

Processing – på vej til Java



Hvad er målet?

Kende til et IDE

Kende (lidt) til grafik

Kende til Processing

Kende til java-maskinen

Java sprogets elementer

Kende til variabler

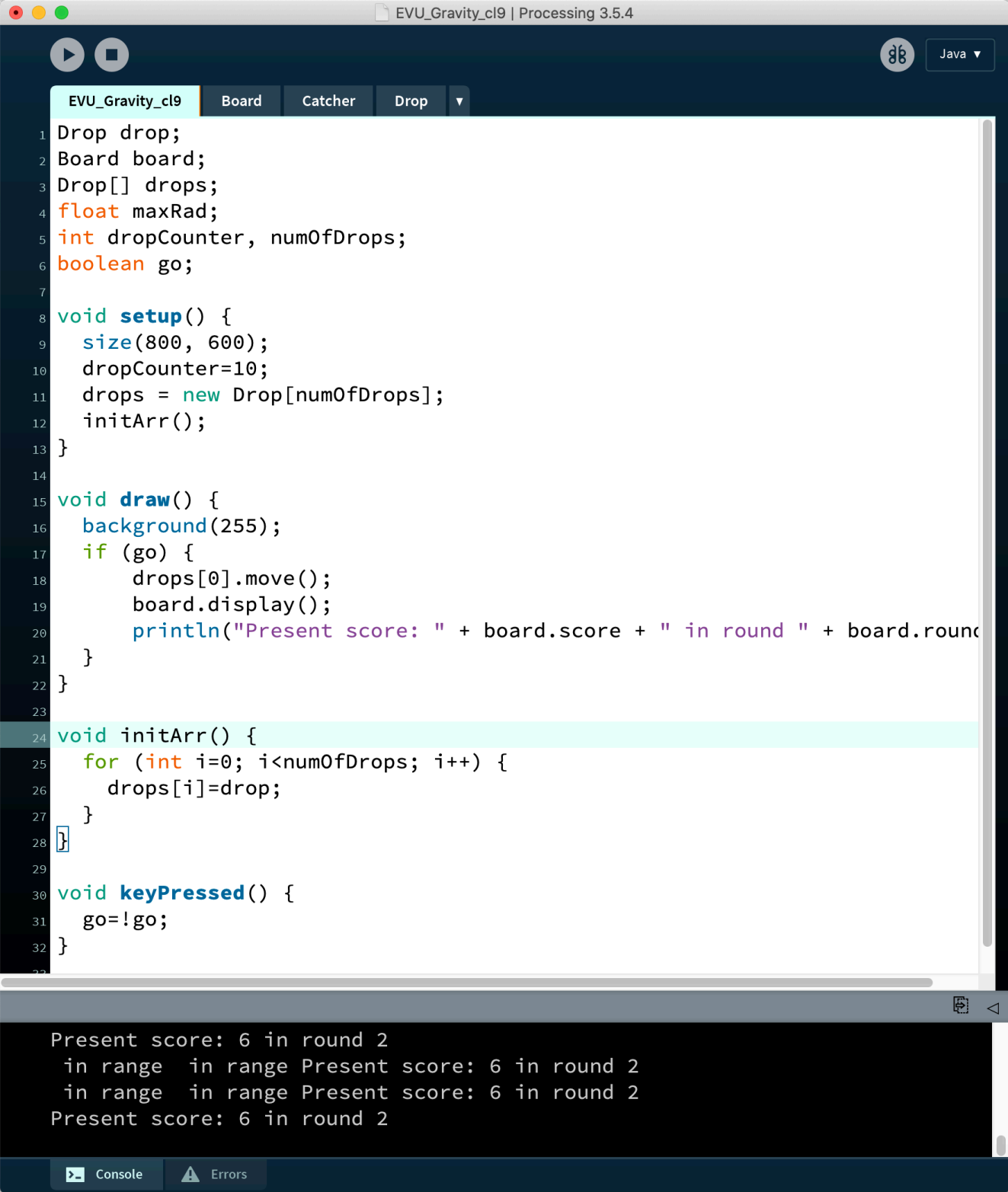
Kende til operatorer

Kende til betingelser

Kende til loops

Kende til metoder

Kende (lidt) til klasser



```
EVU_Gravity_cl9 | Processing 3.5.4
Board Catcher Drop
1 Drop drop;
2 Board board;
3 Drop[] drops;
4 float maxRad;
5 int dropCounter, numOfDrops;
6 boolean go;
7
8 void setup() {
9   size(800, 600);
10  dropCounter=10;
11  drops = new Drop[numOfDrops];
12  initArr();
13 }
14
15 void draw() {
16   background(255);
17   if (go) {
18     drops[0].move();
19     board.display();
20     println("Present score: " + board.score + " in round " + board.round);
21   }
22 }
23
24 void initArr() {
25   for (int i=0; i<numOfDrops; i++) {
26     drops[i]=drop;
27   }
28 }
29
30 void keyPressed() {
31   go=!go;
32 }
33
Present score: 6 in round 2
in range in range Present score: 6 in round 2
in range in range Present score: 6 in round 2
Present score: 6 in round 2
Console Errors
```

Hvad er planen?

- 🔖 Acknowledgments
- > 🔖 Introduction
- ✓ 🔖 Lesson 1:
The Beginning
 - > 🔖 Chapter 1: Pixels
 - > 🔖 Chapter 2: Processing
 - > 🔖 Chapter 3:
Interaction
 - 🔖 Lesson One Project
- ✓ 🔖 Lesson 2: Everything
You Need to Know
 - > 🔖 Chapter 4: Variables
 - > 🔖 Chapter 5:
Conditionals
 - > 🔖 Chapter 6: Loops
 - 🔖 Lesson Two Project
- ✓ 🔖 Lesson 3: Organization
 - > 🔖 Chapter 7: Functions
 - > 🔖 Chapter 8: Objects
 - 🔖 Lesson Three Project
- ✓ 🔖 Lesson 4: More of
the Same
 - > 🔖 Chapter 9: Arrays
 - 🔖 Lesson Four Project
- ✓ 🔖 Lesson 5: Putting It
All Together
 - > 🔖 Chapter 10:
Algorithms

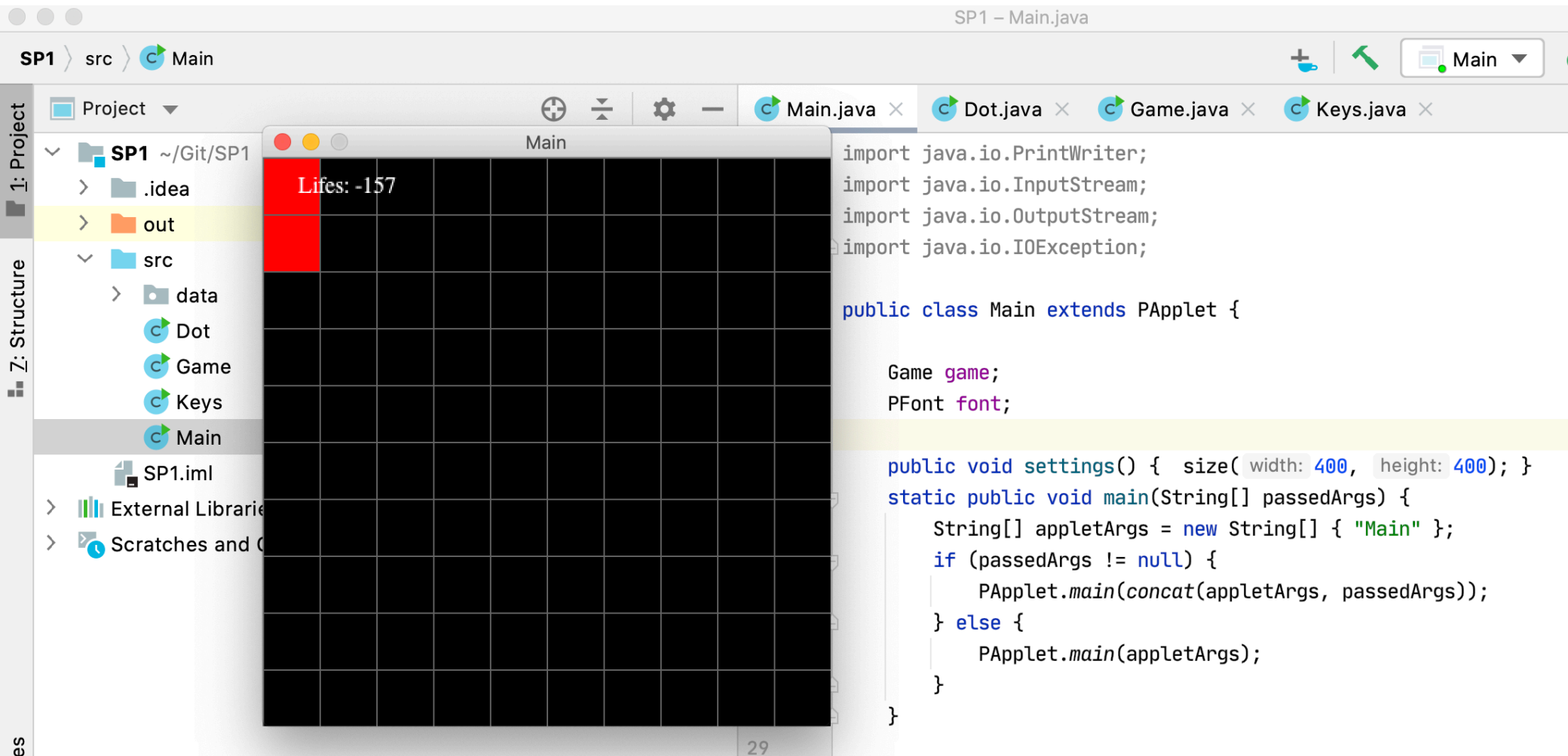
• Onsdag 13/1

• Onsdag 27/1

• Onsdag 10/2

• Onsdag 24/2

Processing – Er det Java?



Dagens tidsplan

| 1.Slot: Start | 2.Slot: Præsentation & inst | 3.Slot: op- samling | 4.Slot: Kap 1 | 5.slot: Øvelse | 6.slot: Kap 2 | 7.slot: øvelser | 8.slot: Afrunding |
|------------------|--------------------------------|---------------------------|------------------|-------------------|------------------|--------------------|----------------------|
| 9:00 - 9:15 | 9:15 - 9:45 | 9:45 | 10:00- 10:20 | 10:20 - 10:30 | 10:40 - 11:00 | 11:15- 12.00 | 12.00-12.30 |

| 1.Slot: | 2.Slot: Kap 2 | 3.Slot: øvelse | 4.Slot: Kap 2 | 5.slot: Øvelse | 6.slot: Kap 3 | 7.slot: øvelser | 8.slot: Afrunding Og lektier |
|------------------|------------------|-------------------|------------------|-------------------|------------------|--------------------|------------------------------------|
| 13:00 - 13:15 | 13:15 - 13:30 | 13:30 - 13:50 | 14:00- 14:20 | 14:20 - 14:30 | 14:30 - 15:00 | 15:15- 16.00 | 16.15 |

Dagens mål

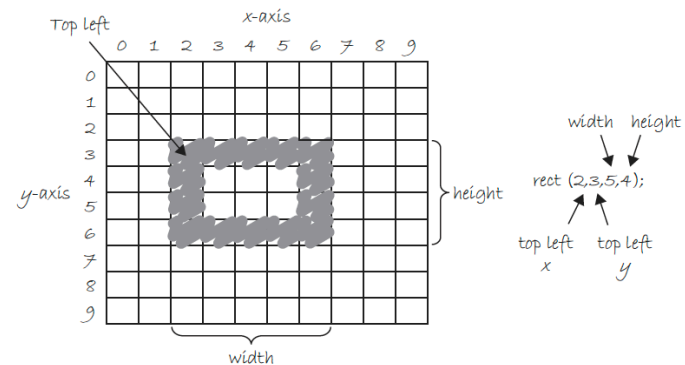
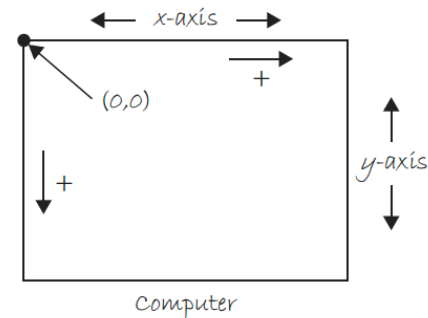


```
EVU2021First | Processing 3.5.4

1 int x=0;
2 boolean go;
3 void setup() {
4   size(400,400);
5   go=false;
6 }
7
8
9 void draw() {
10  if (go) {
11    fill(x,x/12,x/30);
12    background(255);
13    x = x + 1;
14    rect(x,100,40,40);
15  }
16 }
17
18 void mousePressed() {
19   go=true;
20 }
21 }
22
```

Processing – Analog intro

- Koordinatsystemet
 - "ned ad" = y vokser
 - "hen ad" = x vokser
- "draw line from 3.4 to 6.4"
- Basic shapes (with stroke&fill)
 - `rect(5,5,4,4)`
 - `circle(5,5,3)`
 - `point(5,5)`
- Colors
 - Gray (0-255)
 - Color (RGB,HSB) & alpha
- Øvelser
 - 1-4
 - 1-7

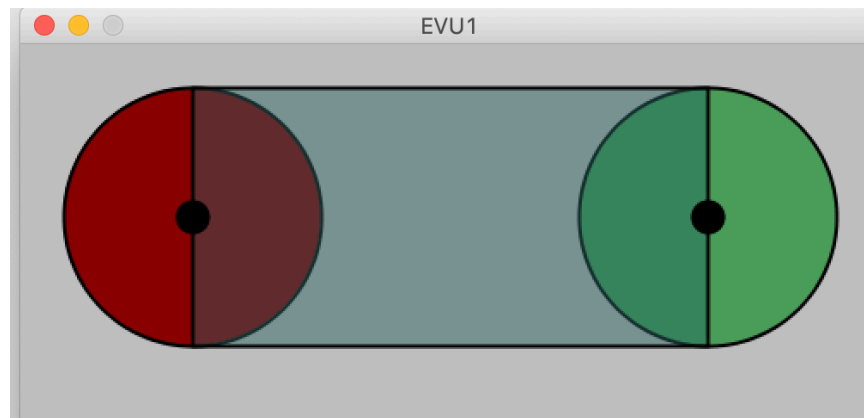
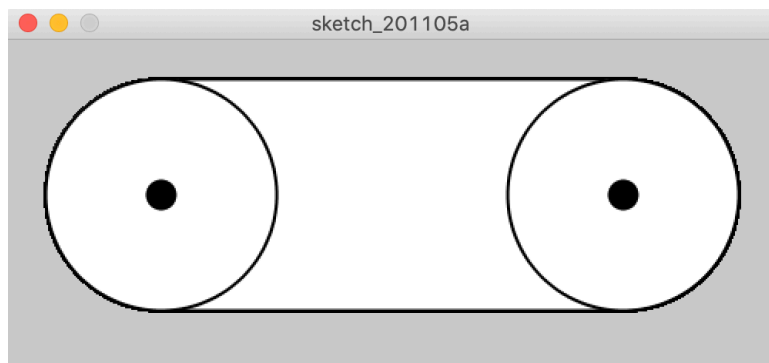
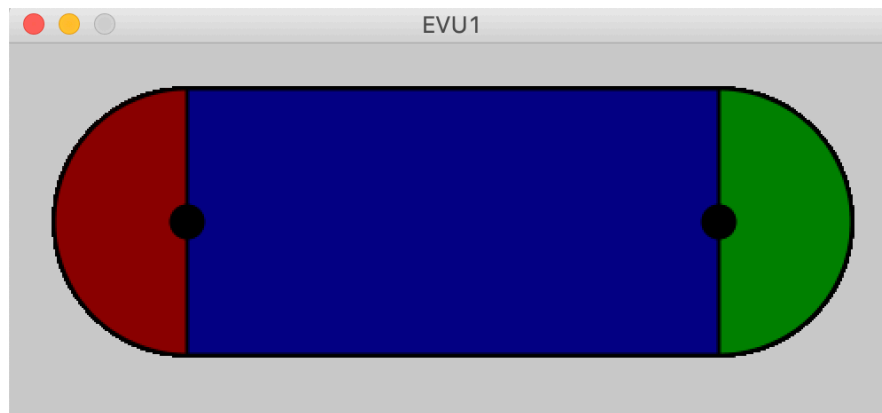
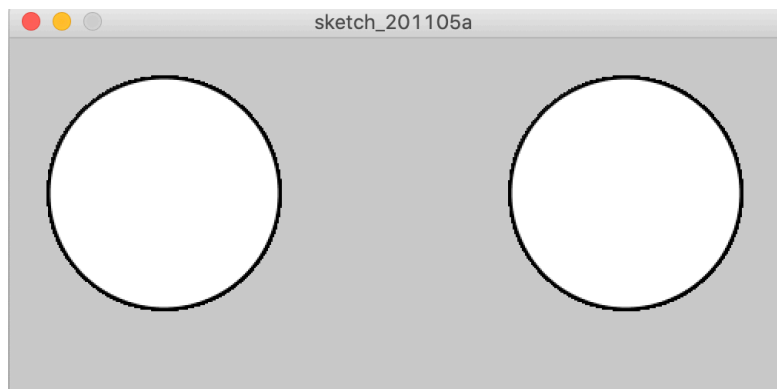


Processing – digital intro (kap 2)

- Getting started ..
 - Installation
 - First example
 - First sketch
 - "is it java?"
 - Export ...
 - Preferences
 - Reference
- Koordinatsystemet, Shapes & Colors in action
 - Functions ...
 - size()
 - println()
 - Comments
- Øvelse 2-4

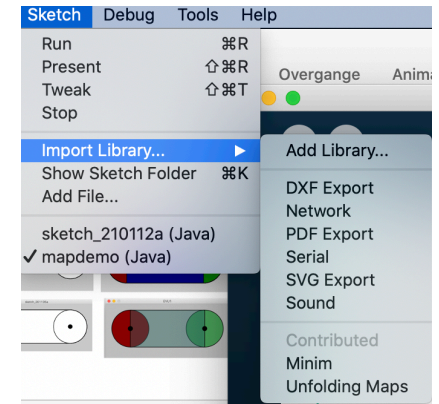
Processing – digital intro (kap 2)

- Prøv at skabe følgende figurer



Præsentation – Google maps ...

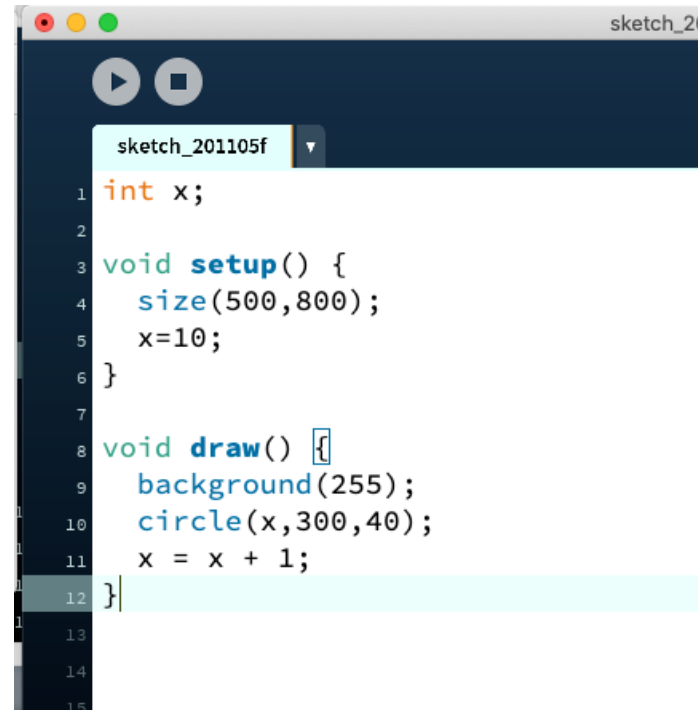
- Hent Unfolding_for_processing_0.9.6.zip fra <https://github.com/cphwulf/EVU-uge3>
- Pak ud og placér det ”rigtige” sted
 - ./Processing/libraries/Unfolding/
- Start en ny sketch og copy/paste mapdemo.pde
- Find koordinaterne på et sted som du vil præsenterer dig selv ud fra ...
- Find flg linje og indsæt dine koordinater
 - `Location loneLoc = new Location(55.39594, 10.38831);`



Processing –Interaction (kap 3)

- The Flow

- Setup()
 - Draw()
- Draw()
 - Internal loop
 - (framecounter)
- Block of code {}
- Variation: Mouse
 - mouseX,mouseY
 - Ex 3-2 (background)
 - pmouseX,pmouseY
 - Ex 3-4



```
sketch_201105f
1 int x;
2
3 void setup() {
4   size(500,800);
5   x=10;
6 }
7
8 void draw() {
9   background(255);
10  circle(x,300,40);
11  x = x + 1;
12 }
```

Processing –Interaction øvelser

- 3-4 Zoog
- 3-7 Update

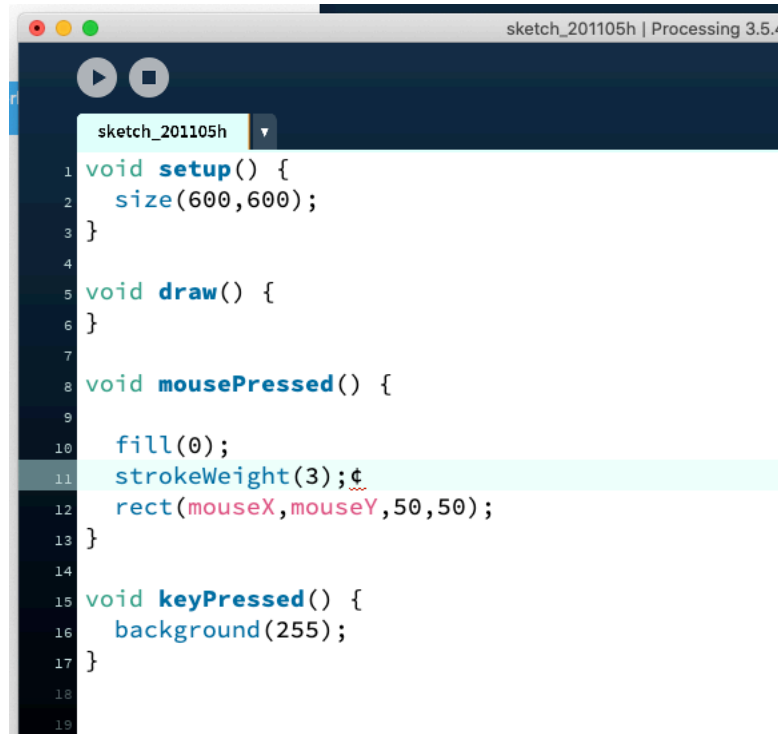
Mere mus ..

- Interaction

- mousePressed()
- mouseReleased()
- keyPressed()

- Øvelser

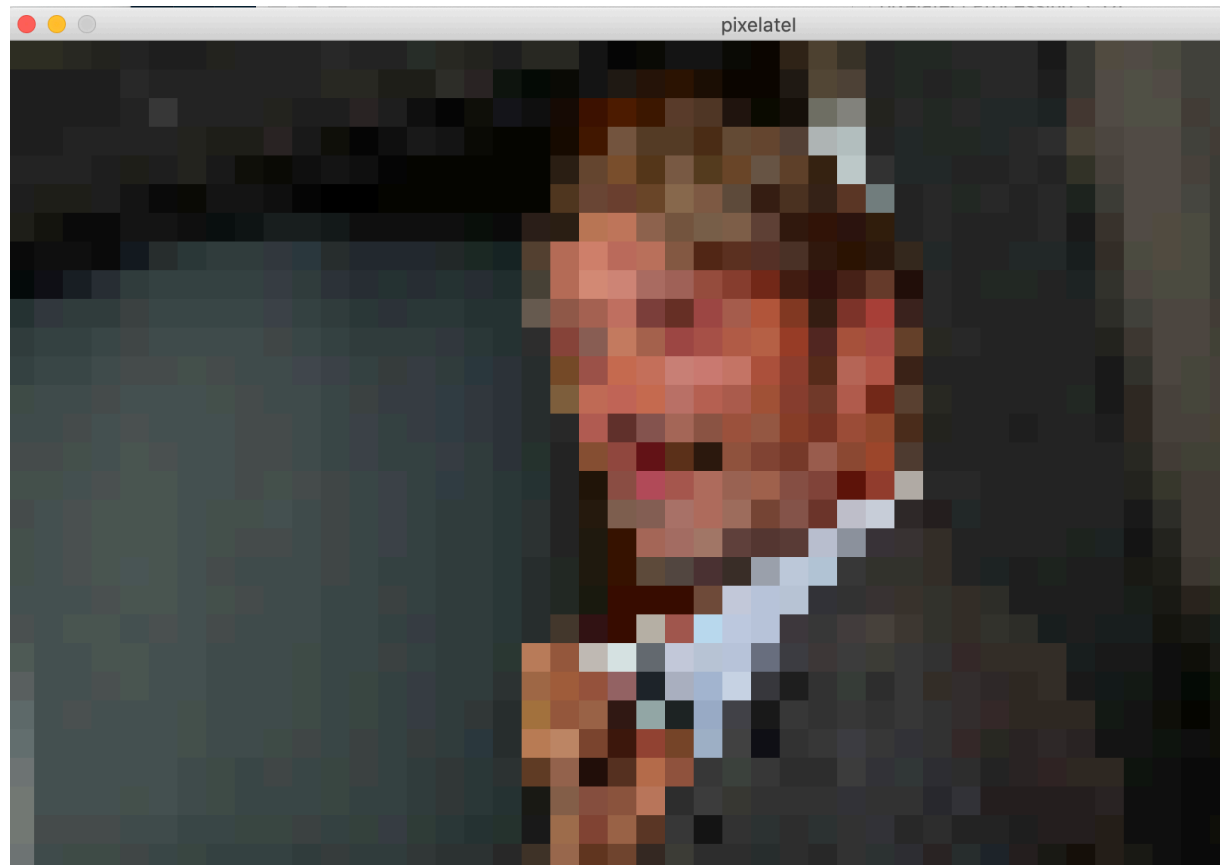
- Få baggrunden til at skifte
- Tegn en figur
- Sæt baggrund til muspos



```
sketch_201105h | Processing 3.5.4

1 void setup() {
2   size(600,600);
3 }
4
5 void draw() {
6 }
7
8 void mousePressed() {
9
10  fill(0);
11  strokeWeight(3);
12  rect(mouseX,mouseY,50,50);
13 }
14
15 void keyPressed() {
16   background(255);
17 }
18
19
```

Pixel Quiz



7. Øvelse – Lav jeres egen pixel-quiz

- Find billeder indenfor et tema
- Læg dem i data-mappen
- Brug frameRate eller Counter til at udregne point

```
58  
59 void draw() {  
60     println("C " + factor);  
61     println("FrameRate: " + frameRate);  
    ..  
    ..  
    ..  
}
```

Variables – Declare, initialize & use

- Built in processing

- boolean
- int
- float
- char
- String

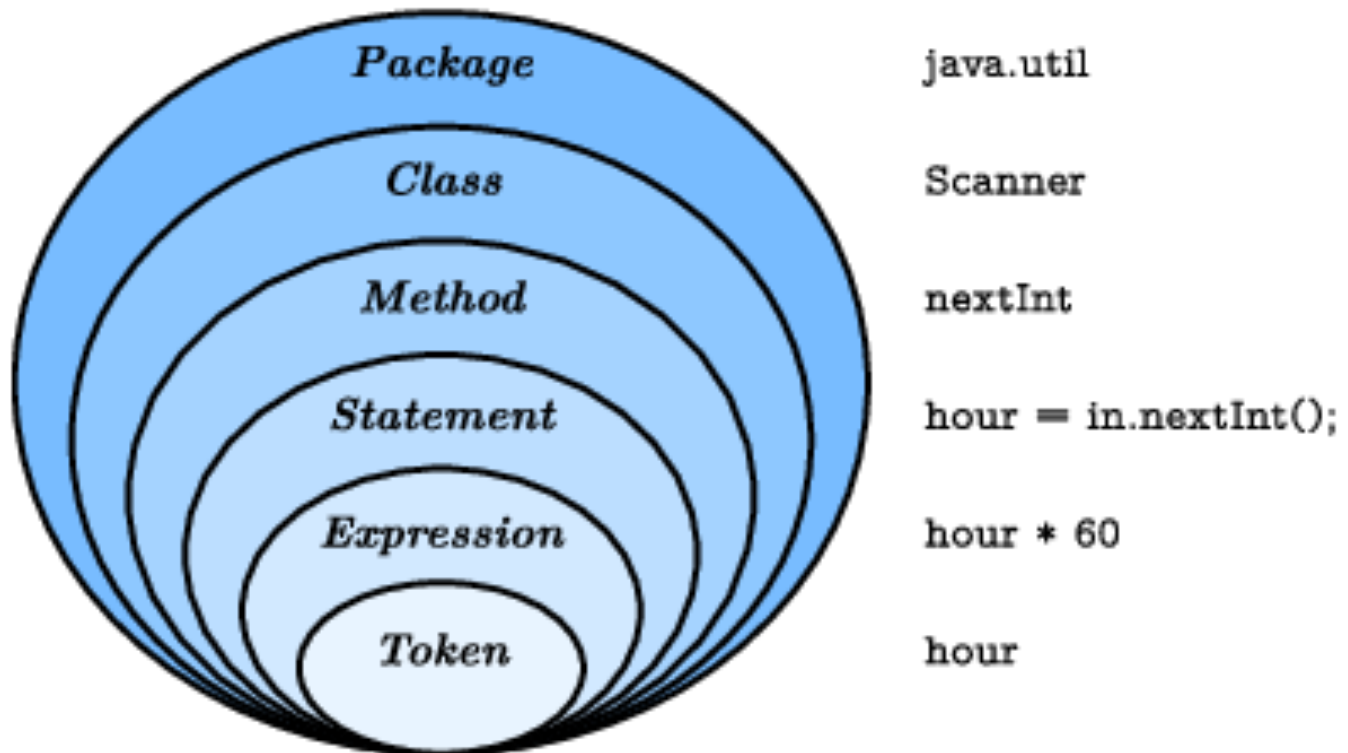
- System Variables

- width —Width (in pixels) of sketch window.
- height —Height (in pixels) of sketch window.
- frameCount —Number of frames processed.
- frameRate —Rate that frames are processed (per second).
- key —Most recent key pressed on the keyboard.
- keyPressed —True or false? Is a key pressed?
- mousePressed —True or false? Is the mouse pressed?



```
sketch_201105f
1 int x;
2
3 void setup() {
4   size(500,800);
5   x=10;
6 }
7
8 void draw() {
9   background(255);
10  circle(x,300,40);
11  x = x + 1;
12 }
```


Elements of the language

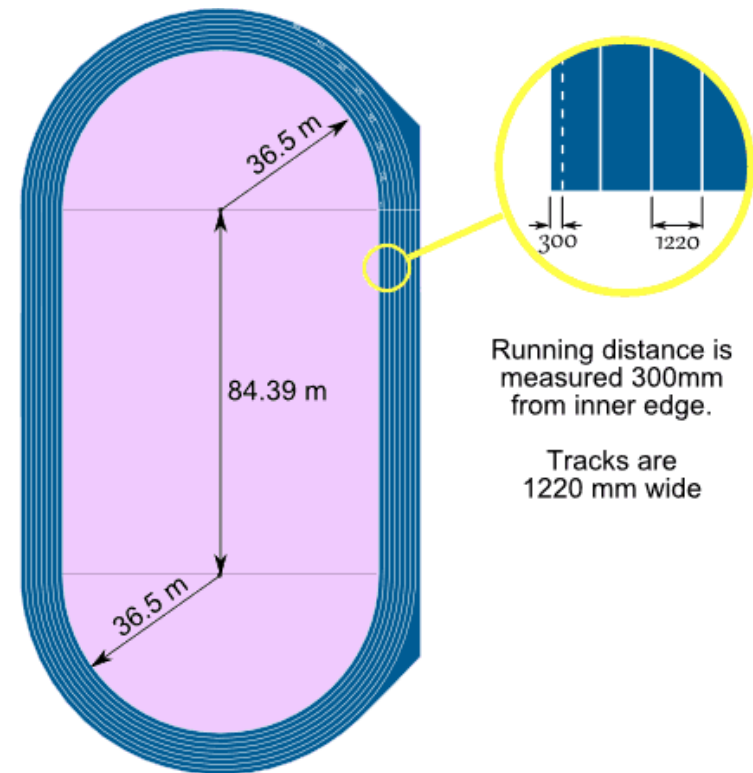


Operators og bogen s. 77

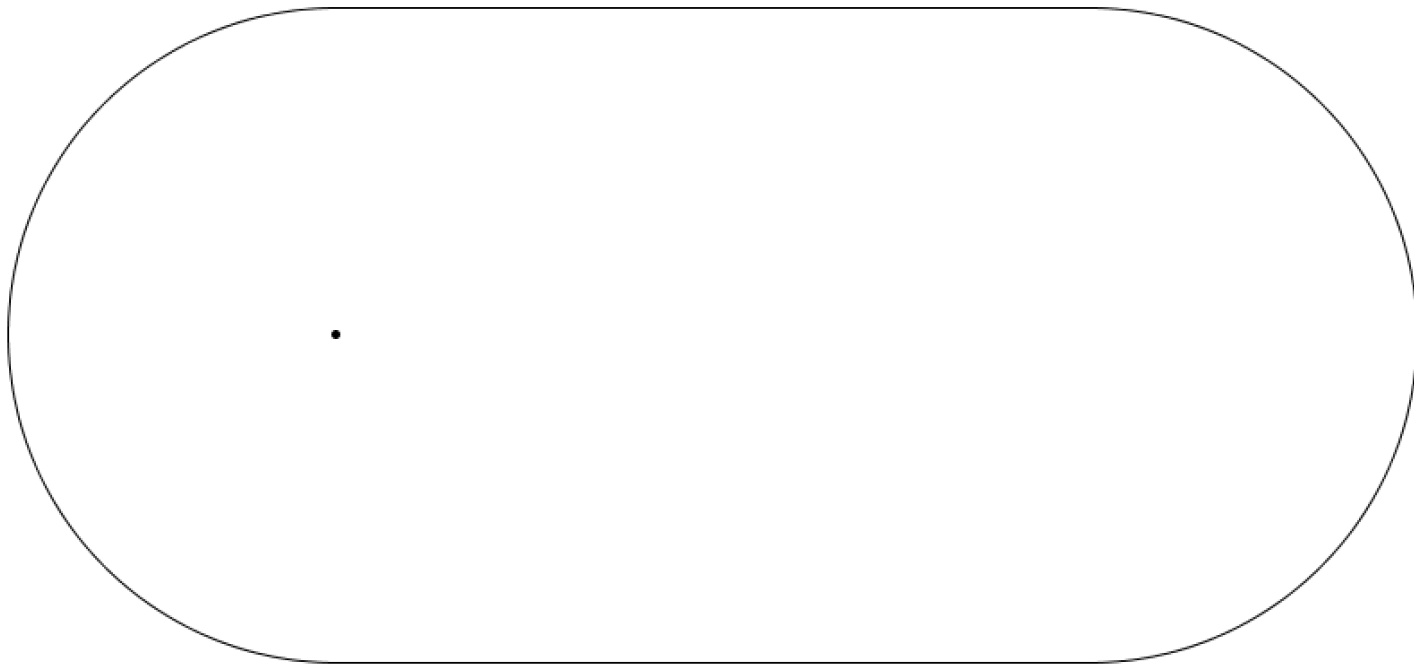
| Level | Operators | Description | Associativity |
|-------|---|--|---------------|
| 15 | () [] . | Function Call Array Subscript Member Selection | Left to Right |
| 14 | ++ -- | Postfix Increment / Decrement | Right to Left |
| 13 | ++ -- + - ! ~ (type) | Prefix Increment / Decrement Unary plus / minus Logical negation / bitwise complement Casting | Right to Left |
| 12 | * / % | Multiplication Division Modulo | Left to Right |
| 11 | + - | Addition / Subtraction | Left to Right |
| 10 | << >> >>> | Bitwise Left Shift Bitwise Right Shift with sign extension Bitwise Right Shift with zero extension | Left to Right |
| 9 | < <= > >= instance of | Relational Less Than / Less than Equal To Relational Greater / Greater than Equal To Type Comparison for objects | Left to Right |
| 8 | == != | Equality Inequality | Left to Right |
| 7 | & | Bitwise AND | Left to Right |
| 6 | ^ | Bitwise XOR | Left to Right |
| 5 | | Bitwise OR | Left to Right |
| 4 | && | Logical AND | Left to Right |
| 3 | | Logical OR | Left to Right |
| 2 | ?: | Conditional Operator | Right to Left |
| 1 | = += -= *= /= %= &= ^= = <<= >>= | Assignment Operators | Right to Left |

Øvelse - Atletikbanen

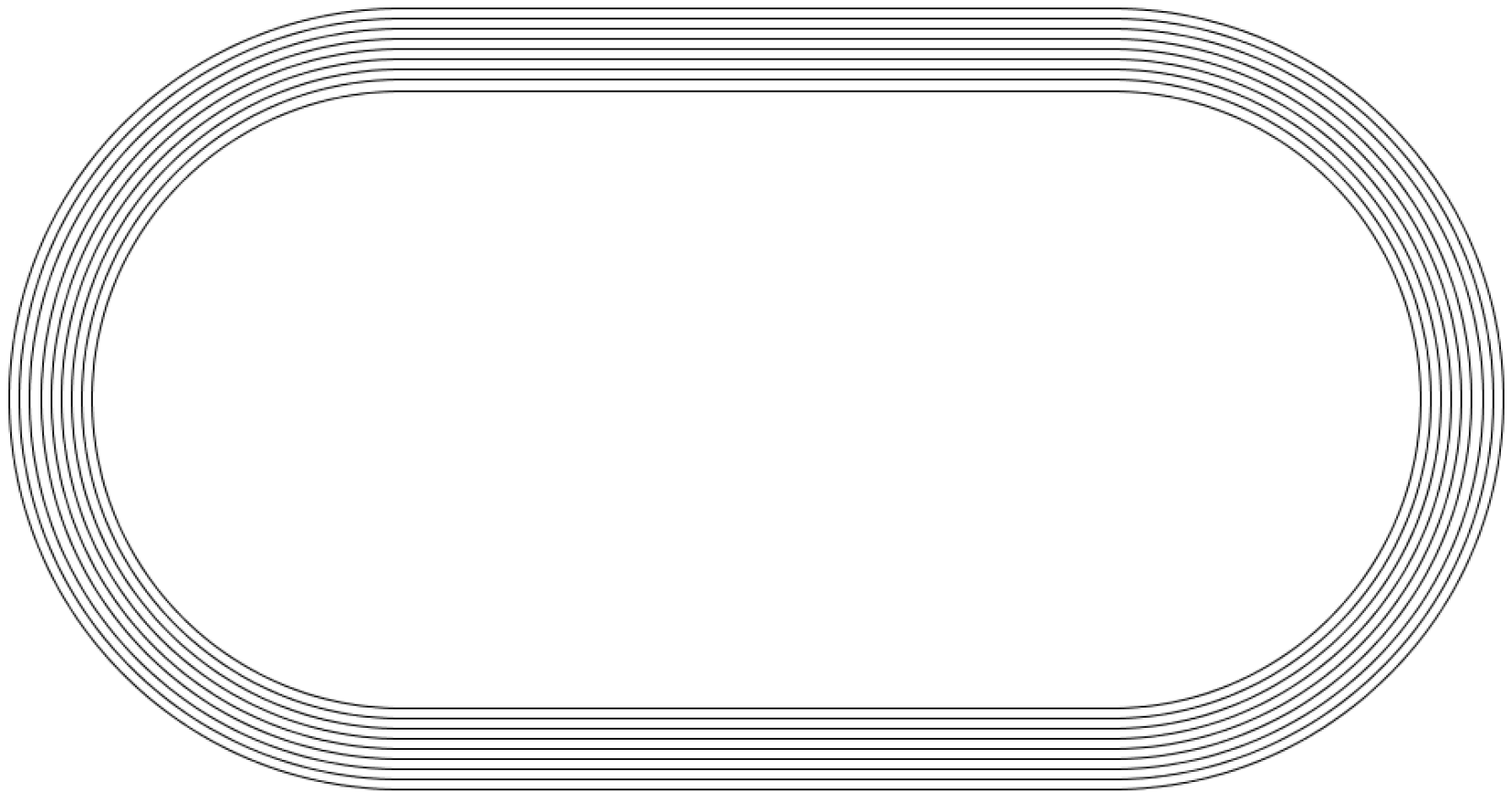
- Konstruér en 400 m atletikbane med 8 løbebaner. Buen laves vha arc-shapen
- Ekstra: Tilføj forskudt start



Øvelse – Atletikbanen – step 1



Øvelse – Atletikbanen – step 2



Øvelse – Atletikbanen – step 3

