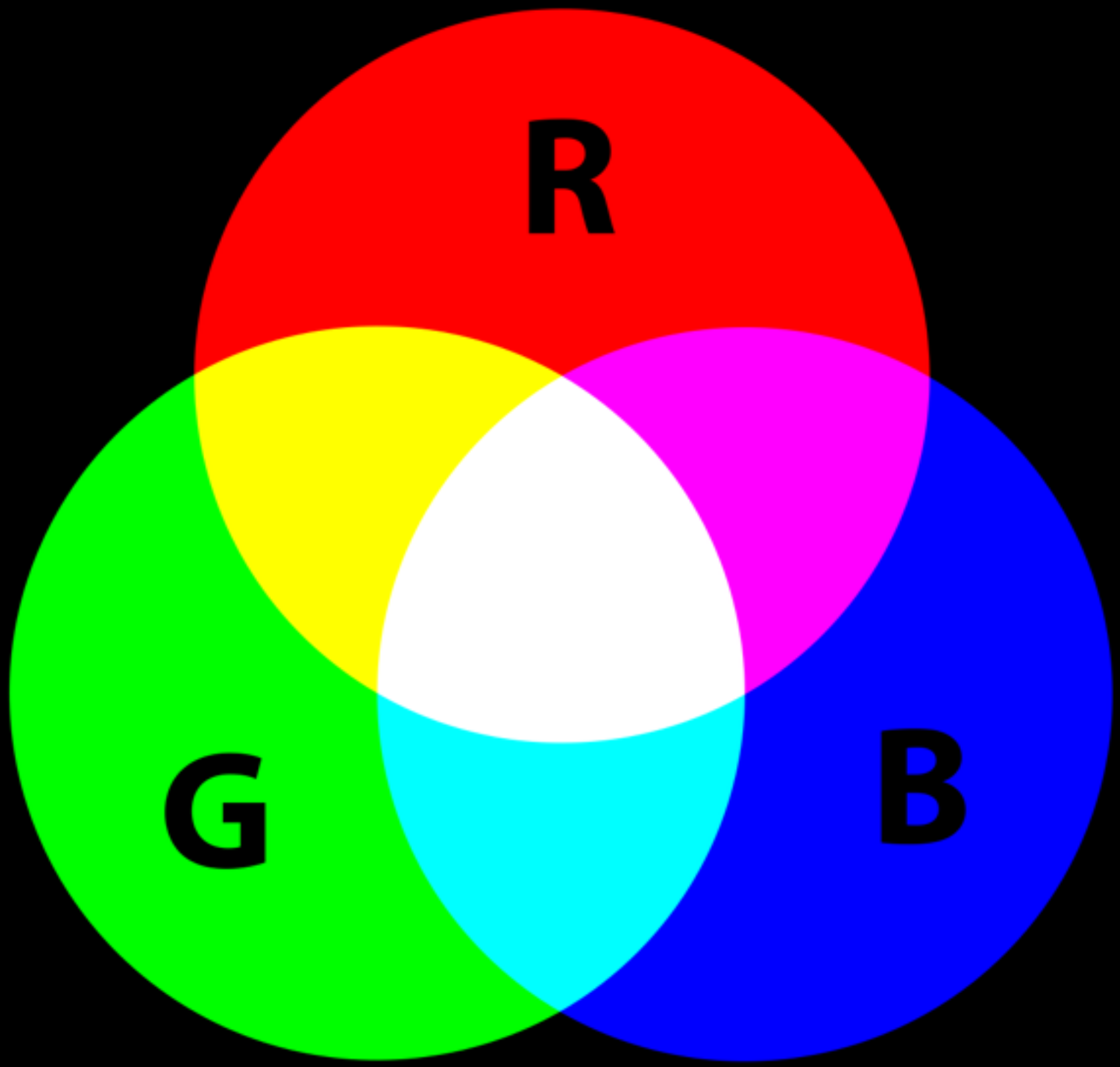
Point Line Rectangle Ellipse

# Colour

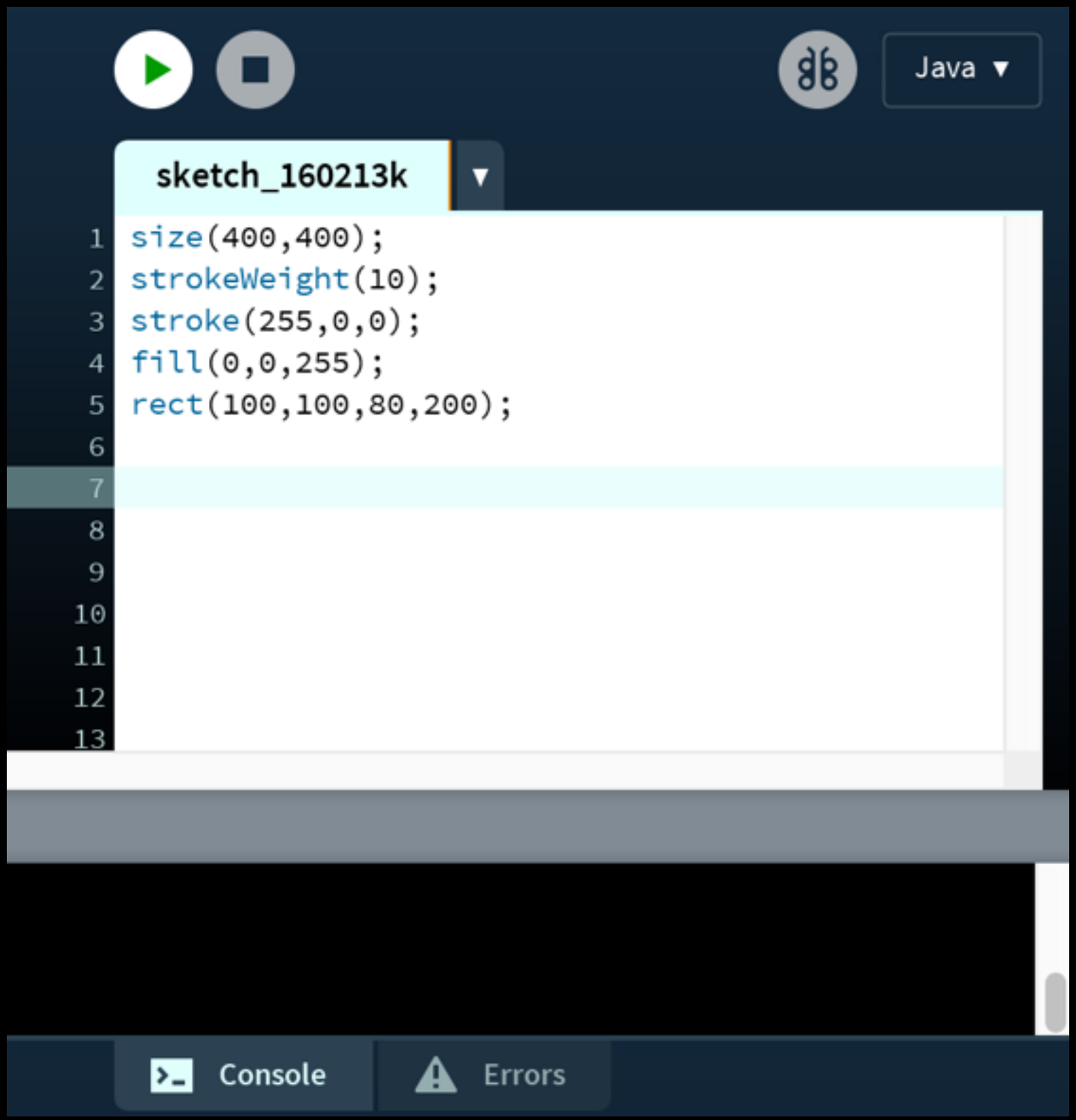
# Colour values



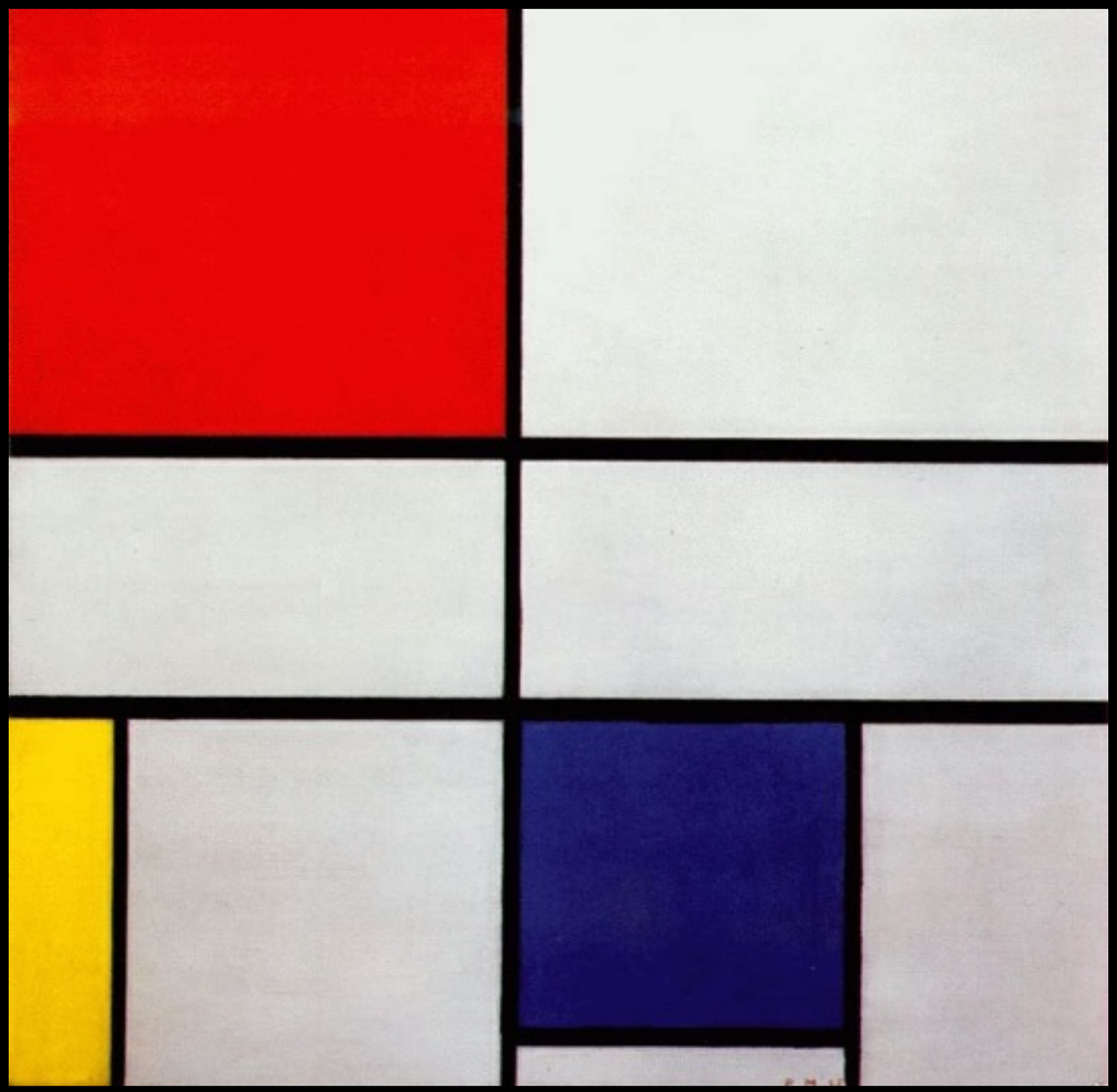
# Red, Green, Blue



# stroke(), strokeWeight, fill()

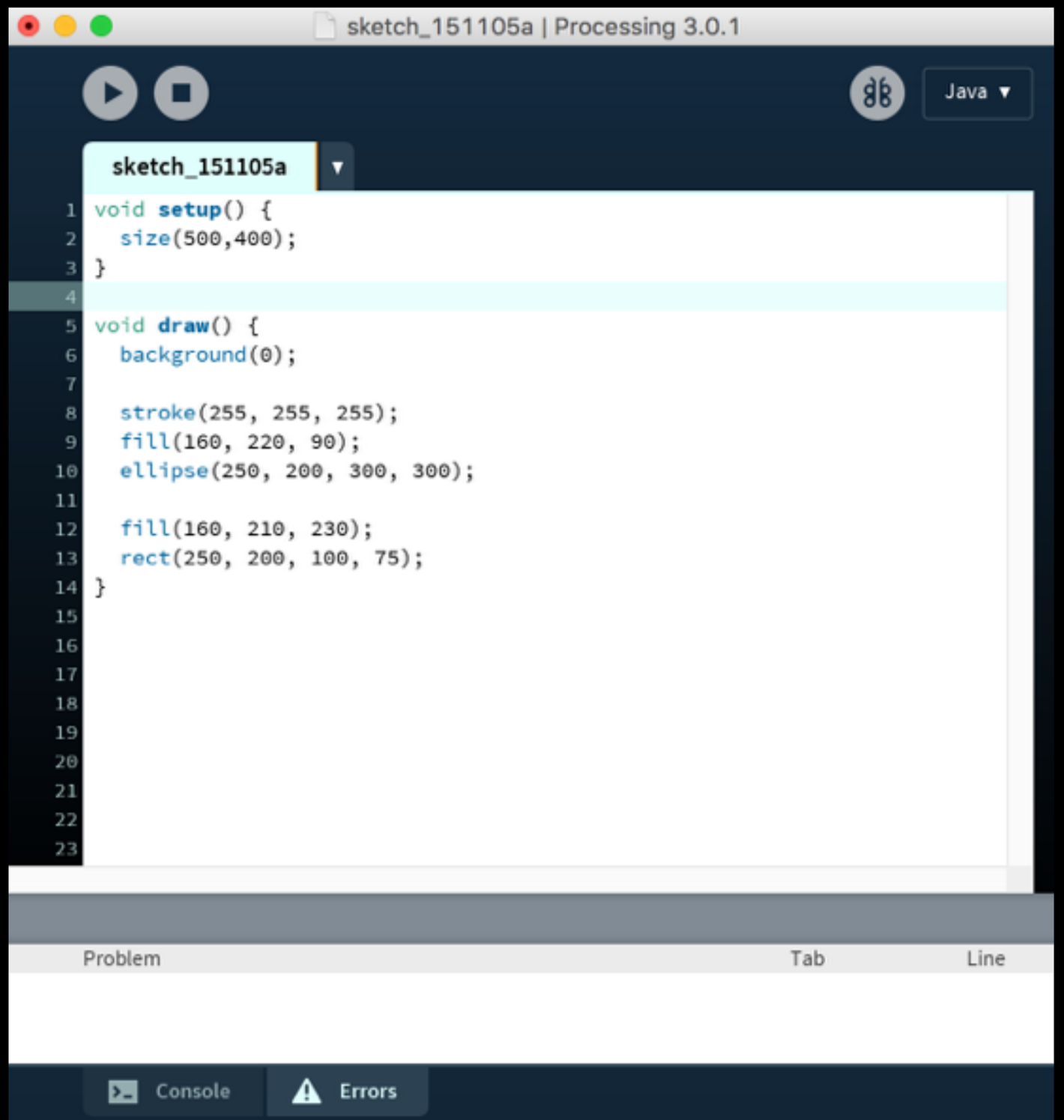


# Exercise: Mondrian



# III. Interactivity

# setup(), draw()


sketch_151105a | Processing 3.0.1
Java
sketch_151105a
1 void setup() {
2 size(500,400);
3 }
4
5 void draw() {
6 background(0);
7
8 stroke(255, 255, 255);
9 fill(160, 220, 90);
10 ellipse(250, 200, 300, 300);
11
12 fill(160, 210, 230);
13 rect(250, 200, 100, 75);
14 }
15
16
17
18
19
20
21
22
23
Problem
Tab
Line
Console
Errors

# Mouse

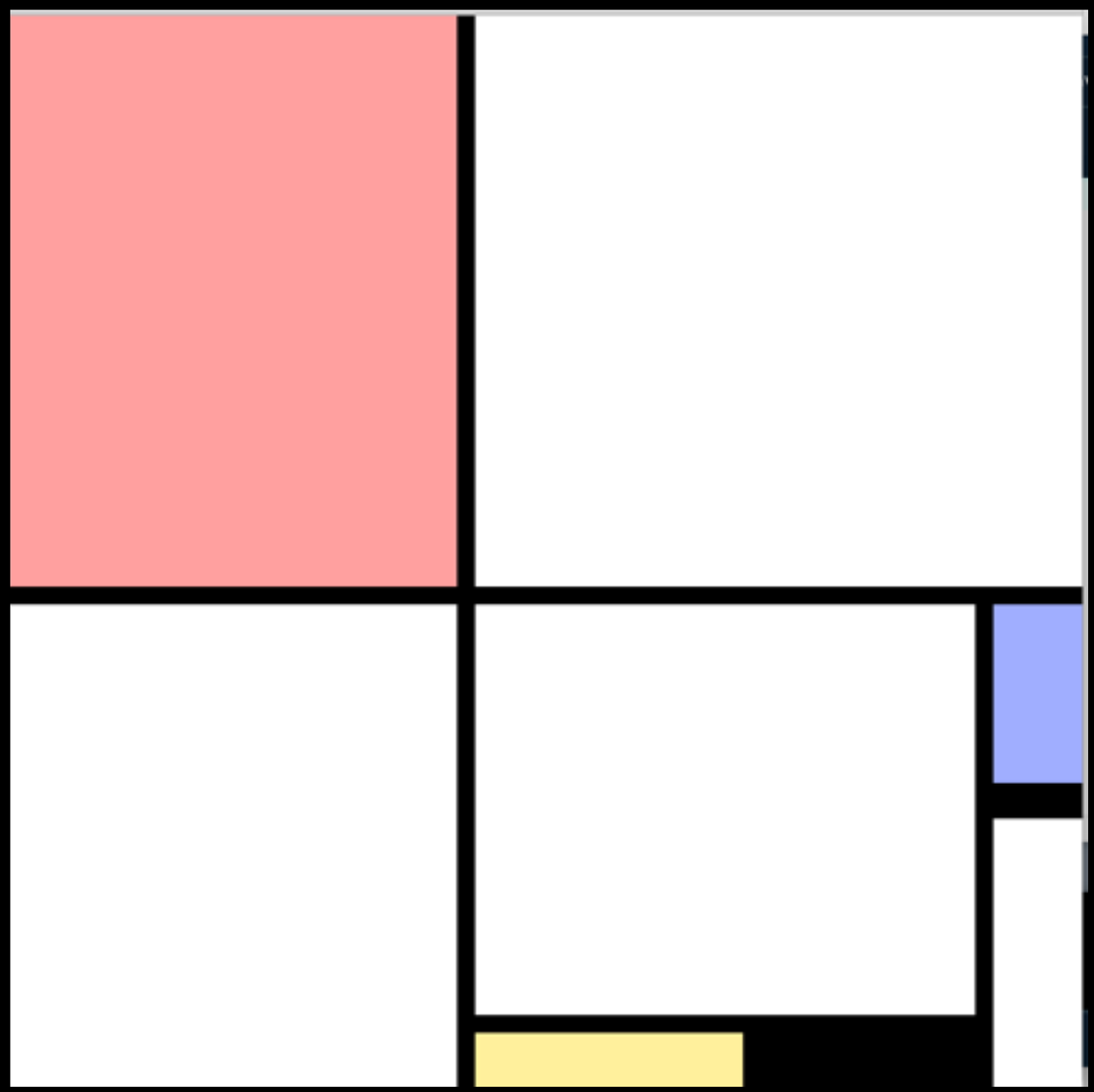
Java

sketch_160213l

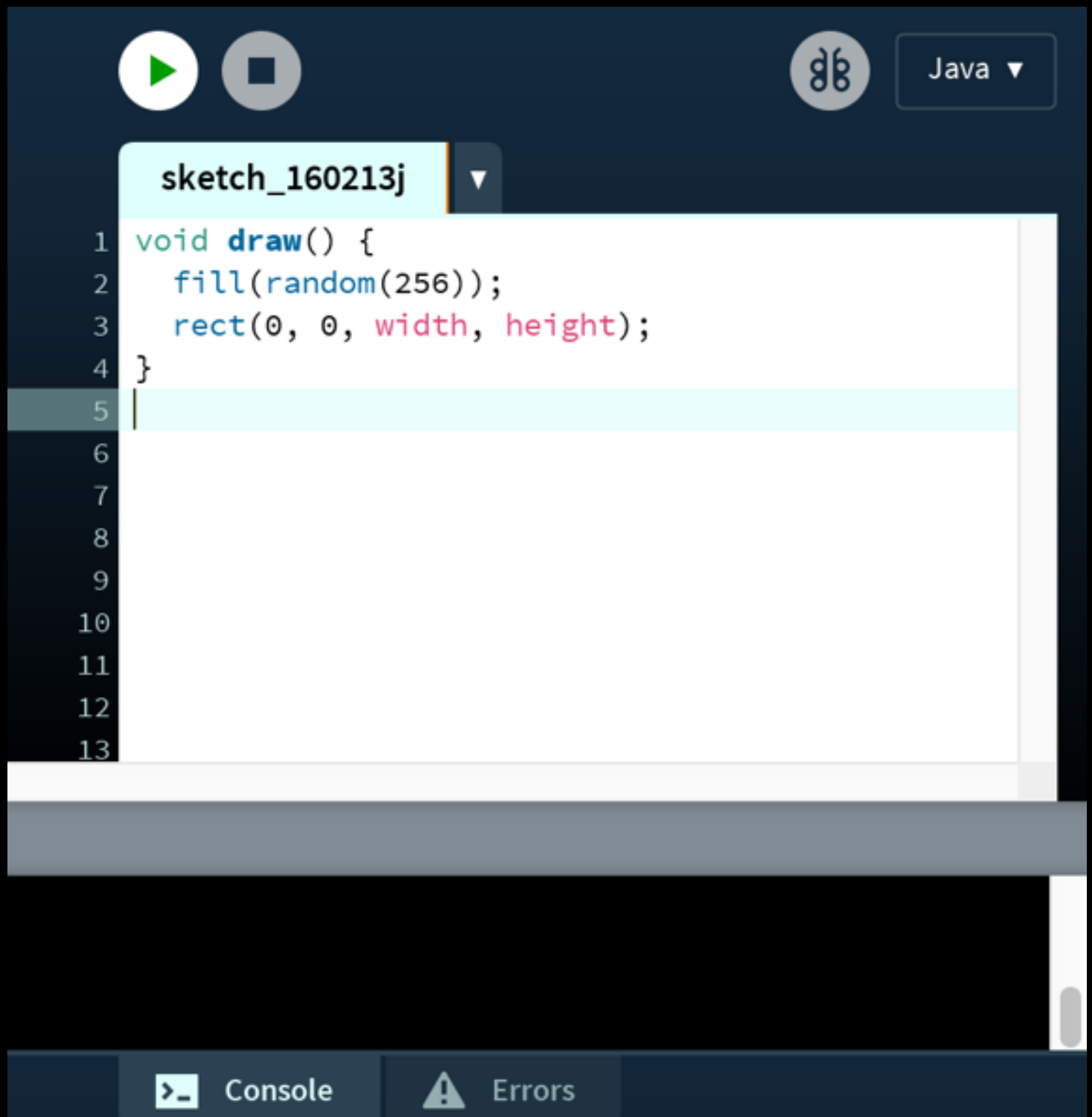
```
1  void setup() {
2    size(500,500);
3  }
4
5  void draw() {
6    background(204);
7    ellipse(mouseX, mouseY, 50, 50);
8  }
9
10
11
12
13
14
15
16
```

Console  Errors

# Exercise: Reactive Mondrian



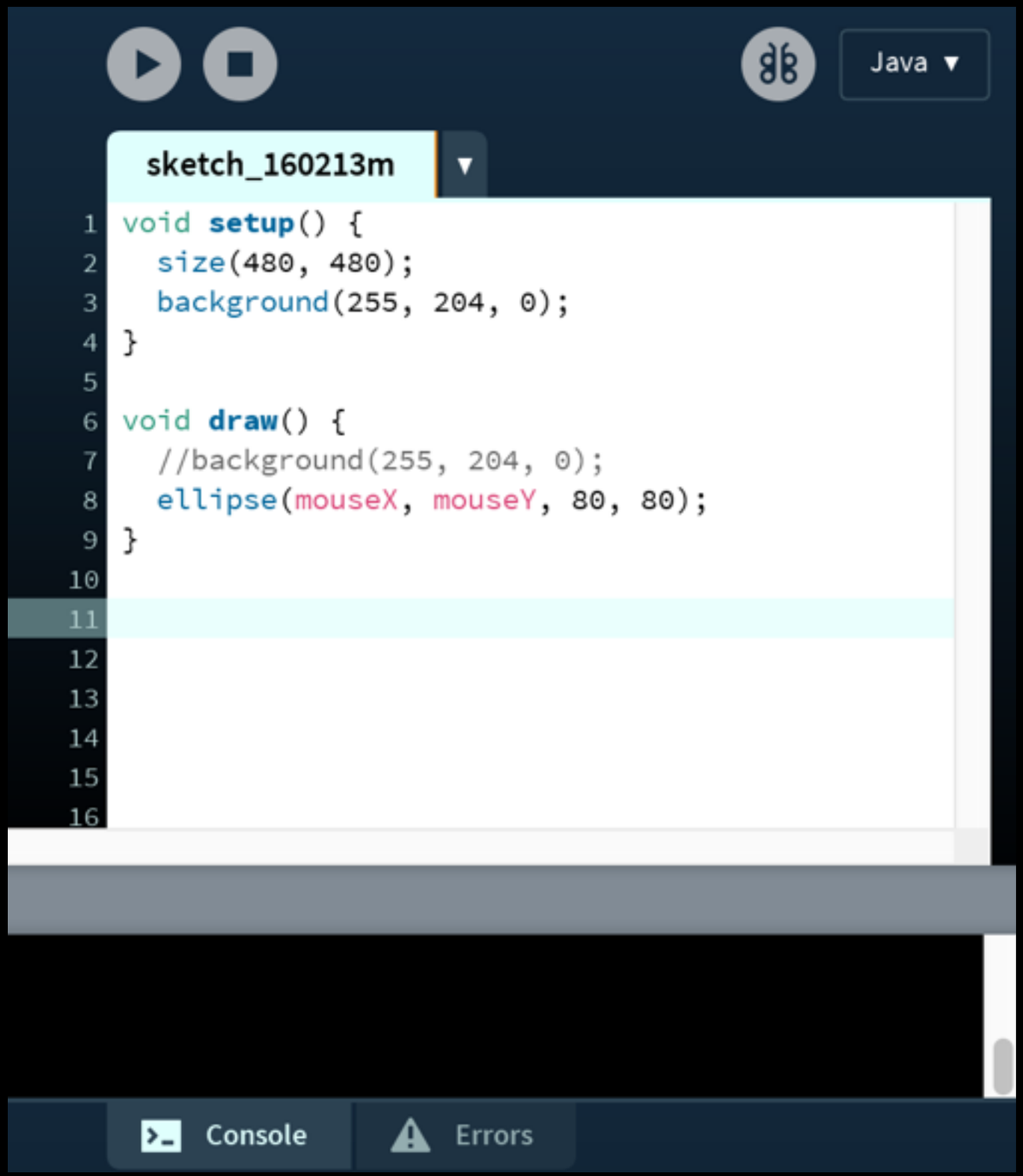
# random()


Java
sketch_160213j
1 void draw() {
2 fill(random(256));
3 rect(0, 0, width, height);
4 }
5
6
7
8
9
10
11
12
13
Console
Errors

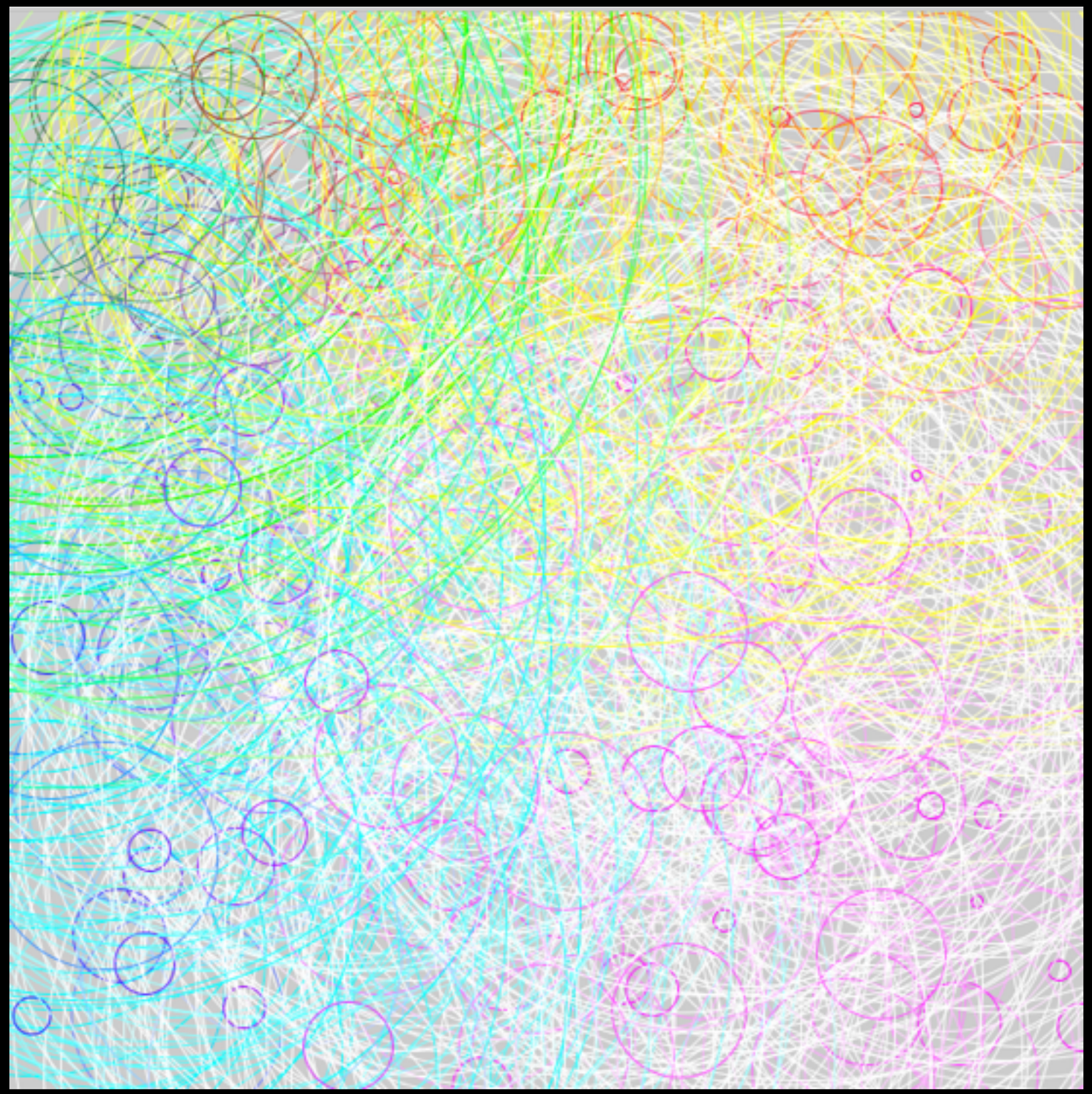
# millis()


Java
sketch_160213j
1 void draw() {
2 int m = millis();
3 noStroke();
4 fill(m % 255);
5 rect(25, 25, 50, 50);
6 }
7
8
9
10
11
12
13
14
15
16
Console
Errors

# background()

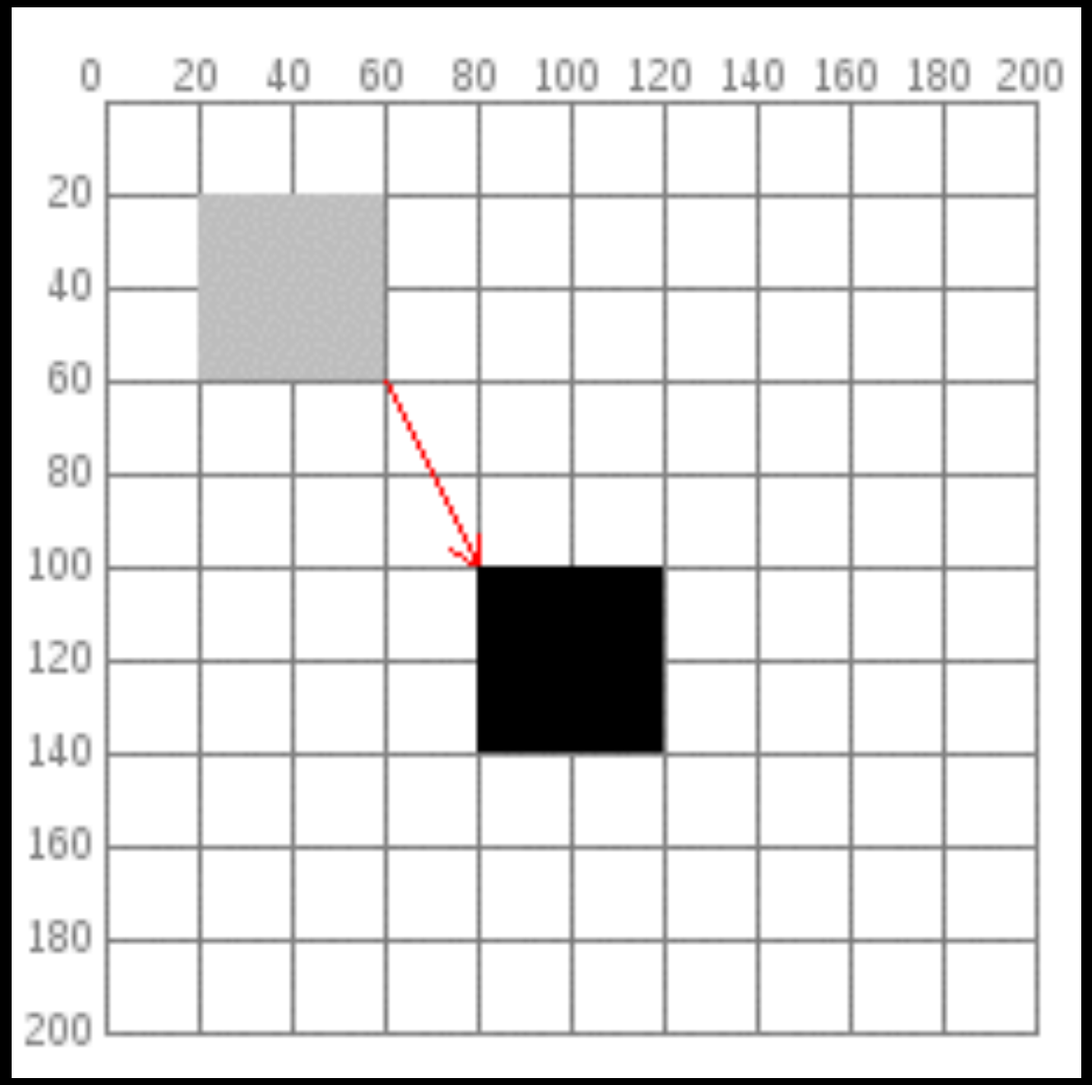

Java
sketch_160213m
1 void setup() {
2 size(480, 480);
3 background(255, 204, 0);
4 }
5
6 void draw() {
7 //background(255, 204, 0);
8 ellipse(mouseX, mouseY, 80, 80);
9 }
10
11
12
13
14
15
16
Console
Errors

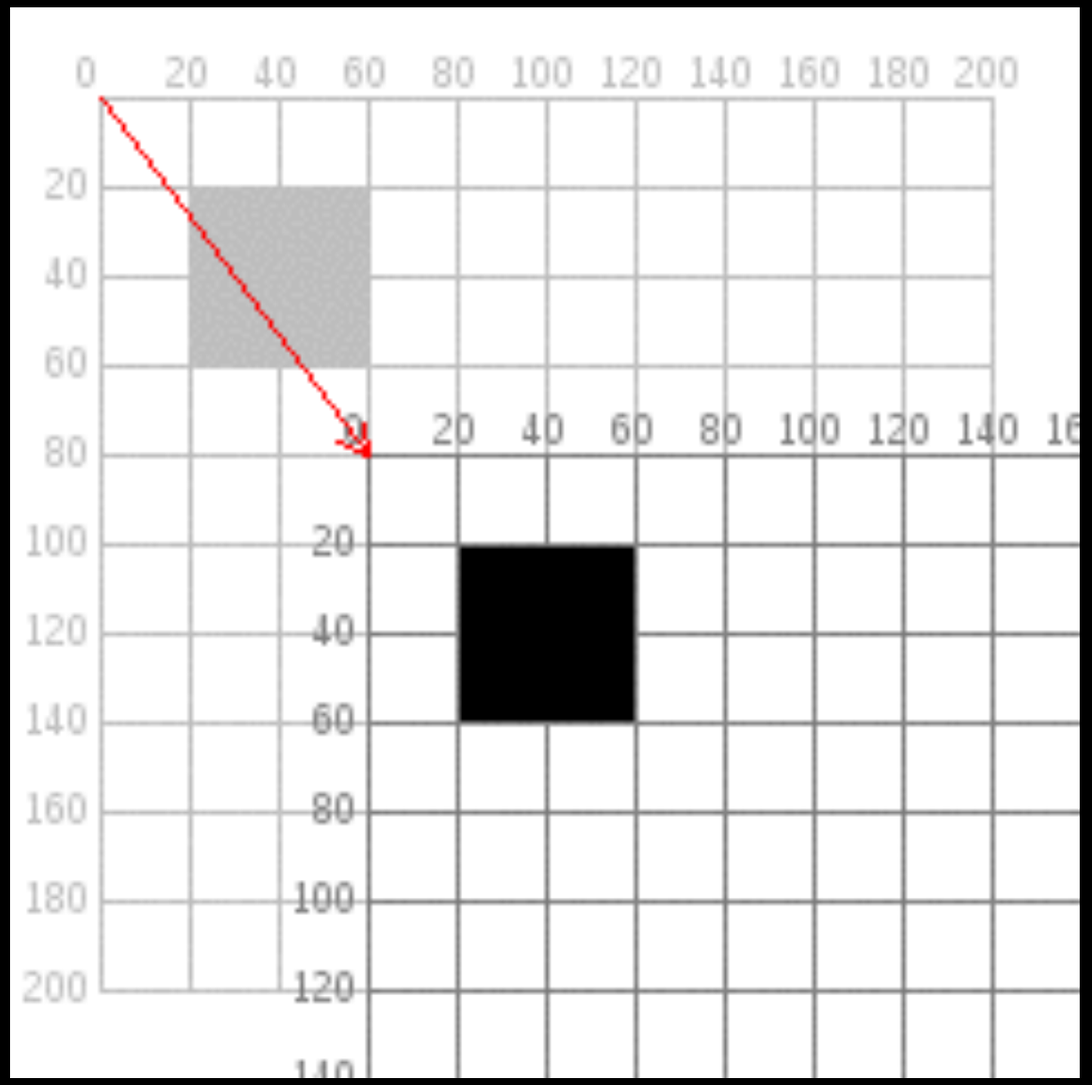
# Exercise: Circles



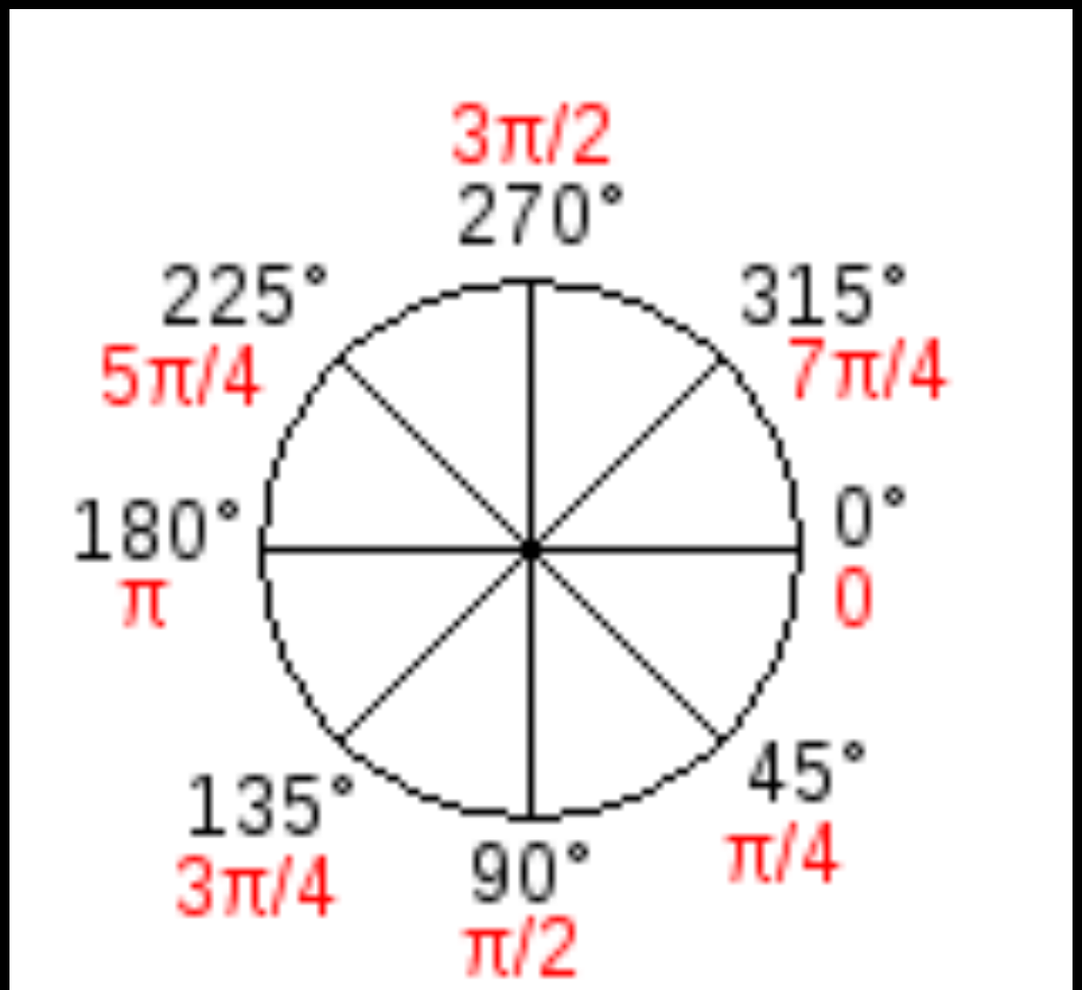
# III. Transformations

# Translate

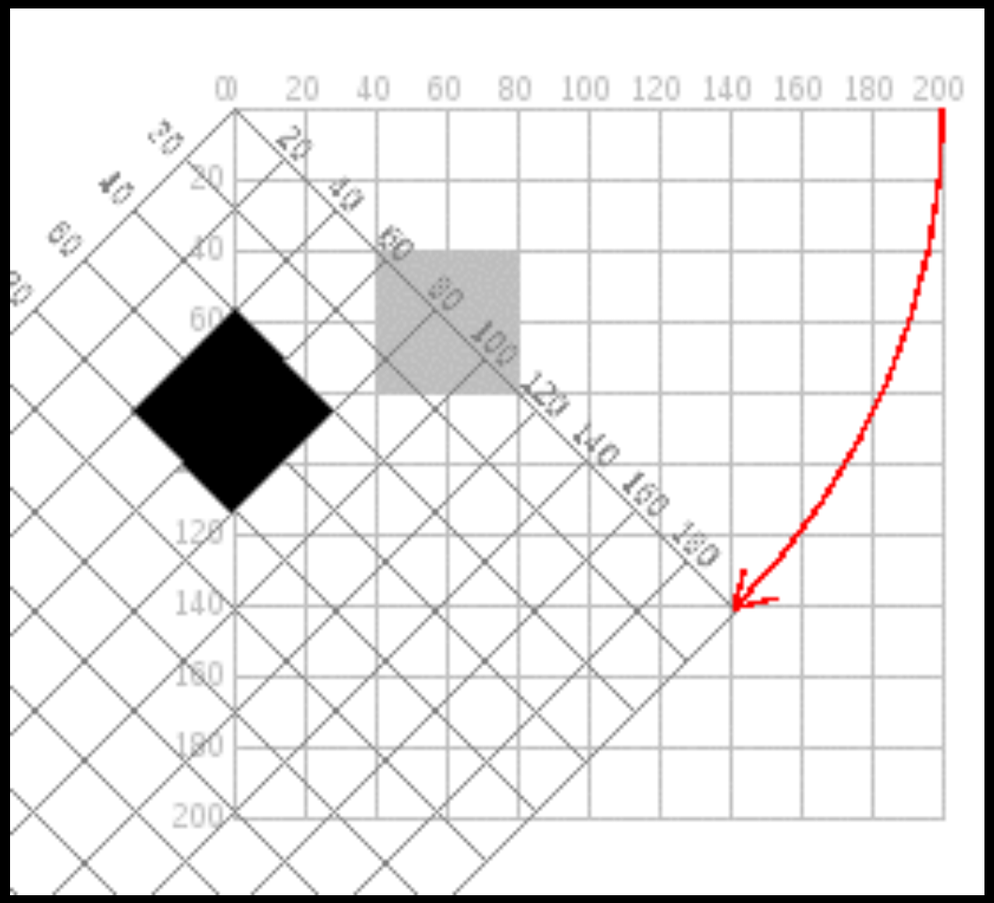

0 20 40 60 80 100 120 140 160 180 200
20
40
60
80
100
120
140
160
180
200

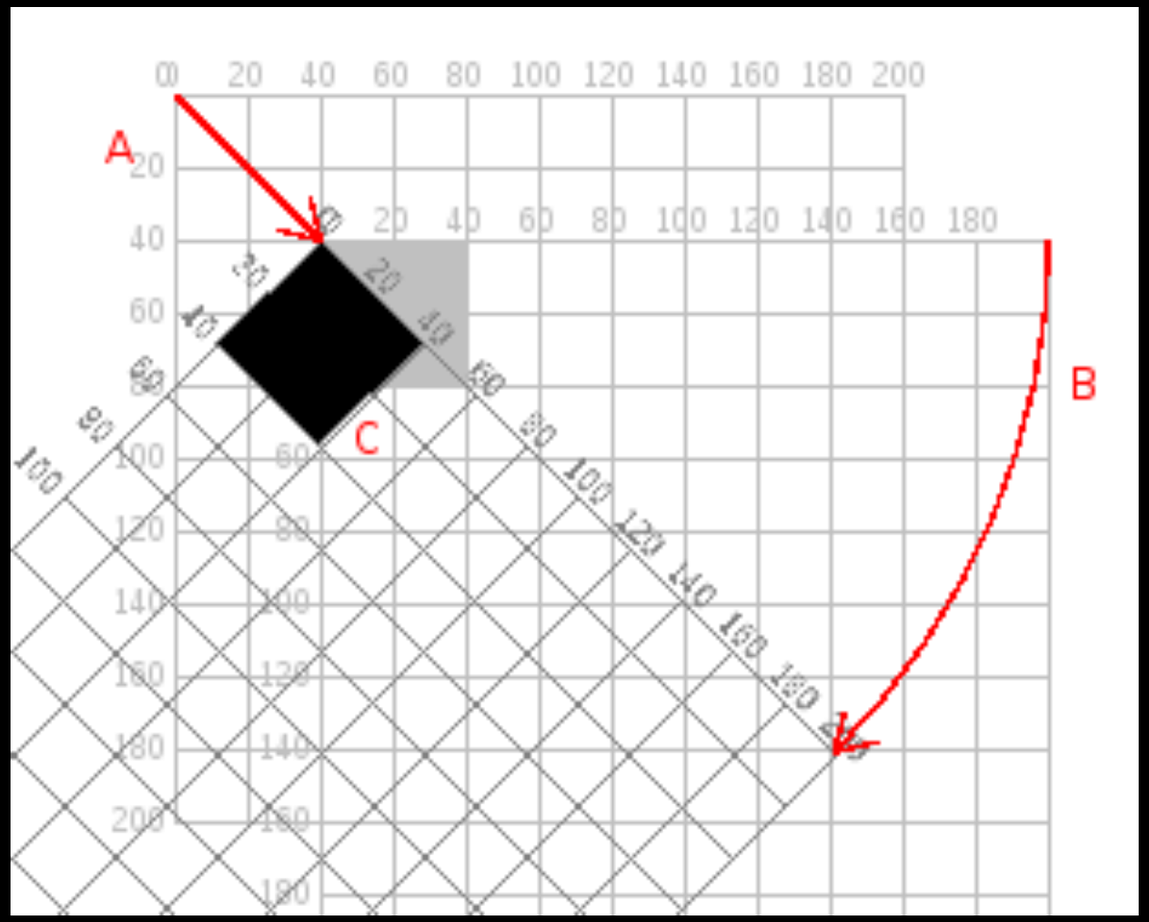

0 20 40 60 80 100 120 140 160 180 200
20
40
60
80
100
120
140
160
180
200
0 20 40 60 80 100 120 140 16
20
40
60
80
100
120

# Rotation

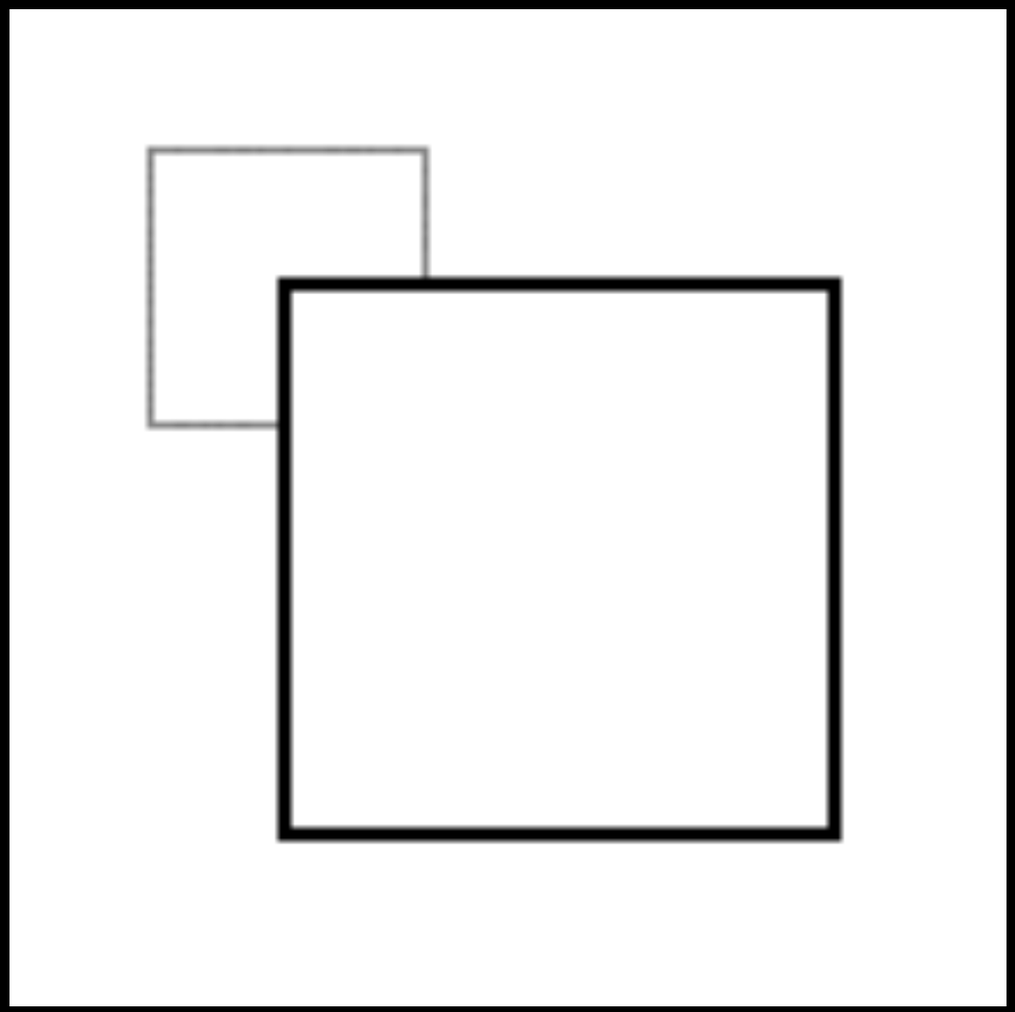


# Rotation


0 20 40 60 80 100 120 140 160 180 200
20
40
60
80
100
120
140
160
180
200

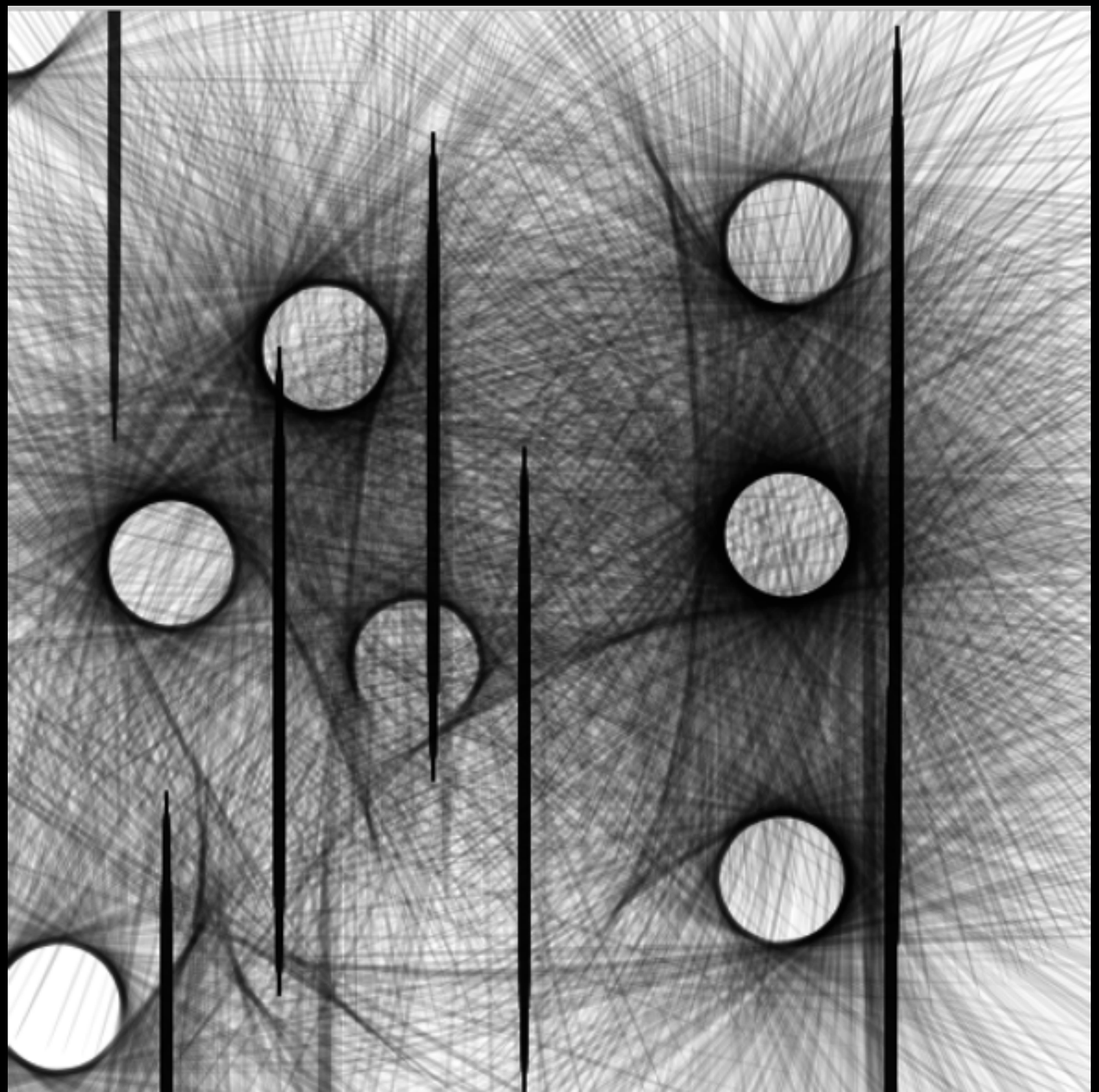

A
B
C
0 20 40 60 80 100 120 140 160 180 200

# Scaling



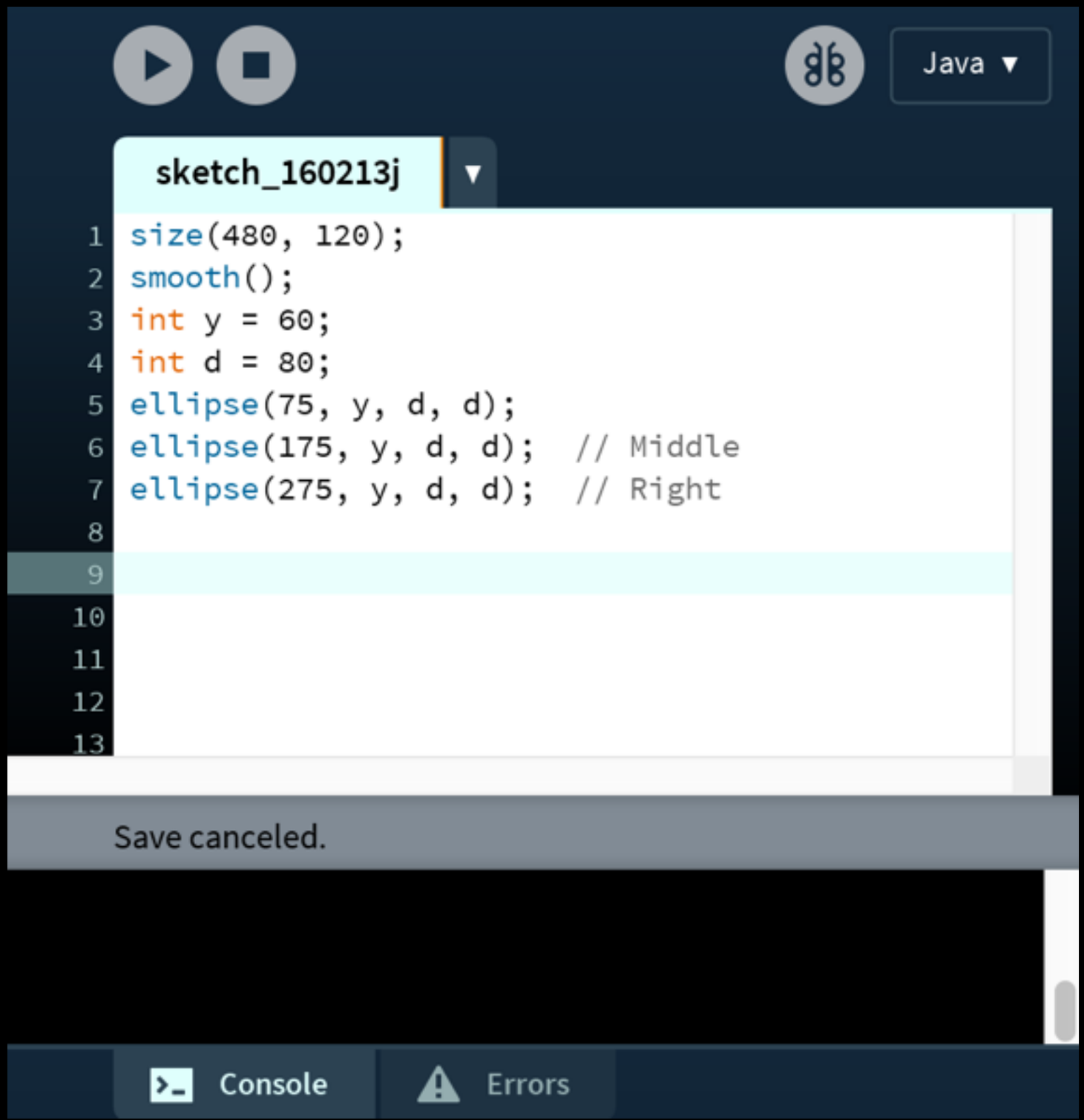
# The Transformation Matrix

# Exercise: Transformations

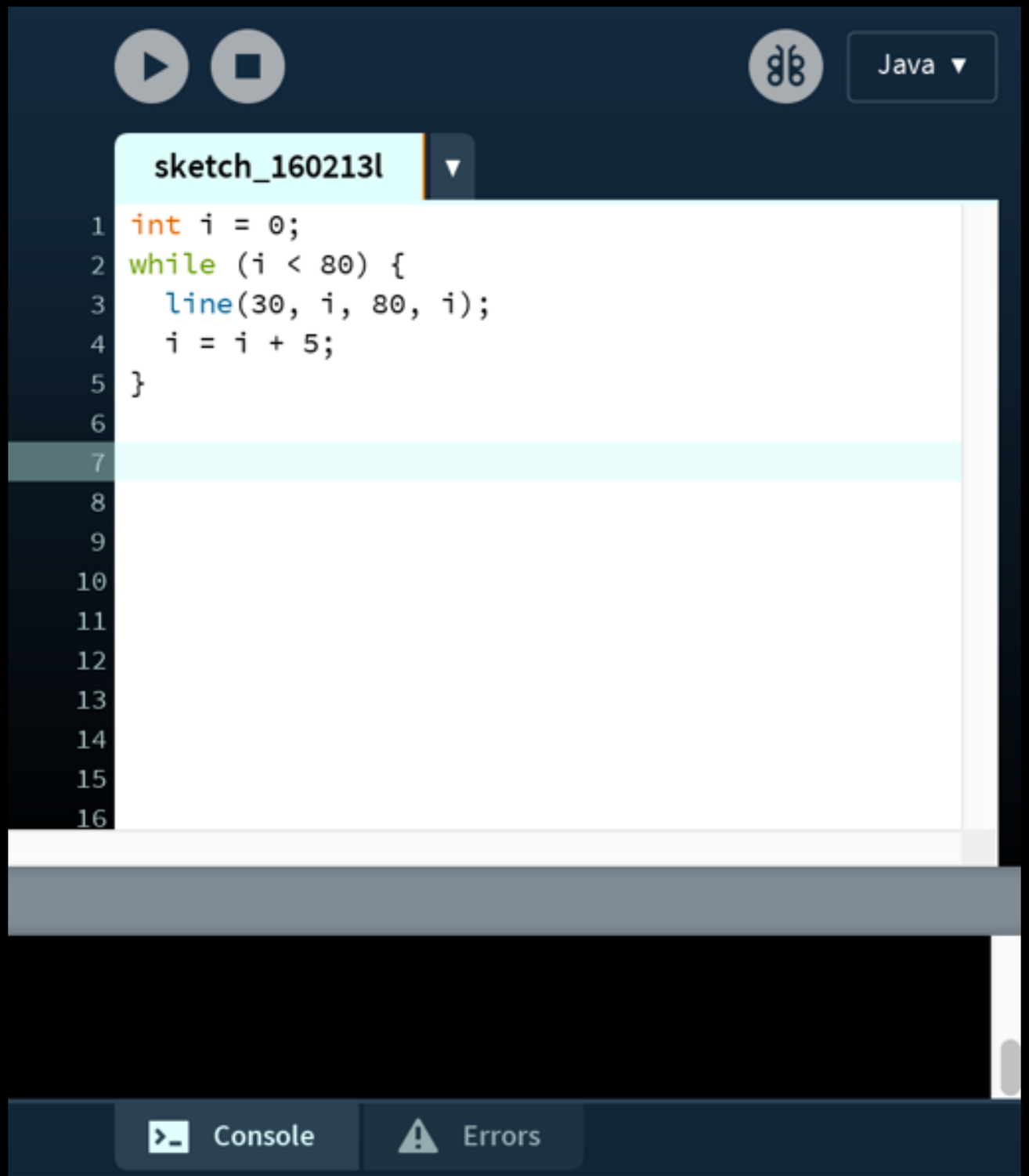


# IV. Main Tools

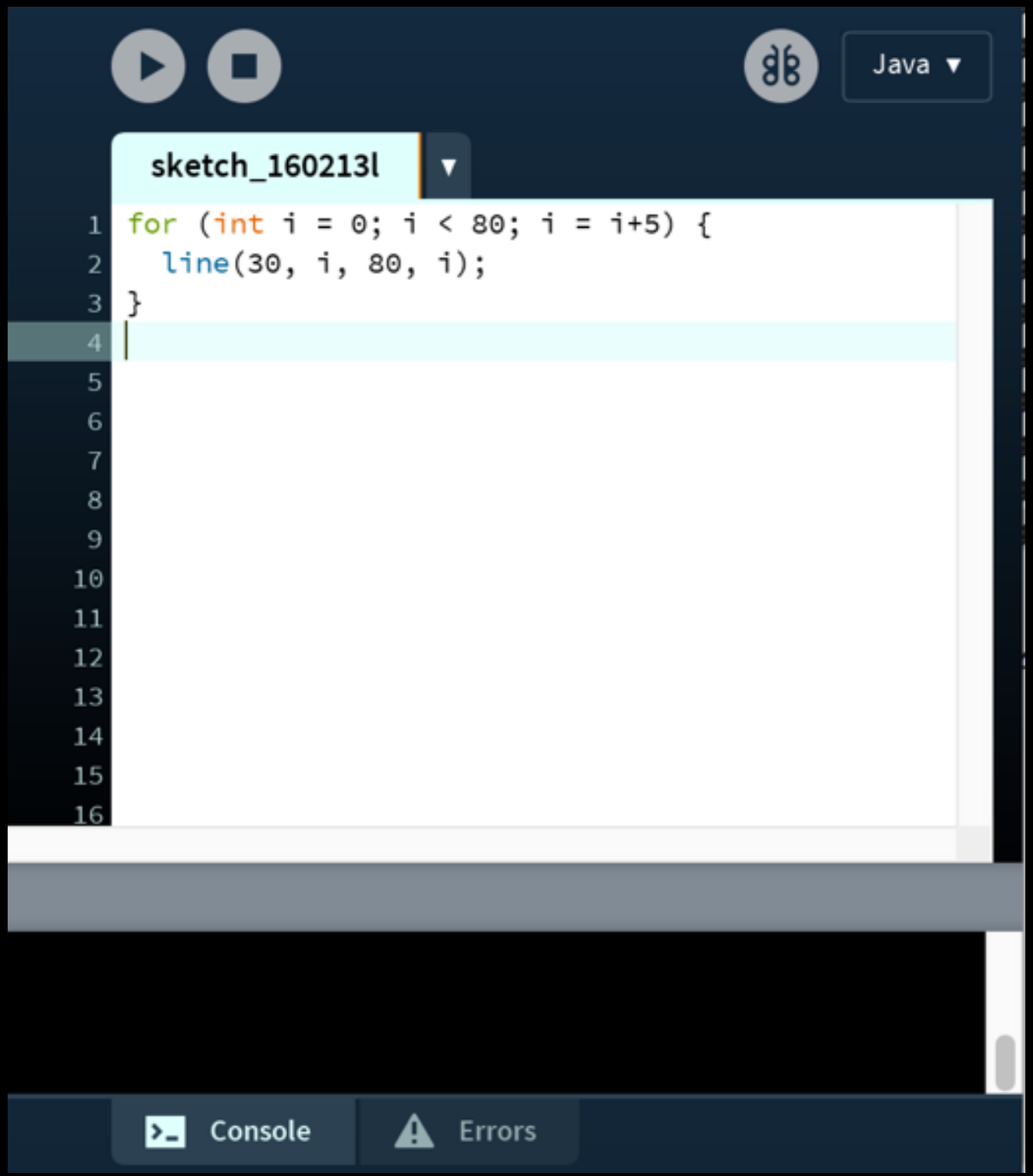
# Variables


Java
sketch_160213j
1 size(480, 120);
2 smooth();
3 int y = 60;
4 int d = 80;
5 ellipse(75, y, d, d);
6 ellipse(175, y, d, d); // Middle
7 ellipse(275, y, d, d); // Right
8
9
10
11
12
13
Save canceled.
Console
Errors

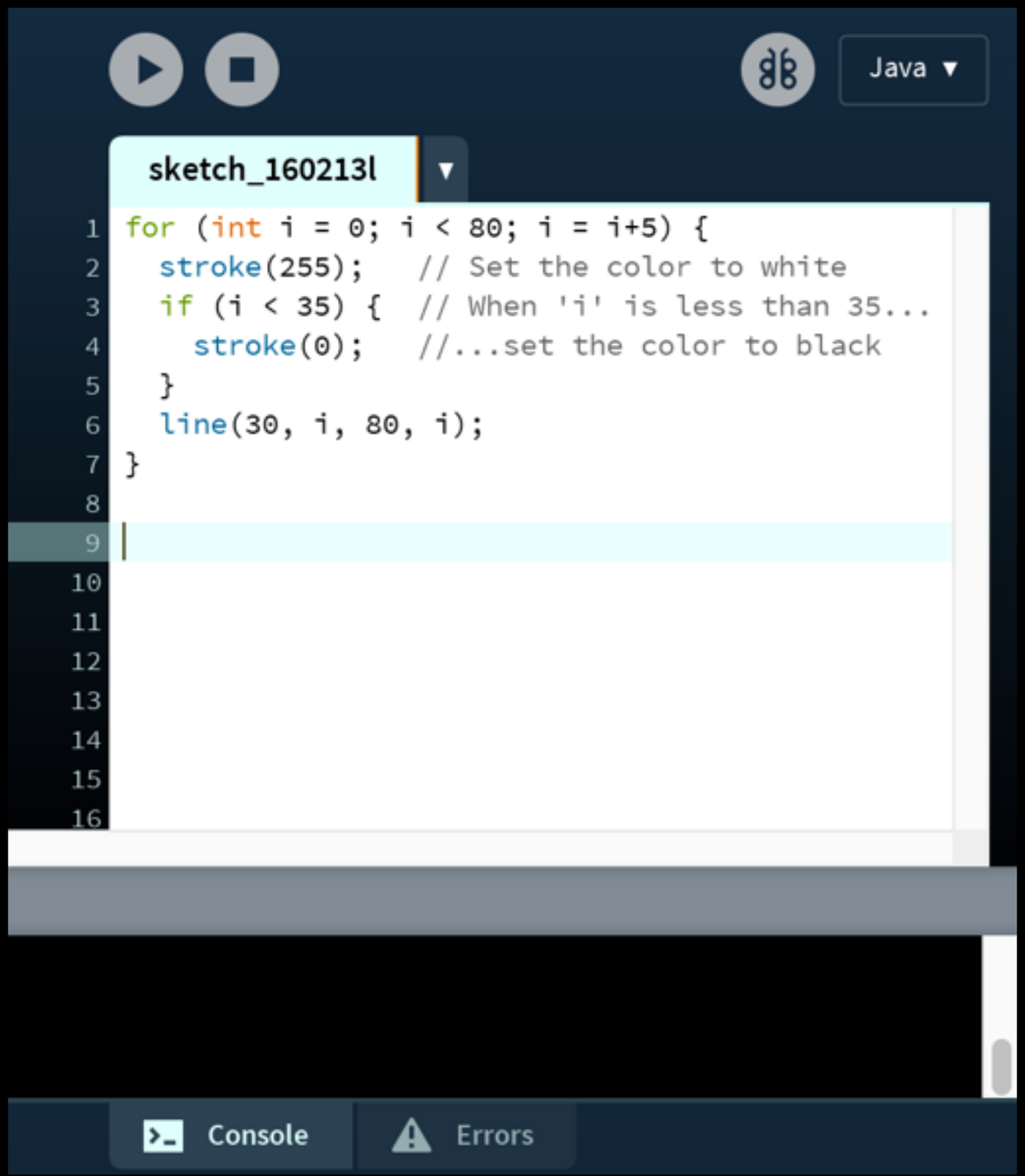
# while


Java
sketch_160213l
int i = 0;
while (i < 80) {
line(30, i, 80, i);
i = i + 5;
}
Console
Errors

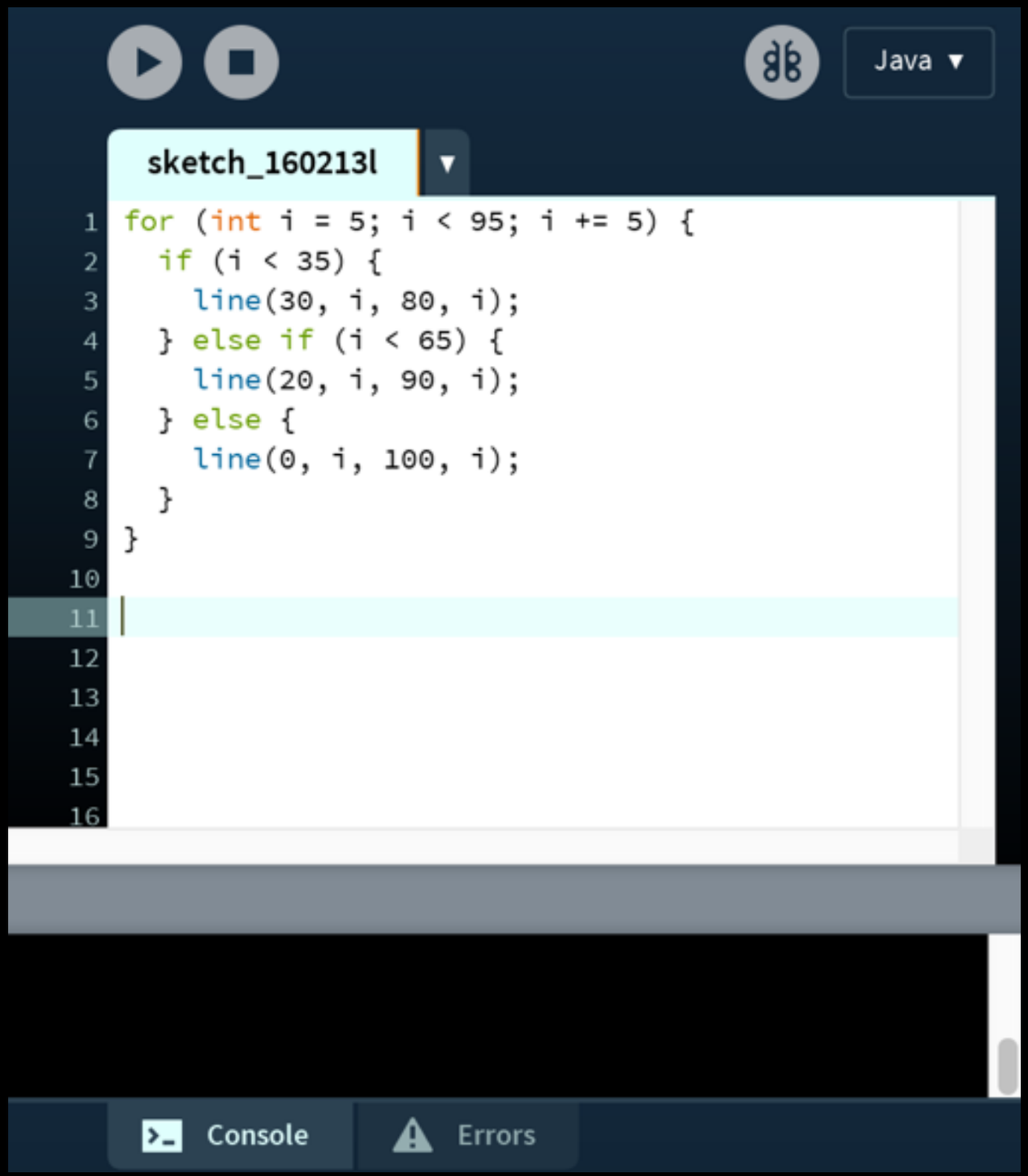
# for


Java
sketch_160213l
1 for (int i = 0; i < 80; i = i+5) {
2 line(30, i, 80, i);
3 }
4
5
6
7
8
9
10
11
12
13
14
15
16
Console
Errors

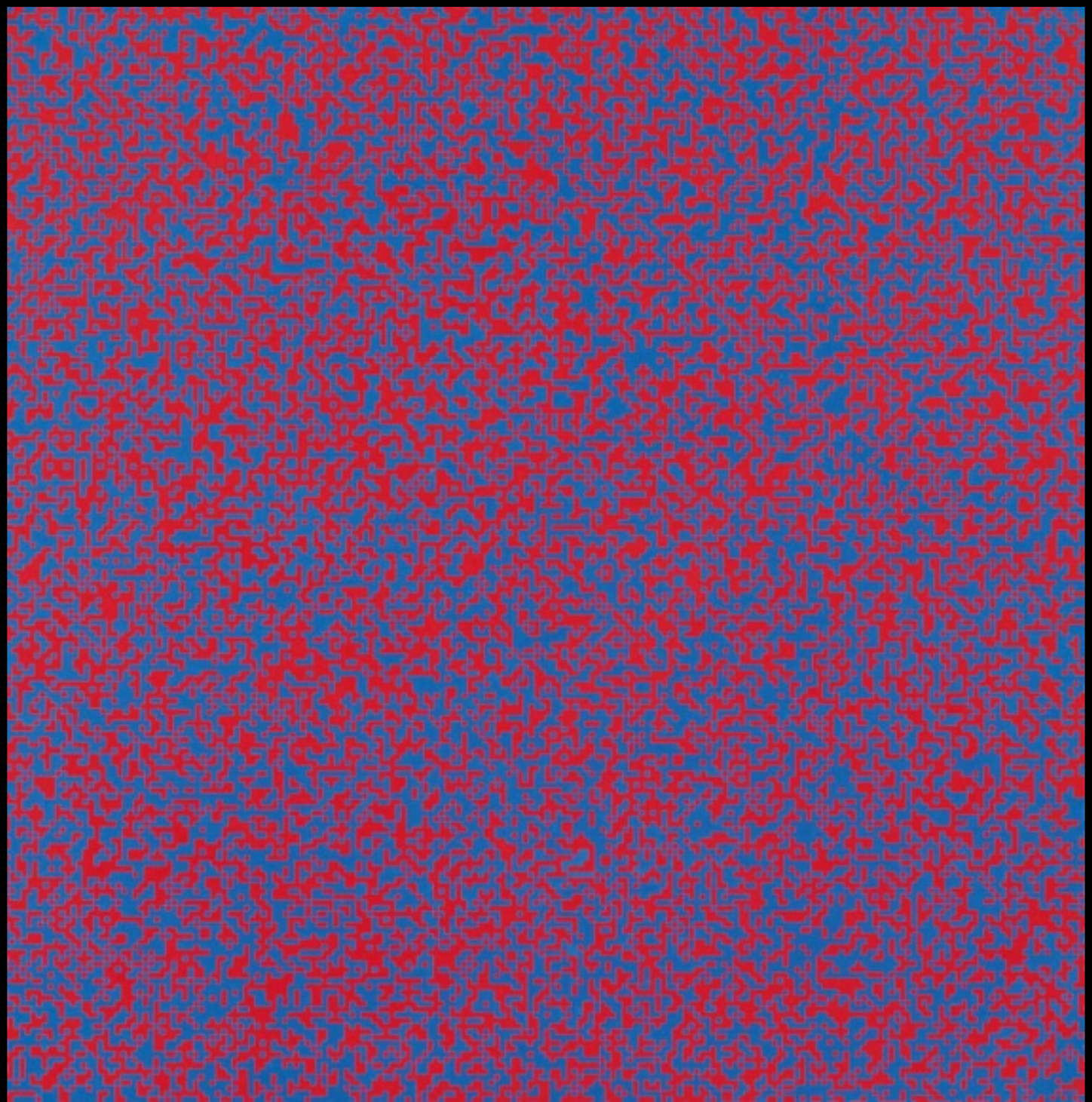
# if


Java
sketch_160213l
for (int i = 0; i < 80; i = i+5) {
stroke(255); // Set the color to white
if (i < 35) { // When 'i' is less than 35...
stroke(0); //...set the color to black
}
line(30, i, 80, i);
}
Console
Errors

# else


Java
sketch_160213l
for (int i = 5; i < 95; i += 5) {
if (i < 35) {
line(30, i, 80, i);
} else if (i < 65) {
line(20, i, 90, i);
} else {
line(0, i, 100, i);
}
}
Console
Errors

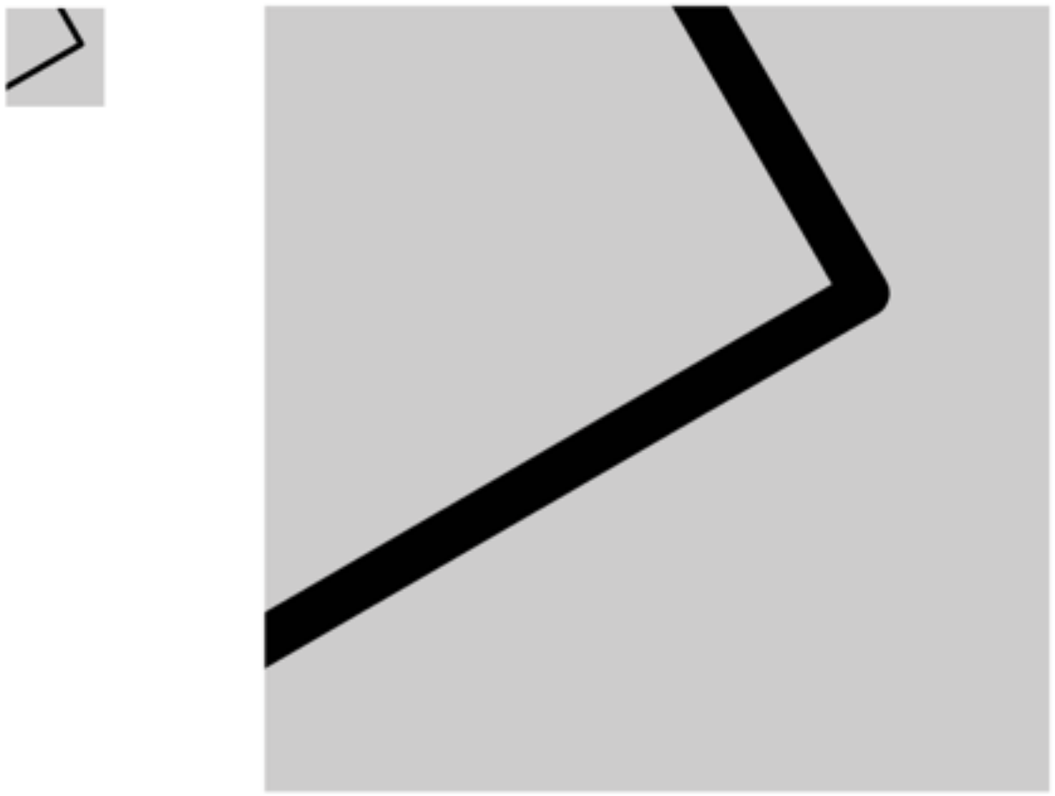
# Exercise: Morellet



# V. Print

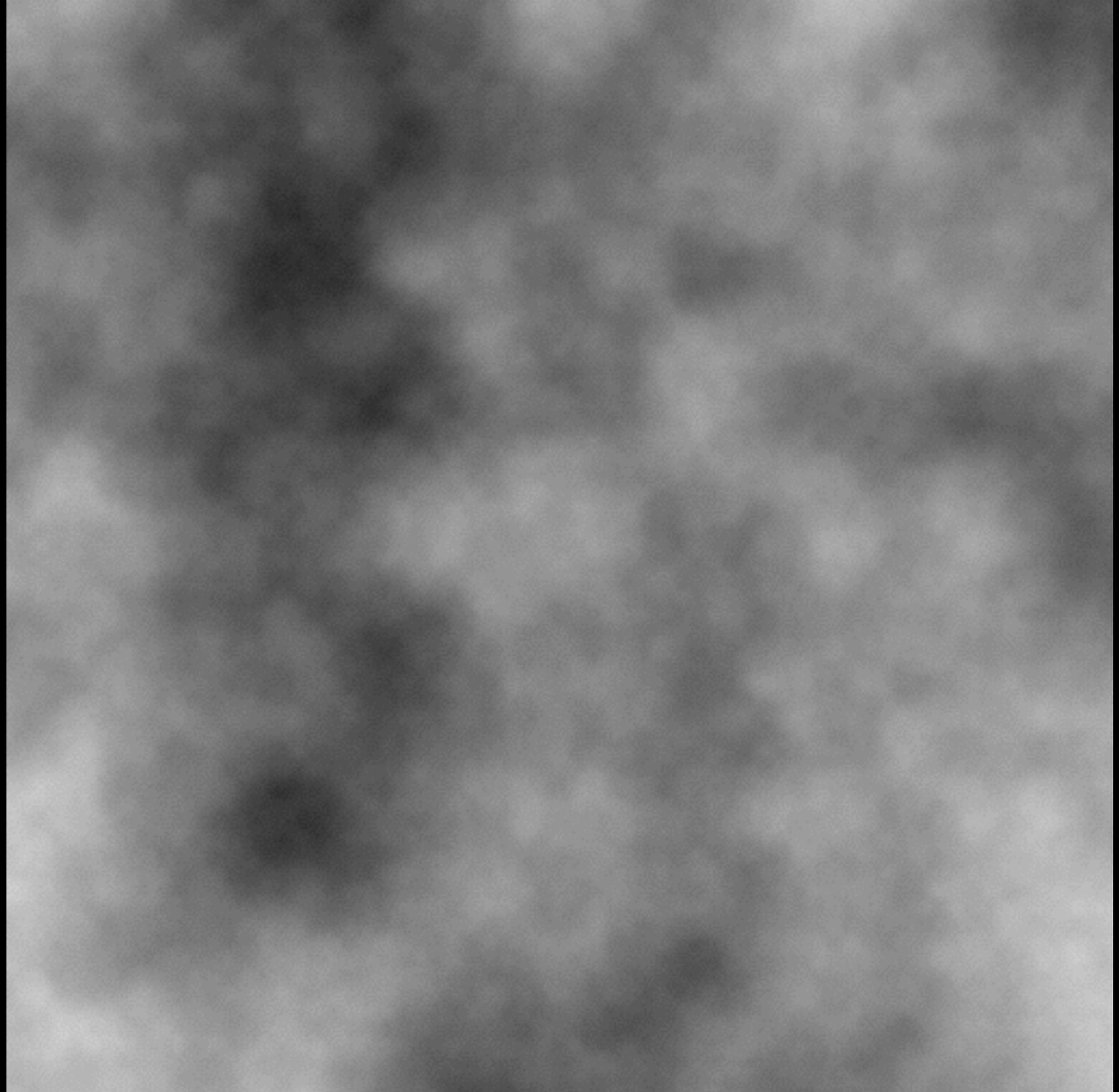
# Vector vs Raster

Vector image enlarged 800%



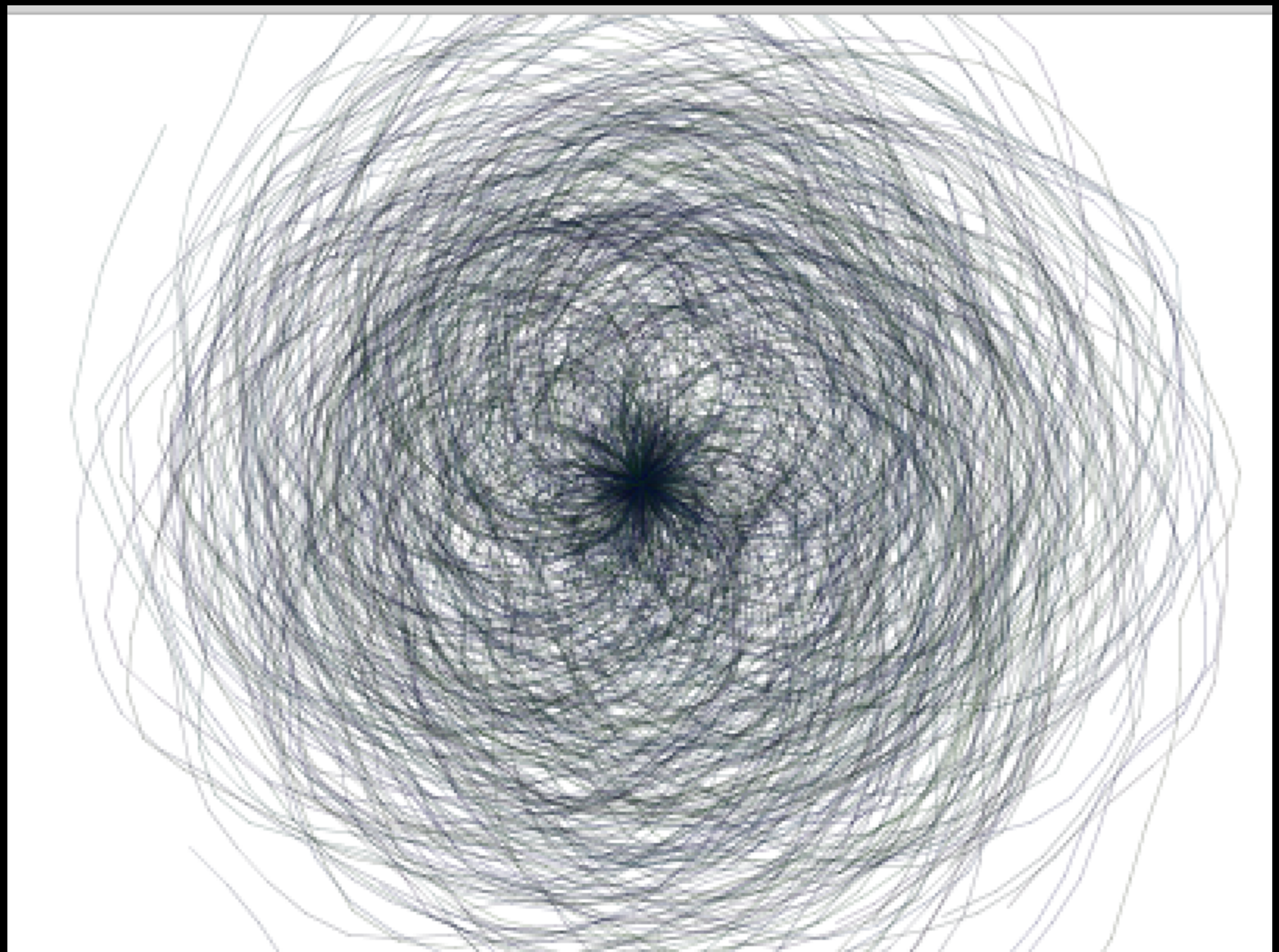
Raster image enlarged 800%

# VI. Noise



# Noise Function

# Exercise: Noise



# VII. Images

# Getting Started

# Image Processing

# Pixels

How the pixels look:

| | | | | |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 |

How the pixels are stored:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | · | · | · | | |

# Exercise: Render to PDF

# VIII. Parametric

Goodbye!

# Questions?

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