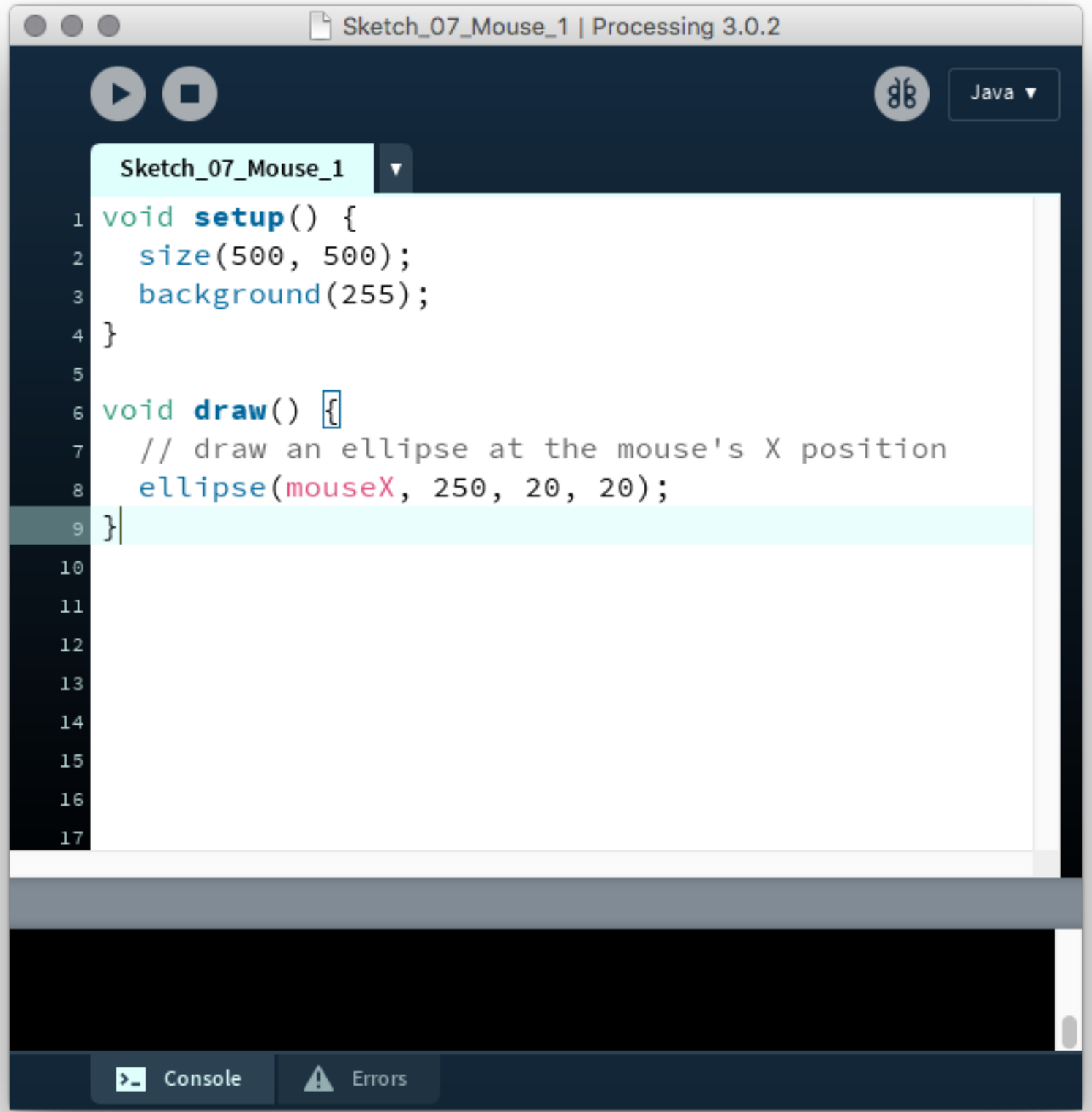
Mouse


Sketch_07_Mouse_1 | Processing 3.0.2
Java
Sketch_07_Mouse_1
void setup() {
size(500, 500);
background(255);
}
void draw() {
// draw an ellipse at the mouse's X position
ellipse(mouseX, 250, 20, 20);
}
Console
Errors


Sketch_07_Mouse_1 | Processing 3.0.2
Java
Sketch_07_Mouse_1
void setup() {
size(500, 500);
background(255);
}
void draw() {
// draw an ellipse at the mouse's X Y position
ellipse(mouseX, mouseY, 20, 20);
}
Console
Errors

Sketch_07_Mouse_1 | Processing 3.0.2

Java ▾

Sketch_07_Mouse_1

```
1  void setup() {
2    size(500, 500);
3    background(255);
4  }
5
6  void draw() {
7    // draw an ellipse at the mouse's X Y position
8    ellipse(mouseX, mouseY, 20, 20);
9
10   // and mirror it
11   ellipse(width - mouseX, mouseY, 20, 20);
12 }
13
14
15
16
17
```

Console Errors

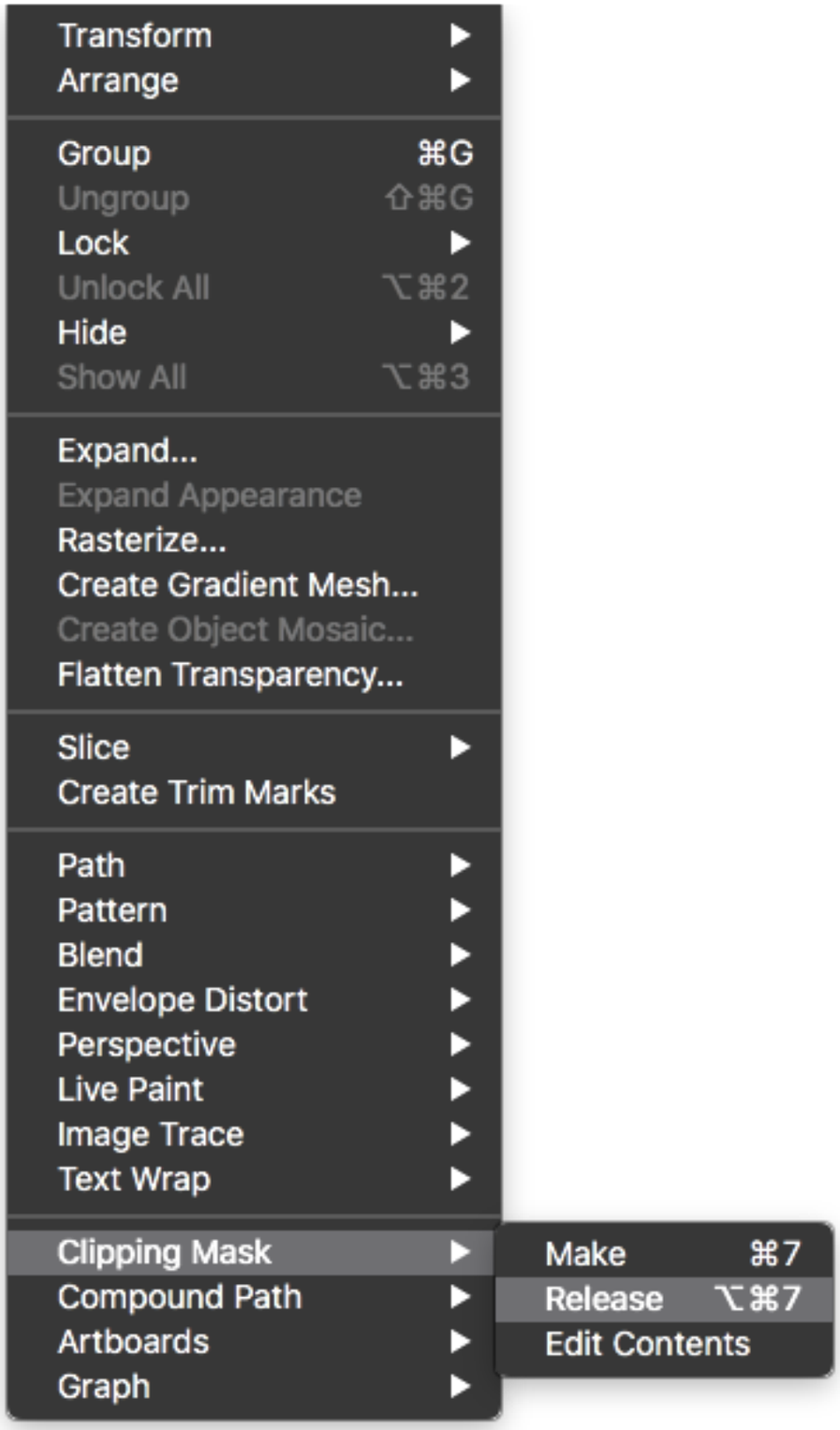
Sketch_09_PDF_2 | Processing 3.0.2

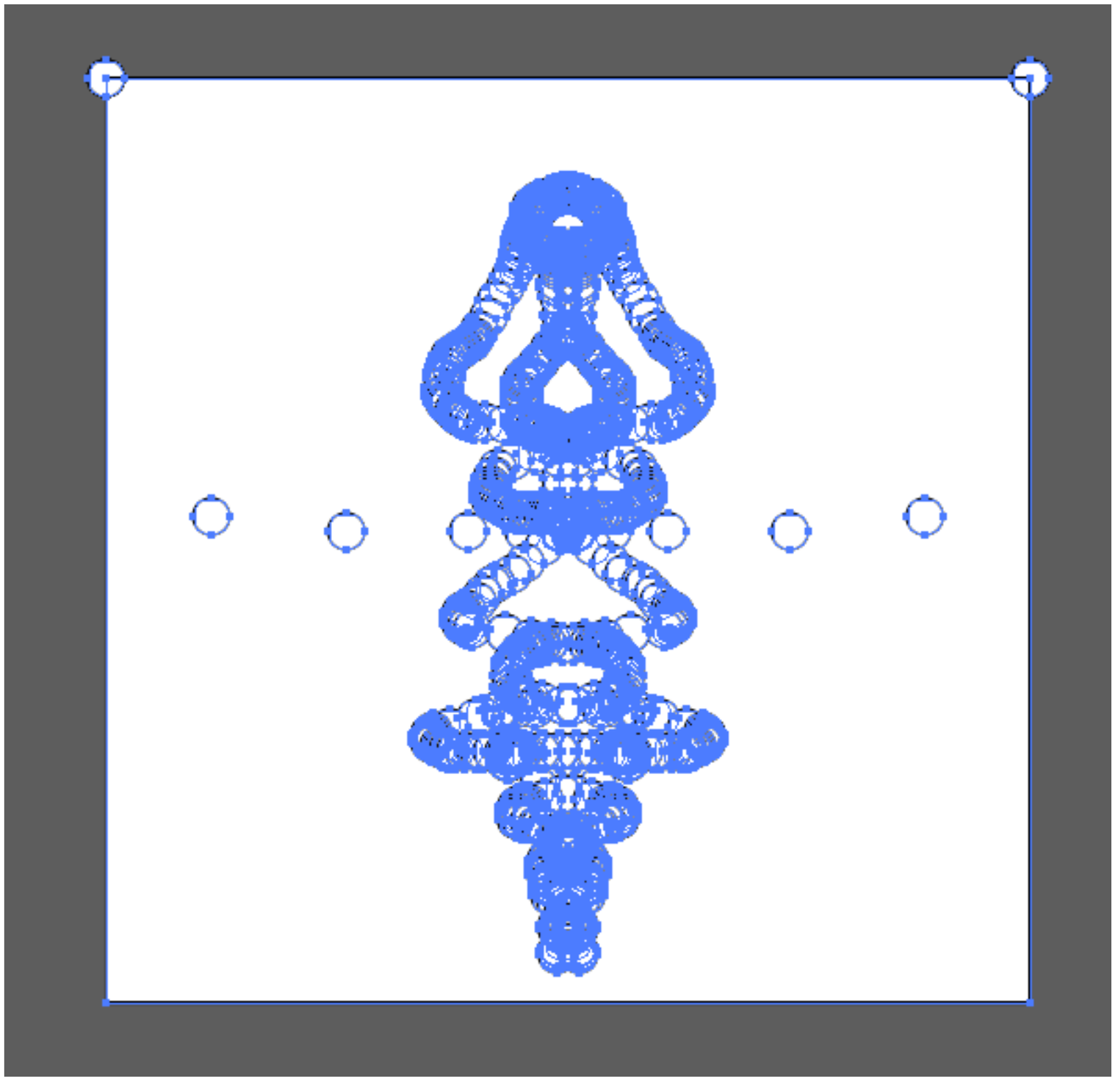
Java ▾

Sketch_09_PDF_2

```
1  import processing.pdf.*;
2
3  void setup() {
4    beginRecord(PDF, "sketch.pdf");
5    size(500, 500);
6    background(255);
7  }
8
9  void draw() {
10   // draw an ellipse at the mouse's X Y position
11   ellipse(mouseX, mouseY, 20, 20);
12
13   // and mirror it
14   ellipse(width - mouseX, mouseY, 20, 20);
15 }
16
17 void mousePressed() {
18   endRecord();
19   exit();
20 }
21
22
```

Console Errors


Transform
Arrange
Group ⌘G
Ungroup ⇧⌘G
Lock
Unlock All ⌥⌘2
Hide
Show All ⌥⌘3
Expand...
Expand Appearance
Rasterize...
Create Gradient Mesh...
Create Object Mosaic...
Flatten Transparency...
Slice
Create Trim Marks
Path
Pattern
Blend
Envelope Distort
Perspective
Live Paint
Image Trace
Text Wrap
Clipping Mask
Compound Path
Artboards
Graph
Make ⌘7
Release ⌥⌘7
Edit Contents



Variables

A ***literal*** stays the same
20 is always 20

```
ellipse(mouseX, mouseY, 20, 20);
```

A ***variable*** changes (varies)
mouseX could be any number

mouseX	———	mouse position on the x axis
mouseY	———	mouse position on the y axis
width	———	width of the canvas
height	———	height of the canvas
frameRate	———	current frameRate
frameCount	———	for how many frames the sketch has been running

int

float

boolean

color

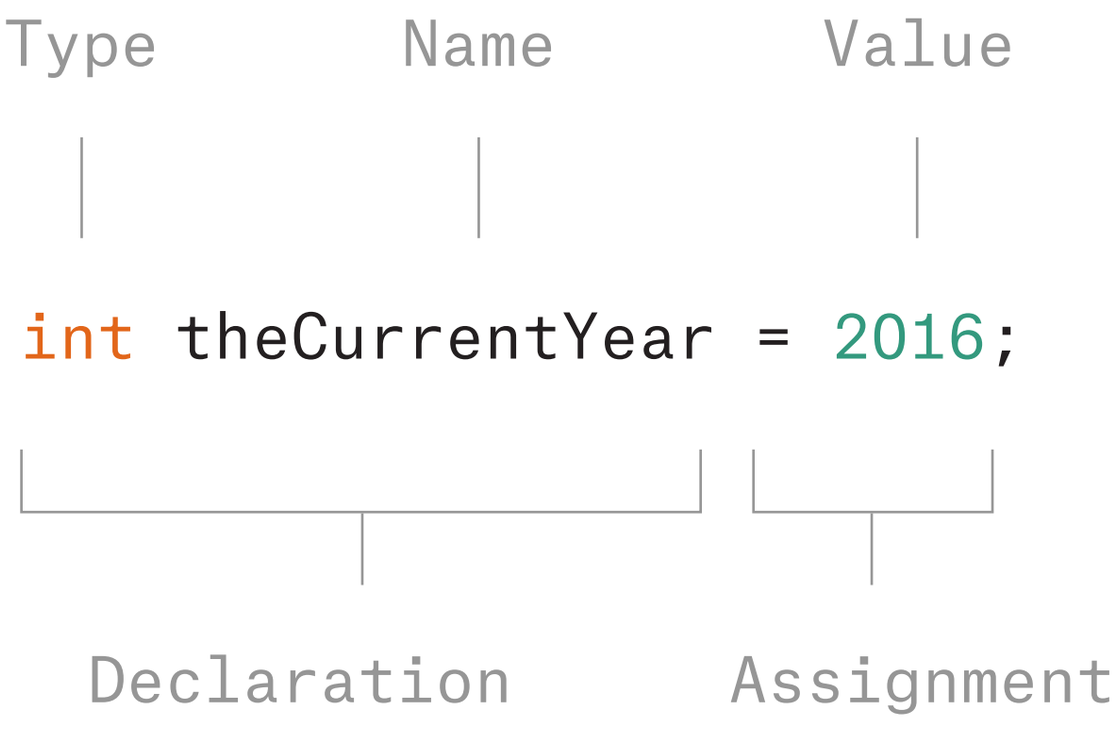
char

String

int

Stores whole numbers (integers)

```
int theCurrentYear = 2016;
int aPersonsAge = 55;
int numParticipants = 9;
```


Type
Name
Value
int theCurrentYear = 2016;
Declaration
Assignment

float

Stores numbers with decimal points (floating point)

```
float productCost = 19.95;
float documentHeight = 29.7;
float pi = 3.14;
```

boolean

true or false?

```
boolean on = true;
boolean mouseIsDown = false;
boolean expired = true;
```

color

Stores a color

```
color red = color(255, 0, 0);
color highlightColor = #FFFF00;
color textColor = color(50);
```

char

Stores a single character

```
char firstInitial = ‘D‘;
char lastKeyPressed = ‘A‘;
char YorN = ‘N‘;
```

String

Stores a ‘string’ (sequence) of characters i.e. text

```
String name = “Dan”;
String message = “Hello!”;
String content = “It was the best of times, it
```

Operators

```
+    Add

-    Subtract

*    Multiply

/    Divide
```

```
++   increment (Add one)

--   decrement (Subtract one)
```

+ Addition

```
int apples = 4;
int oranges = 6;
int fruits = apples + oranges;
```

- Subtraction

```
int purchased = 100;
int sold = 25;
int inventory = purchased - sold;
```

* Multiplication

```
float price = 19.99;
float unitsSold = 25;
float revenue = unitsSold * price;
```

/ Division

```
int miles = 80;
int hours = 3;
int speed = miles / hours;
```

++ Increment

```
int age = 55;
age++;
println(age); // 56
```

-- Decrement

```
int sessions = 10;
sessions--;
println(sessions); // 9
```

Sketch_10_Variables_1 | Processing 3.0.2

Java ▾

Sketch_10_Variables_1

```
1  float myXPosition = 250;
2  float myYPosition = 250;
3
4  void setup() {
5    size(500, 500);
6    background(255);
7  }
8
9  void draw() {
10   // draw an ellipse at the variable x and y position
11   ellipse(myXPosition, myYPosition, 20, 20);
12 }
13
14 void mousePressed() {
15   // add 3 to xPosition
16   myXPosition = myXPosition + 3;
17
18   // add 3 to yPosition
19   myYPosition = myYPosition + 3;
20 }
21
22
23
24
```

Done saving.

Console | Errors

Sketch_10_Variables_1 | Processing 3.0.2

Java ▾

Sketch_10_Variables_1

```
float myXPosition = 250;
float myYPosition = 250;

void setup() {
  size(500, 500);
  background(255);
}

void draw() {
  // draw an ellipse at the variable x and y position
  ellipse(myXPosition, myYPosition, 20, 20);
}

void mousePressed() {
  // add 3 to xPosition
  myXPosition = mouseX;

  // add 3 to yPosition
  myYPosition = mouseY;
}
```

Console Errors

Sketch_10_Variables_1 | Processing 3.0.2

Java ▾

Sketch_10_Variables_1

```
1  float myXPosition = 250;
2  float myYPosition = 250;
3
4  void setup() {
5    size(500, 500);
6    background(255);
7  }
8
9  void draw() {
10   // draw an ellipse at the variable x and y position
11   ellipse(myXPosition, myYPosition, 20, 20);
12
13   myXPosition = myXPosition + 3;
14   myYPosition = myYPosition + 3;
15 }
16
17 void mousePressed() {
18   // add 3 to xPosition
19   myXPosition = mouseX;
20
21   // add 3 to yPosition
22   myYPosition = mouseY;
23 }
24
```

Done saving.

Console | Errors

Sketch_12_Variables_3 | Processing 3.0.2

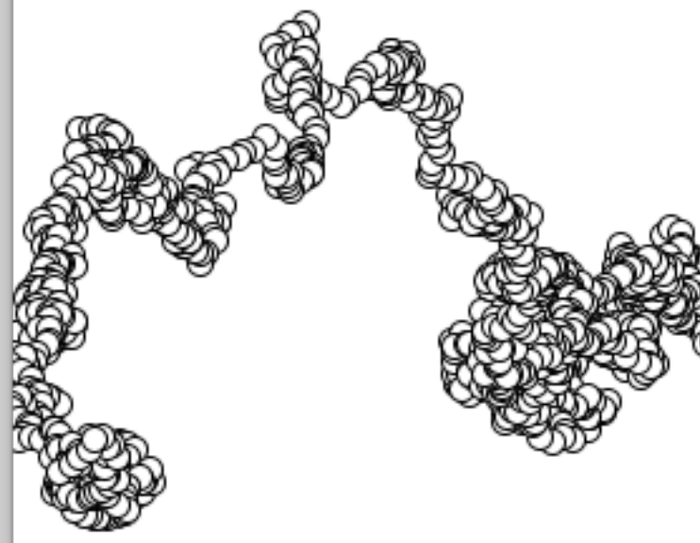
Java ▾

Sketch_12_Variables_3

```
float myXPosition = 250;
float myYPosition = 250;

void setup() {
  size(500, 500);
  background(255);
}

void draw() {
  // draw an ellipse at the variable x and y position
  ellipse(myXPosition, myYPosition, 10, 10);

  // add a random number between -5 and 5 to both variables
  myXPosition = myXPosition + random(-5, 5);
  myYPosition = myYPosition + random(-5, 5);
}
```

Console Errors

Sketch_12_Vari



Sketch_13_Variables_4 | Processing 3.0.2

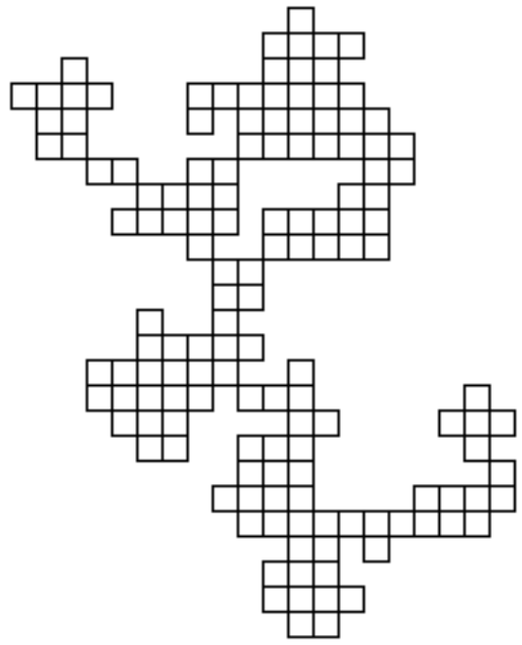
Java

Sketch_13_Variables_4

```
float myXPosition = 250;
float myYPosition = 250;

float rectSize = 10;

void setup() {
  size(500, 500);
  background(255);
}

void draw() {
  // draw a rectangle at the variable positions
  rect(myXPosition, myYPosition, rectSize, rectSize);

  // round the random number to the nearest 10th
  myXPosition = myXPosition + (round(random(-1, 1)) * rectSize);
  myYPosition = myYPosition + (round(random(-1, 1)) * rectSize);
}
```

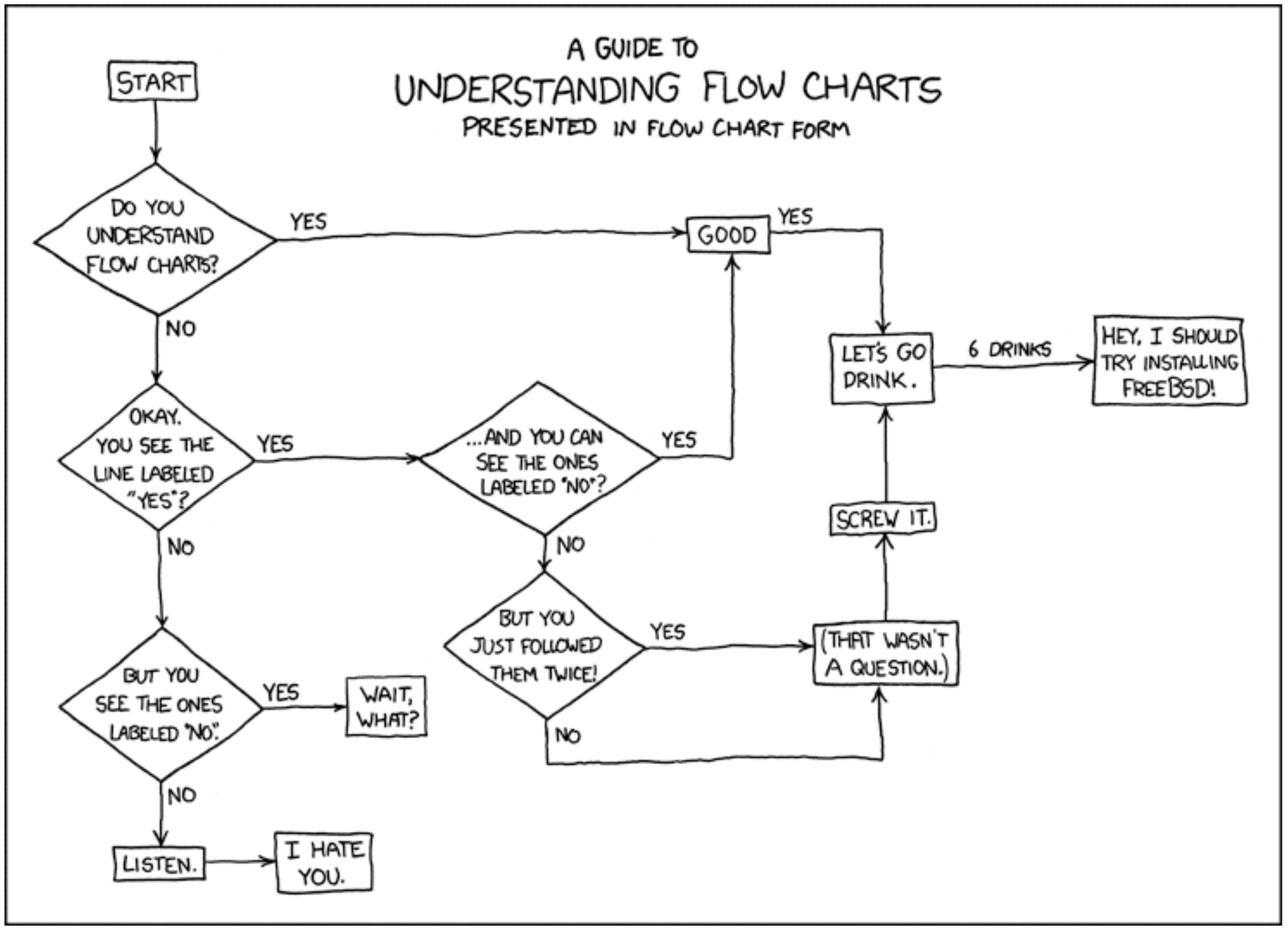
Console Errors

Sketch_13_Variables_



Conditional Statments

```
if

else

else if
```


A GUIDE TO
UNDERSTANDING FLOW CHARTS
PRESENTED IN FLOW CHART FORM
START
DO YOU UNDERSTAND FLOW CHARTS?
YES
NO
GOOD
YES
LET'S GO DRINK.
6 DRINKS
HEY, I SHOULD TRY INSTALLING FREEBSD!
OKAY. YOU SEE THE LINE LABELED "YES"?
YES
NO
...AND YOU CAN SEE THE ONES LABELED "NO"?
YES
NO
SCREW IT.
BUT YOU SEE THE ONES LABELED "NO".
YES
WAIT, WHAT?
NO
BUT YOU JUST FOLLOWED THEM TWICE!
YES
(THAT WASN'T A QUESTION.)
NO
LISTEN.
I HATE YOU.

```
if a person is over 18
    they can vote
else
    they cannot vote
```

```
if (person >= 18) {
    // they can vote
} else {
    // they cannot vote
}
```

Relational Operators

`>`	Greater than
`>=`	Greater than or equal to
`<`	Less than
`<=`	Less than or equal to
`==`	Equal to
`!=`	Not equal to

```
if (this expression is true) {
    // run this code
} else {
    // run this code
}
```

```
int age = 68;

if (age >= 65) {
    println(“Retire!”);
} else {
    println(“Get to work!”);
}
```

```
int age = 68;
```

true

```
if (age >= 65) {
    println(“Retire!”);
} else {
    println(“Get to work!”);
}
```

```
int age = 68;
```

```
if (age >= 65) {
    println(“Retire!”);
} else {
    println(“Get to work!”);
}
```

```
int age = 22;

if (age >= 65) {
    println(“Retire!”);
} else {
    println(“Get to work!”);
}
```

```
int age = 22;
```

false

```
if (age >= 65) {
    println(“Retire!”);
} else {
    println(“Get to work!”);
}
```

```
int age = 22;
```

```
if (age >= 65) {
    println(“Retire!”);
} else {
    println(“Get to work!”);
}
```

Logical Operators

&&	AND
||	OR
!	NOT

```
float temp = 28.6;
boolean sunshine = true;
```

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 28.6;
boolean sunshine = true;
```


```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 28.6;
boolean sunshine = true;
```

true

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 28.6;
boolean sunshine = true;
```

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 && sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 || sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 || sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 || sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

```
float temp = 16.2;
boolean sunshine = true;
```

```
if (temp > 25 || sunshine == true) {
    println(“Go to the beach”);
} else {
    println(“Go to the movies”);
}
```

Sketch_12_Conditionals_1 | Processing 3.0.2

Java

Sketch_12_Conditionals_1

```
float myXPosition = 250;
float myYPosition = 250;

float rectSize = 10;

void setup() {
  size(500, 500);
  background(255);

}

void draw() {
  rect(myXPosition, myYPosition, rectSize, rectSize);

  myXPosition = myXPosition + (round(random(-1, 1)) * rectSize);
  myYPosition = myYPosition + (round(random(-1, 1)) * rectSize);

  if (myXPosition < 0) {
    myXPosition = width;
  }

  if (myXPosition > width) {
    myXPosition = 0;
  }

  if (myYPosition < 0) {
    myYPosition = height;
  }

  if (myYPosition > height) {
    myYPosition = 0;
  }
}

```

Console Errors