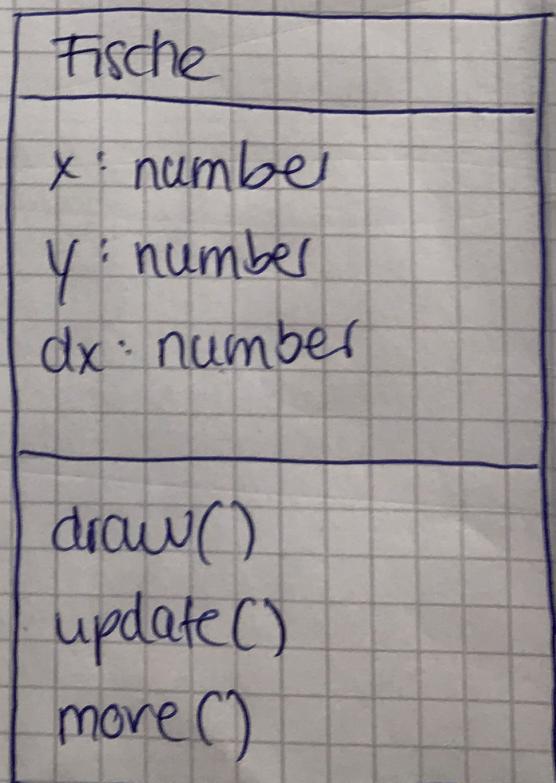
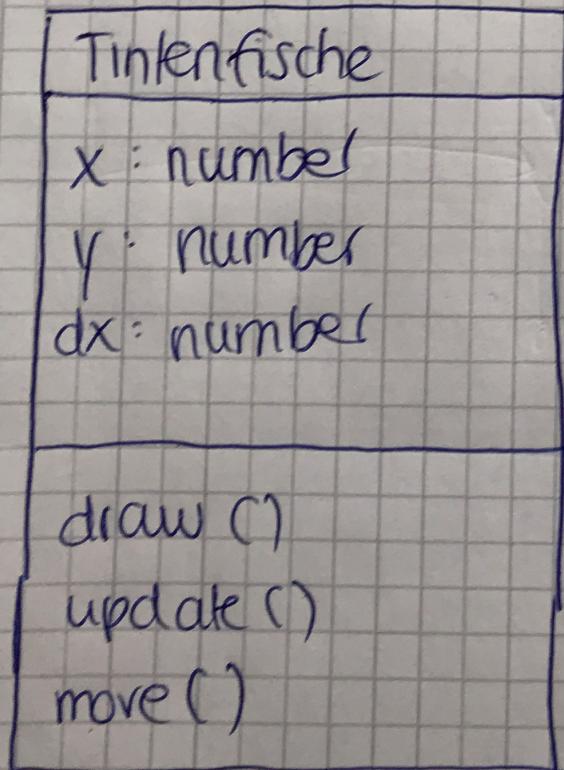
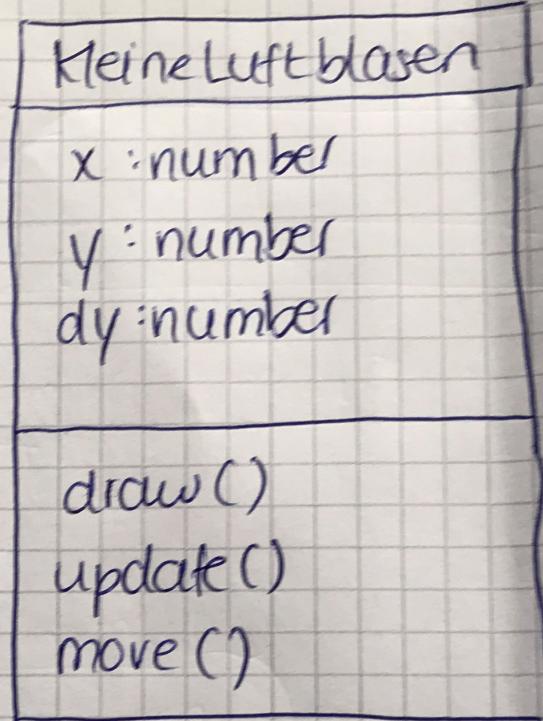
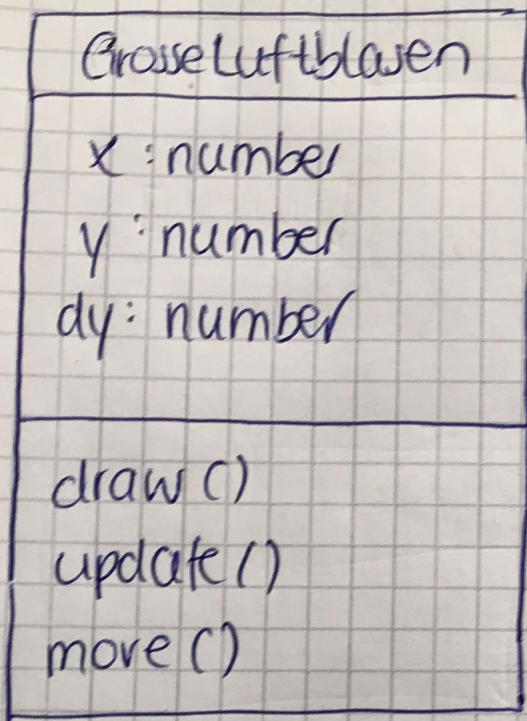


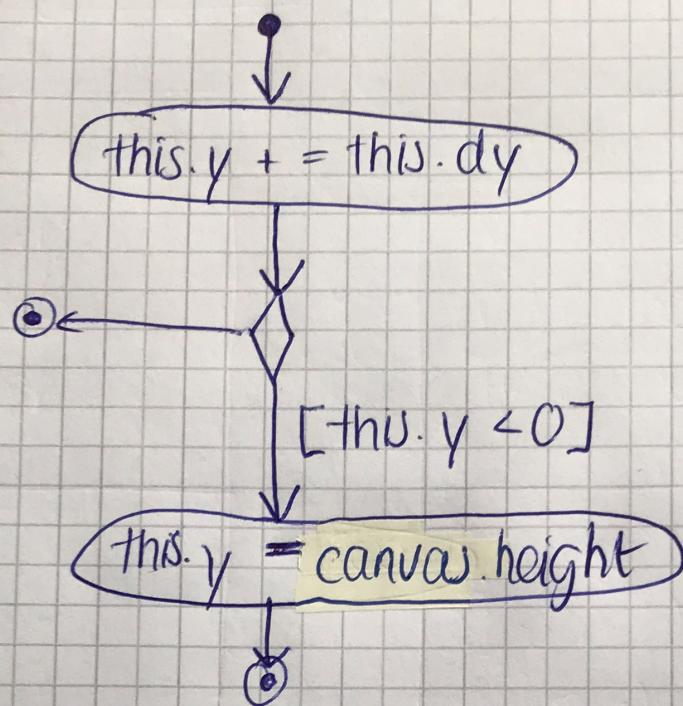
# Aufgabe 11: Animationen und Klassen

## Klassendiagramme

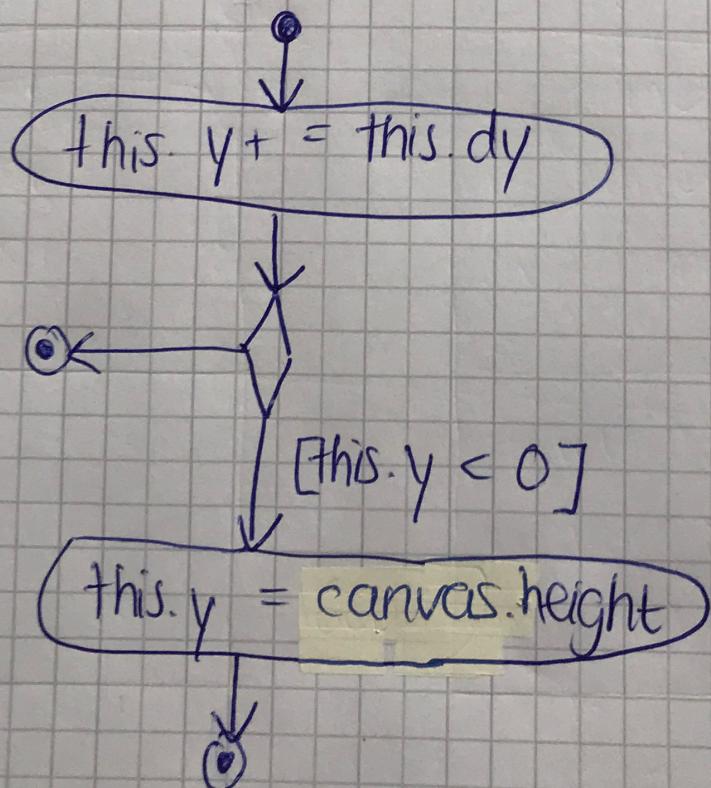


## Aktivitätsdiagramme

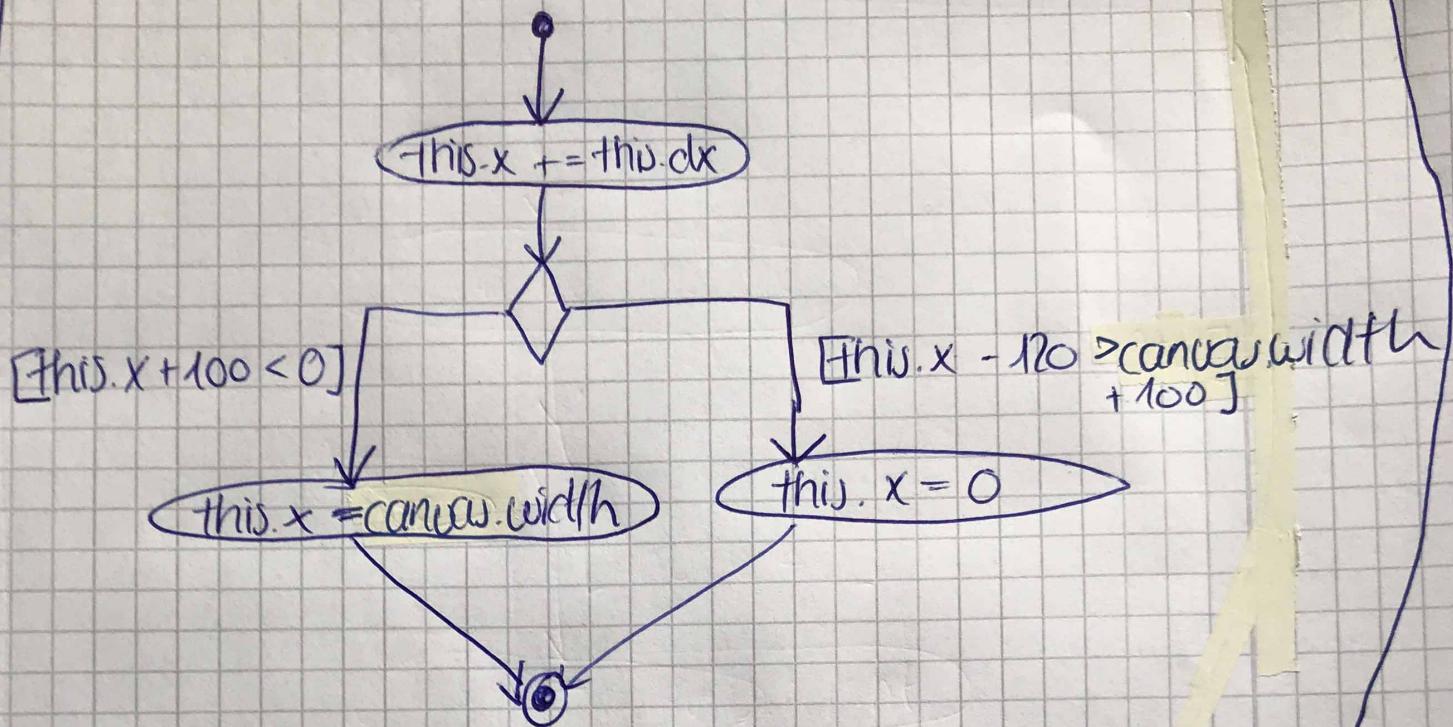
GrosseLuftblasen move()



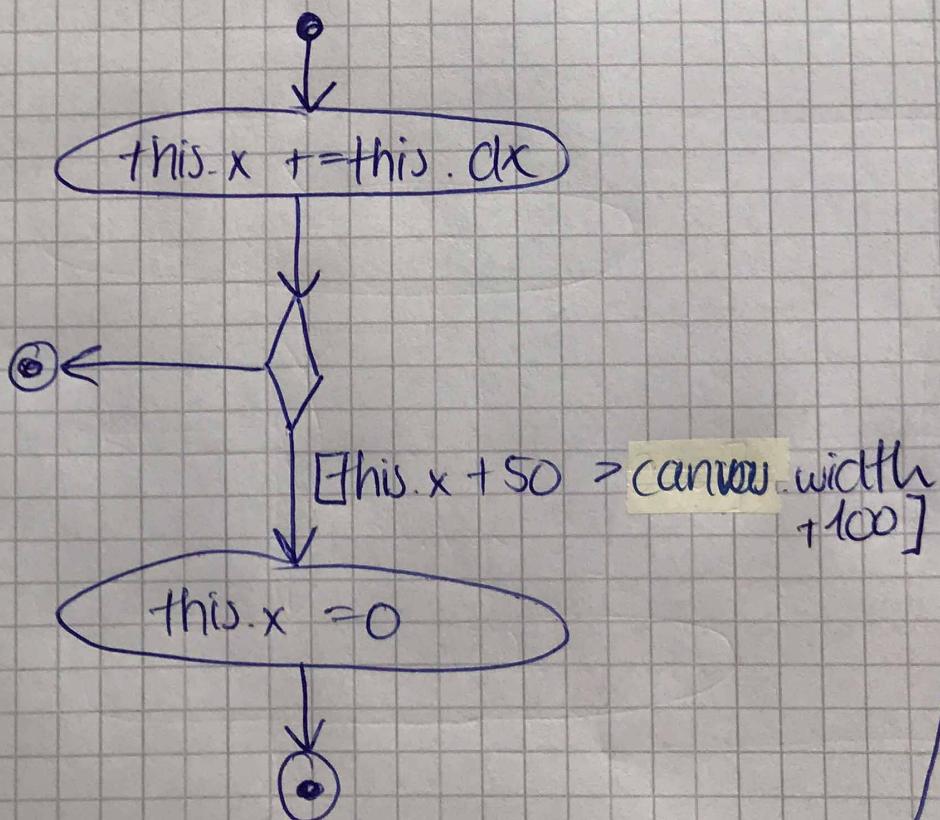
KleineLuftblasen move()



## Tintenfische move()



## Fische move()



document.addEventListener  
("DOMContentLoaded", init)

```
export let cir : CanvasRenderingContext2D  
export let canvas : HTMLCanvasElement  
let fischArray : Fische [] = []  
let tiefenfischArray : Tiefenfische [] = []  
let kleineBlasenArray : KleineLuftblasen [] = []  
let grosseBlasenArray : GroßeLuftblasen [] = []  
let fps : number = 30  
let imageData : ImageData
```

init

BRUNNEN

canvas = document.getElementById("canvas")[0]

ac = canvas.getContext("2d")

zeichne Hintergrund()

imageData = ac.getImageData(0,0,canvas.width,canvas.height)

let i: number = 0

Für jeden  
zweig eigene  
for-Schleife

[i <= 20]

let x: number = Math.random \* canvas.width  
let y: number = Math.random \* canvas.height  
let dx: number = Math.random() \* 15,  
let fisch: Fische

fisch = new Fische()  
fisch.x = x  
fisch.y = y  
fisch.dx = dx  
fishArray.push(fisch)  
fisch.draw()

[i <= 5]

[i <= 50]

let x: number = Math.random \* canvas.width  
let y: number = Math.random \* canvas.height  
let dx: number = Math.random \* 10 - 5  
let tinti: Tintenfische

tinti = new Tintenfische()  
tinti.x = x  
tinti.y = y  
tinti.dx = dx  
tintefischArray.push(tinti)  
tinti.draw()

let x: number = Math.random \* canvas.width  
let y: number = Math.random \* canvas.height  
let dy: number = Math.random \* -3 - 1  
let klein: KleineLuftblasen

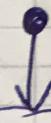
klein = new KleineLuftblasen()  
klein.x = x  
klein.y = y  
klein.dy = dy  
kleineBlasenArray.push(klein)  
klein.draw()

let x: number = Math.random \* canvas.width  
let y: number = Math.random \* canvas.height  
let dy: number = Math.random \* -2 - 1  
let gross: GroßeLuftblasen

gross = new GroßeLuftblasen()  
gross.x = x  
gross.y = y  
gross.dy = dy  
großeBlasenArray.push(gross)  
gross.draw()

update()

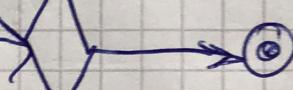
update



```
window.setTimeout(update, 1000 / fps)  
crc.clearRect(0, 0, canvas.width, canvas.height)  
dc.putImageData(imageData, 0, 0)
```

```
for i = number = 0
```

am Beispiel von  
tintenfischArray  
→ FischArray,  
kleineBlasenArray,  
großeBlasenArray,  
gleiche for-Schleife



[ $i < \text{tintenfischArray.length}$ ]

```
tintenfischArray[i].update()
```

$i++$