

# Processing – på vej til Java



# 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

# Dagens mål ....

- Brug
  - Variabler
  - Betingelser
  - Loops
  - Arrays
  - Funktioner
  - Arrays
  - Objekter
  - Strings
- Krav-spec forbedringer
- Finde dit "skateboard"

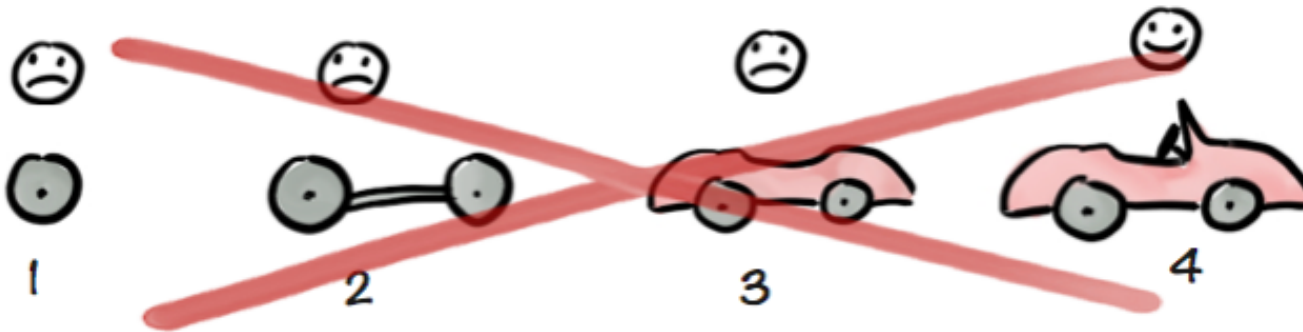
# Dagens tidsplan

1.Slot: Start	2.Slot: Recap	3.Slot:	4.Slot:	5.slot:	6.slot:	7.slot:	8.slot: Afrunding
9:00 - 9:15	9:15 - 9:30	9:45	10:00- 10:20	10:20 - 10:30	10:40 - 11:00	11:15- 12.00	12.00-12.30

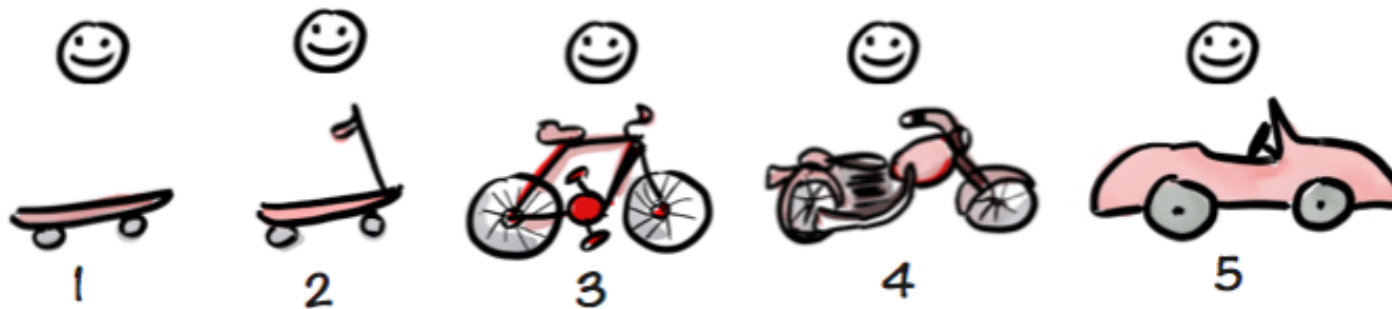
1.Slot:	2.Slot:	3.Slot:	4.Slot:	5.slot:	6.slot:
13:00 - 13:15	13:15 - 13:30	13:30 - 13:50	14:00- 14:20	14:20 - 14:30	14:30 - 15:00

# Processing – Et skateboard ..

Not like this....



Like this!



# Processing – Hvor vi slap sidst ..

- Datatyper (variabler)

- primitives
  - Boolean, int, float
- Non-primitive
  - Arrays

- Kontrol

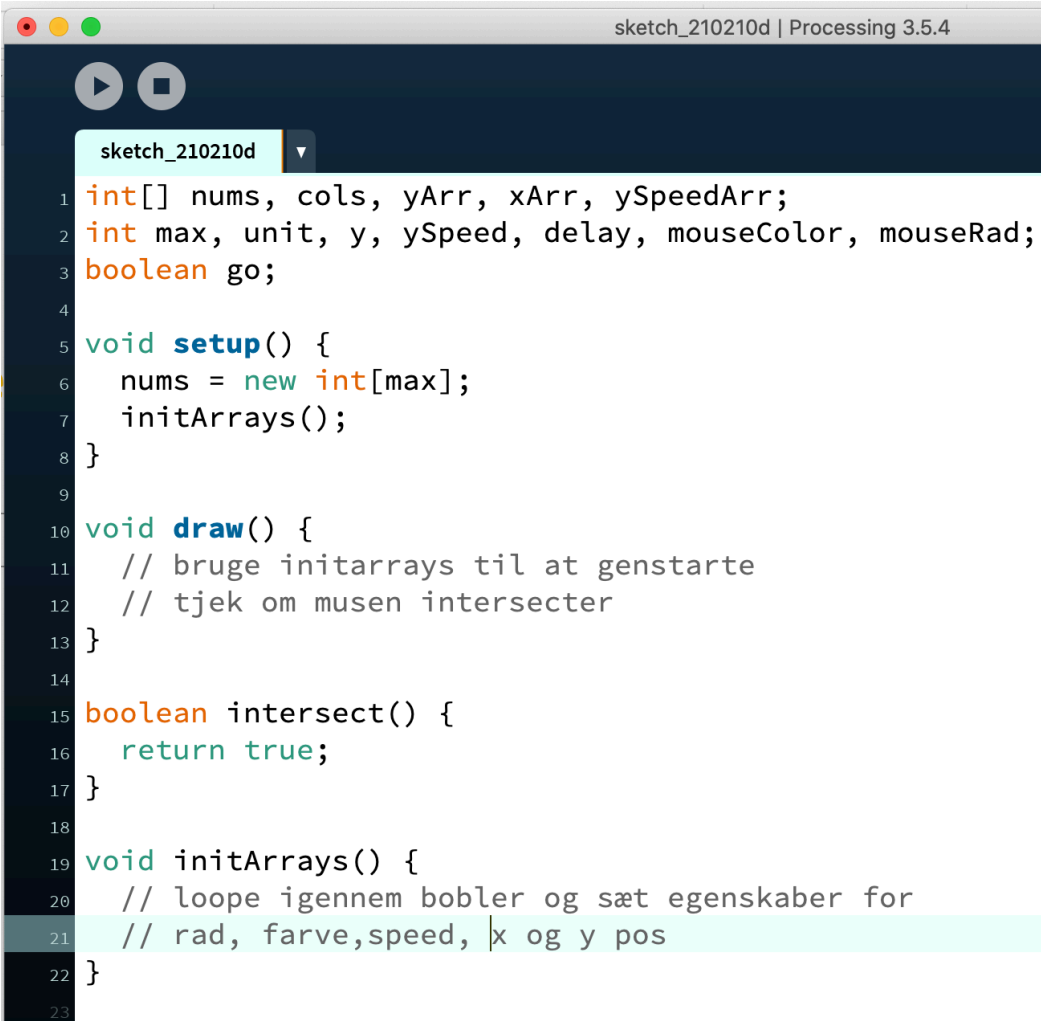
- Conditionals
  - If, else-if og else
  - relational
- Iterationer
  - For

- Struktur

- Metoder

- Processing-stuff

- Grafik, interaction, "system-var", "system-metoder"

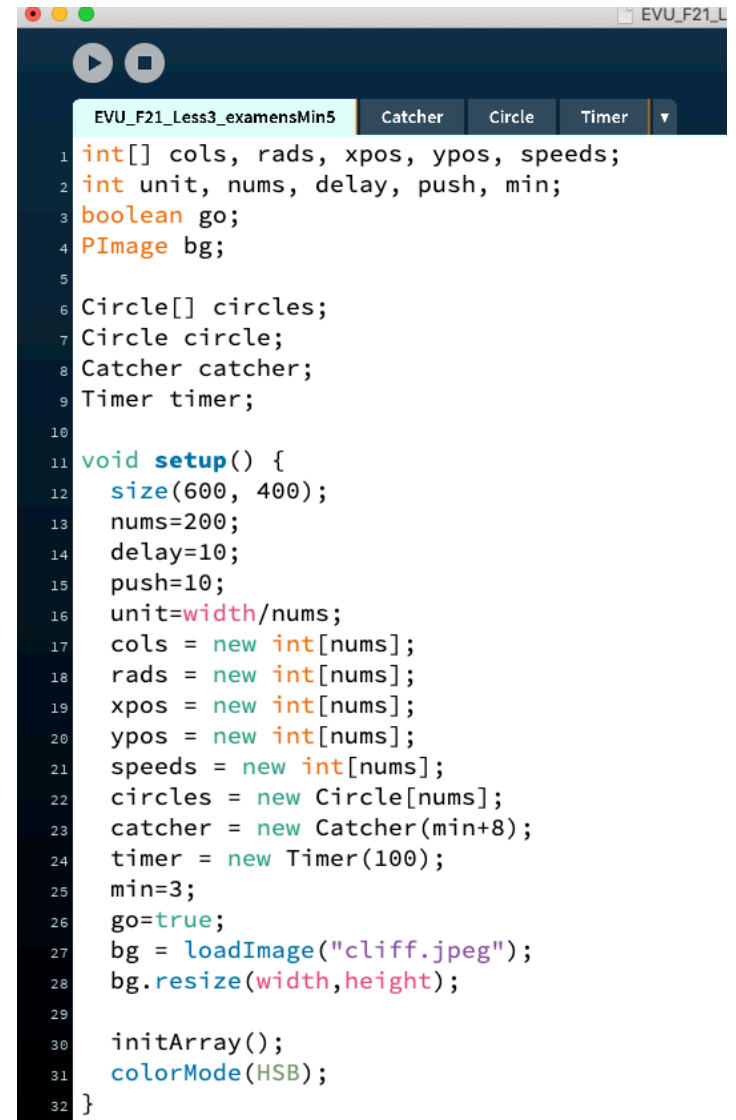


```
sketch_210210d | Processing 3.5.4

1 int[] nums, cols, yArr, xArr, ySpeedArr;
2 int max, unit, y, ySpeed, delay, mouseColor, mouseRad;
3 boolean go;
4
5 void setup() {
6     nums = new int[max];
7     initArrays();
8 }
9
10 void draw() {
11     // bruge initarrays til at genstarte
12     // tjek om musen interseker
13 }
14
15 boolean intersect() {
16     return true;
17 }
18
19 void initArrays() {
20     // loope igennem bobler og sæt egenskaber for
21     // rad, farve, speed, x og y pos
22 }
23
```

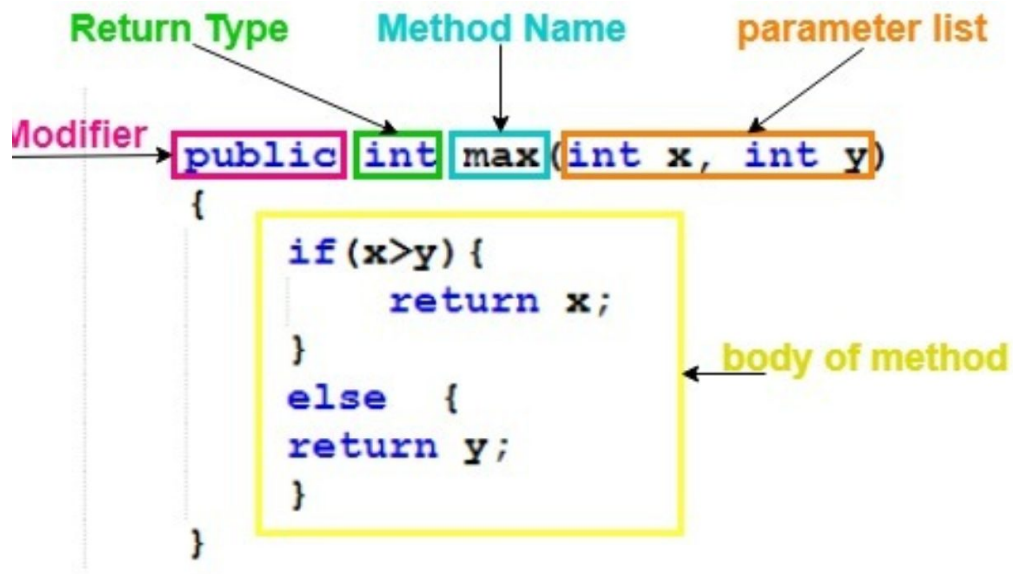
# Processing – Fremad ..

- Datatyper (variabler)
  - primitives
  - Non-primitive
    - Arrays, **Objects**, **Strings**
- Kontrol
  - Conditionals
  - Iterationer
- Struktur
  - Metoder, **Objects**
- Processing-stuff /Java-stuff
  - **Millis()**



```
EVU_F21_Less3_examensMin5  Catcher  Circle  Timer
1 int[] cols, rads, xpos, ypos, speeds;
2 int unit, nums, delay, push, min;
3 boolean go;
4 PImage bg;
5
6 Circle[] circles;
7 Circle circle;
8 Catcher catcher;
9 Timer timer;
10
11 void setup() {
12   size(600, 400);
13   nums=200;
14   delay=10;
15   push=10;
16   unit=width/nums;
17   cols = new int[nums];
18   rads = new int[nums];
19   xpos = new int[nums];
20   ypos = new int[nums];
21   speeds = new int[nums];
22   circles = new Circle[nums];
23   catcher = new Catcher(min+8);
24   timer = new Timer(100);
25   min=3;
26   go=true;
27   bg = loadImage("cliff.jpeg");
28   bg.resize(width,height);
29
30   initArray();
31   colorMode(HSB);
32 }
```

# Kap 7 - Metoder



A screenshot of a code editor window titled "sketch\_201105f" showing the following Java code:

```
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 }  
13  
14  
15
```

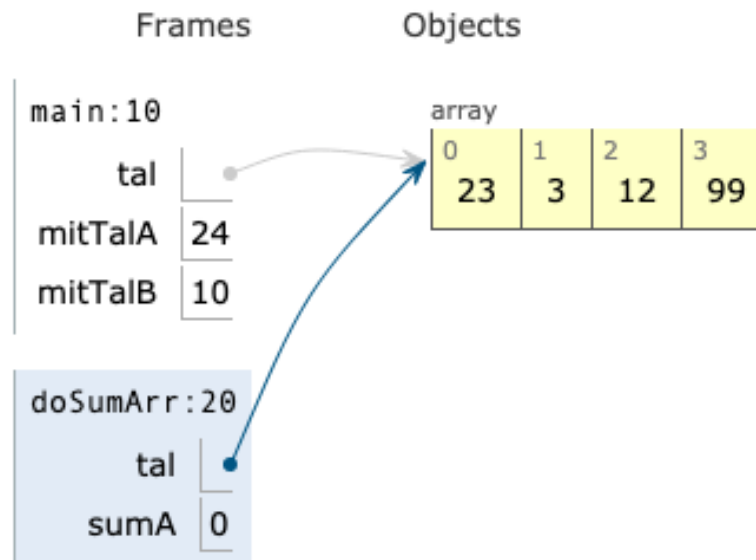


# Kap 9 – Arrays - referencer

- [pythontutor.com/java.html](http://pythontutor.com/java.html)

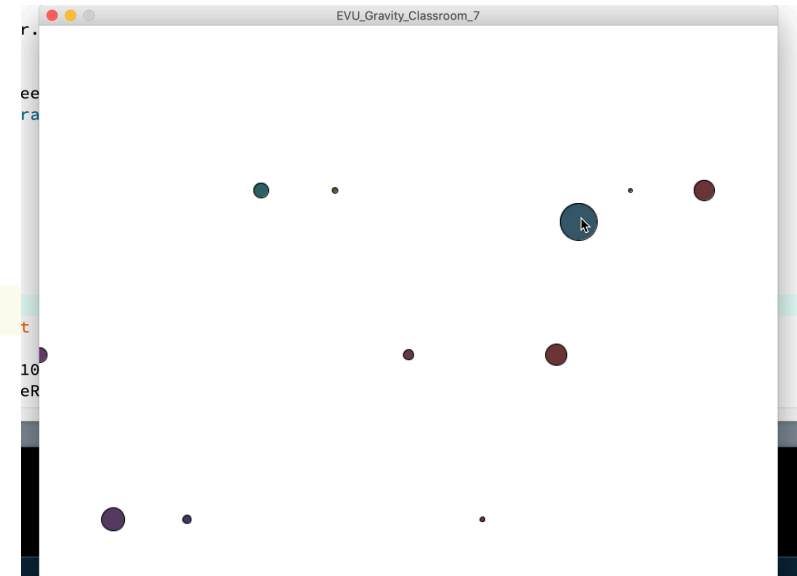
Print output (drag lower right corner to resize)

```
23
3
12
99
```



# Et mindre simpelt program II

```
public class EVU_Gravity_Classroom_7 extends PApplet {  
    int[] nums, cols, yArr, xArr, ySpeedArr;  
    int max, unit, y, ySpeed, delay, mouseColor, mouseRad;  
  
    public void setup() {...}  
  
    public void draw() {...}  
  
    public boolean intersect(float x, float y, float m, float n, float rad) {...}  
  
    public void initArrays() {...}  
  
    public void drawMouse(float x, float y) {...}  
    public void settings() { size( width: 800, height: 600); }
```



# Et mindre simpelt program IV

For mange arrays ...

```
public class EVU_Gravity_Classroom_7 extends PApplet {

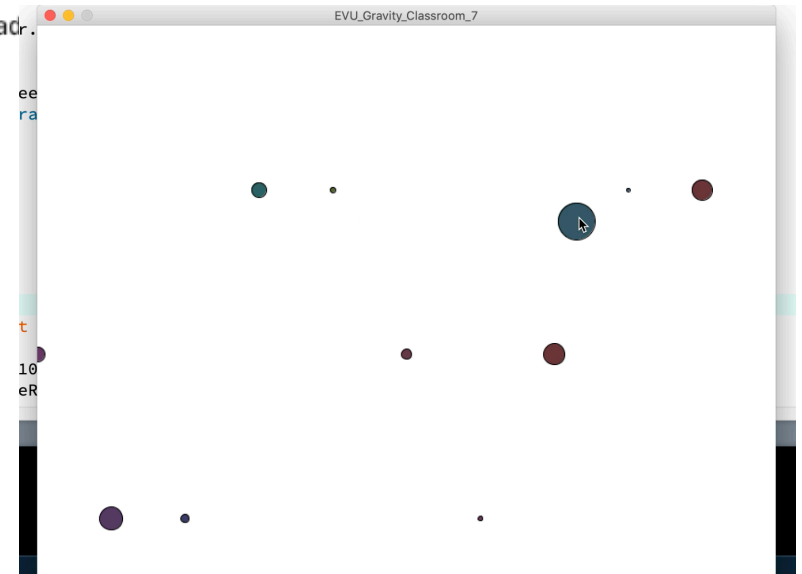
    int[] nums, cols, yArr, xArr, ySpeedArr;
    int max, unit, y, ySpeed, delay, mouseColor, mouseRad;

    public void setup() {...}

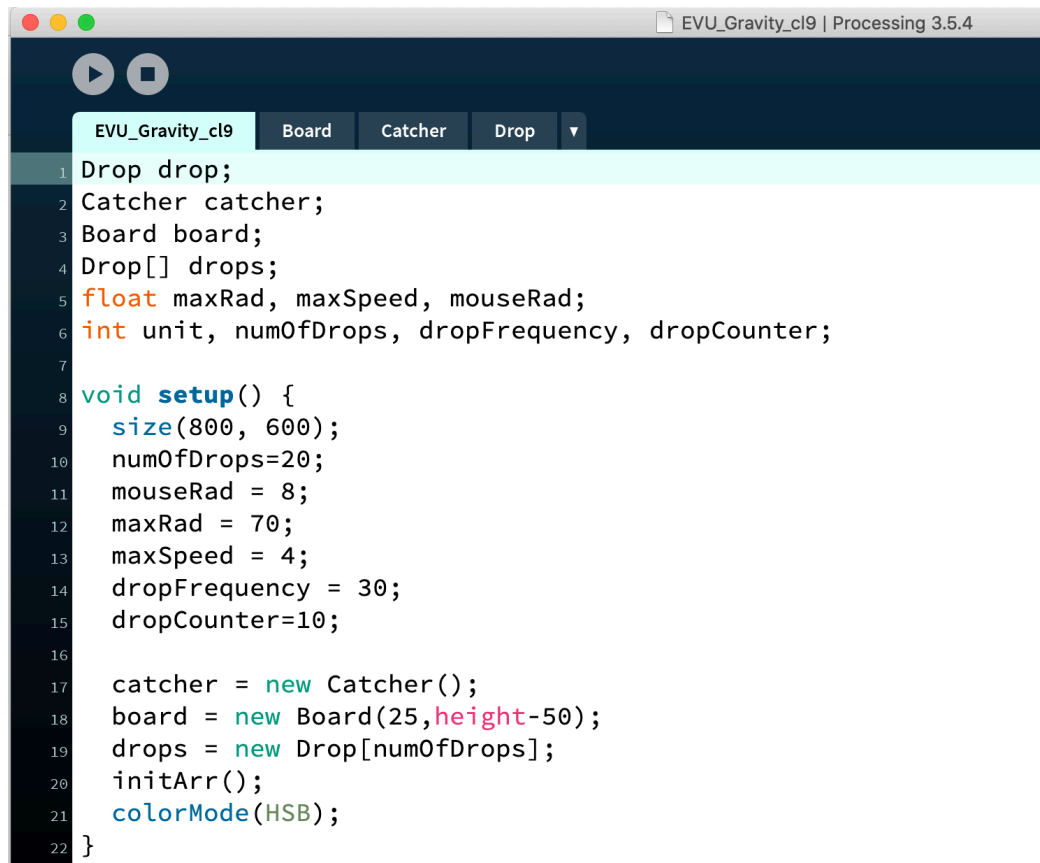
    public void draw() {...}

    public boolean intersect(float x, float y, float m, float n, float rad) {

    public void initArrays() {
        for (int i=0; i<nums.length; i++) {
            nums[i]=PApplet.parseInt(random( low: 1, high: 30));
        }
        for (int i=0; i<cols.length; i++) {
            cols[i]=PApplet.parseInt(random( low: 1, high: 360));
        }
        for (int i=0; i<yArr.length; i++) {
            yArr[i]=0;
        }
        for (int i=0; i<xArr.length; i++) {
            xArr[i]=(i*unit);
        }
        for (int i=0; i<ySpeedArr.length; i++) {
            ySpeedArr[i]=PApplet.parseInt(random( low: 1, high: 4));
        }
    }
}
```

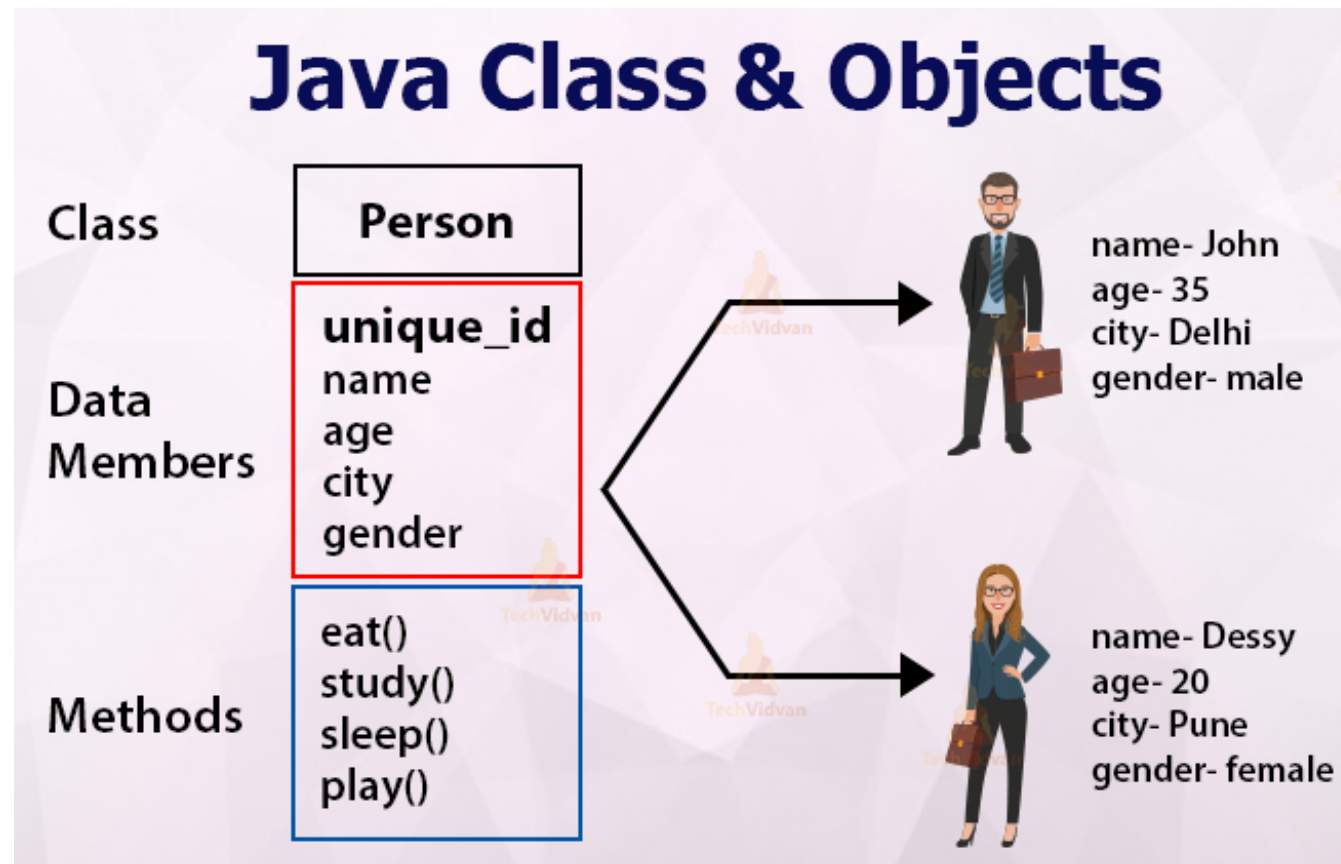


# Et nyt design - OO



```
EVU_Gravity.cl9 | Processing 3.5.4
Board Catcher Drop
1 Drop drop;
2 Catcher catcher;
3 Board board;
4 Drop[] drops;
5 float maxRad, maxSpeed, mouseRad;
6 int unit, numOfDrops, dropFrequency, dropCounter;
7
8 void setup() {
9     size(800, 600);
10    numOfDrops=20;
11    mouseRad = 8;
12    maxRad = 70;
13    maxSpeed = 4;
14    dropFrequency = 30;
15    dropCounter=10;
16
17    catcher = new Catcher();
18    board = new Board(25,height-50);
19    drops = new Drop[numOfDrops];
20    initArr();
21    colorMode(HSB);
22 }
```

# Java OO



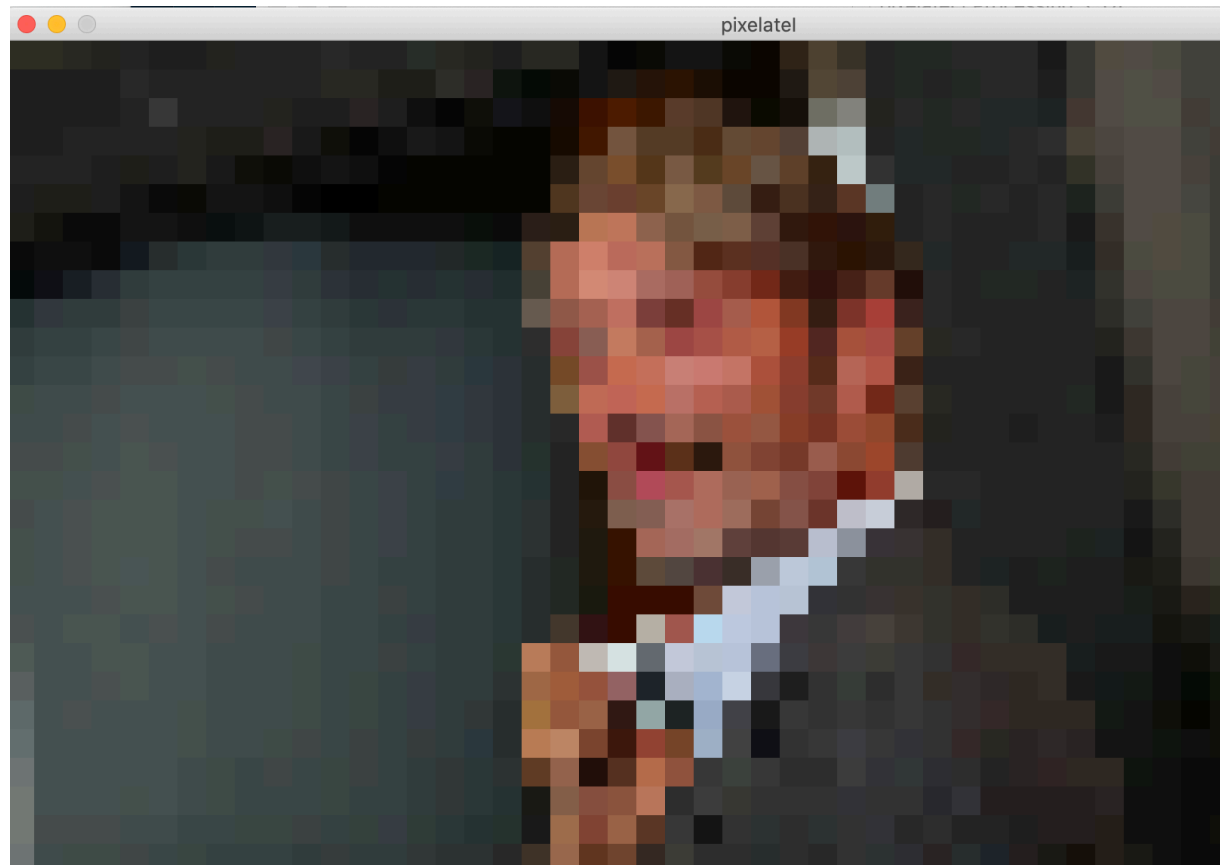
# Processing OOP-øvelser

- Et par bouncing circles
- Masser af firkanter
  - Start med arrays
  - Lav til objekter
- Masser af biler
  - I en garage
- Processing og Streng

# Eksamen - Disposition

- Indledning
  - Præsentation af opgaven og Processing
- Teoretiske nedslag
  - Variabler – scopes
    - Strings -> udfordring
  - Metoder – forskellige signaturer (referencer vs primitive)
  - Data-strukturer
    - Arrays af primitiver -> udfordring (mange data)
    - Arrays af objekter -> udfordring (abstraktionen)
  - Kontrol strukturer
    - If og modulus -> udfordring (Processings frameCount)
- Afrunding
  - Visning af konkret produkt

# Pixel Quiz





# 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);  
    ..  
    ..  
    ..  
}
```