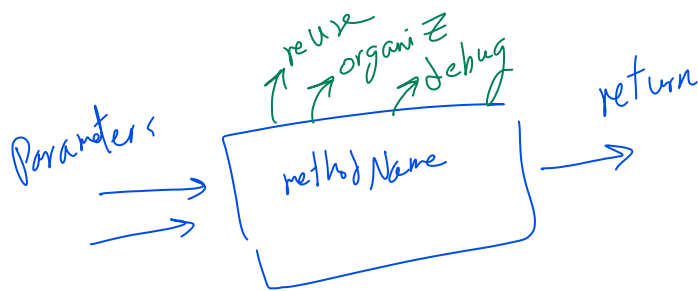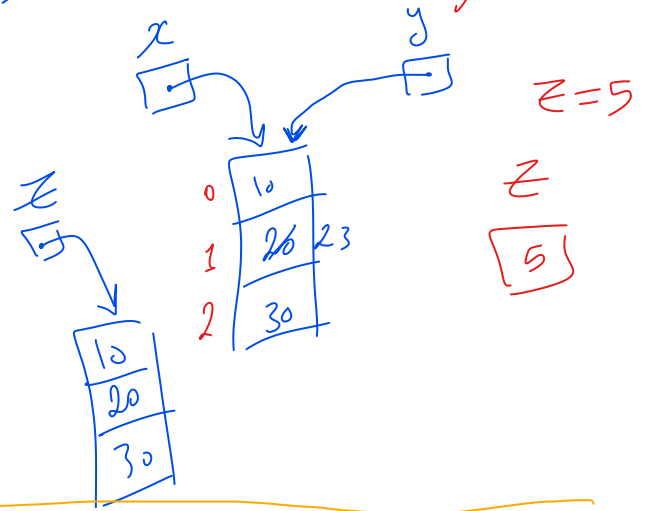* Arrays
* Methods
* Classes & Objects

```
int[] x = {10,20,30};
int[] y = x;

x[1] += 3;
```

Arrays.

Reference Datatype

x   y

Z = 5

0	10
1	26 23
2	30

Z
| 5 |

Z → 10 / 20 / 30

---

reuse → organiz → debug

Parameters →→

methodName → return

Call Method

Math.random()

Array.copyOf(-,-)

name.charAt(0) → 0

modifiers return_type methodName (datatype PName, --) {

}

---

weight   height

$$bmi = \frac{weight}{(height/100)^2}$$ → calcBMI(-,-)

→ getStatus(bmi)

< 18 ____ Underweight
< 25 ____ Normal
< 30 ____ Overweight
____ Obese

mark   full Mark

[ ]   [ ]

$$Pct = \frac{mark}{full\,Mark} * 100$$

- >85 Excellent
- >75 V. Good
- >65 Good
- $>=50$ Pass
- Fail

---

sk
name	email
K	
mobile	balance

SA
name	email
A	
mobil	balance

cl
title	duration
price	

[Trainees]

[Trainer] → [Course]
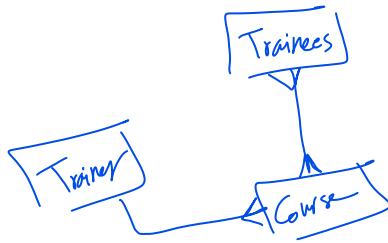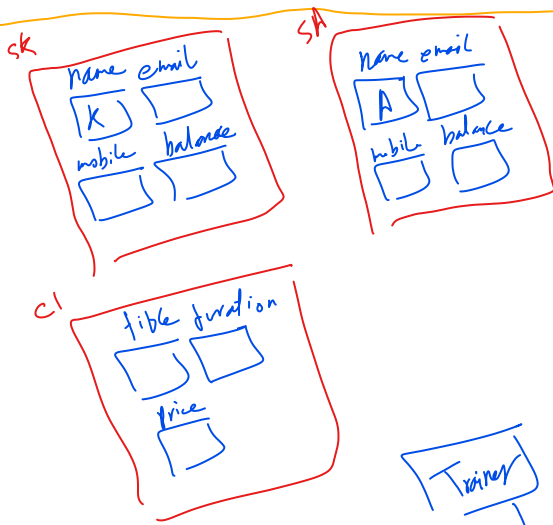
OOP   special variable
- object ↗ place memory
- class → Type
  - code

Create & Init   Define
Object   Operations

---

name   weight   height

[ ]   [ ]   [ ]

$$bmi = \frac{weight}{(height/100)^2}$$

[ ]
[ ]
[ ]

OOP

Patient
- name
- weight
- height

- Patient (-,-,-)
- calcBMI ( )
- getStatus ( )

x
[•] → [A][75][175]

y
[•] → [W][65][175]

Section 1

```
┌─────┐   ┌─────┐   ┌─────┐
│name │   │Salary│  │hireYear│
└─────┘   └─────┘   └─────┘
```
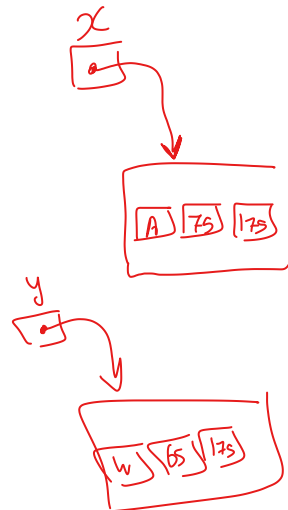
$annualSalary = Salary * 12$

$servicePeriod = 2024 - hireYear$

OOP

Employee

Name
Salary
hireYear

―――――――――
Employee(-,-,-)
calcAS()
calcSP()

Section 2

```
┌─────┐   ┌─────┐   ┌─────┐
│name │   │mark │   │fullMark│
└─────┘   └─────┘   └─────┘
```

$Pct = \dfrac{mark}{fullMark} * 100$

OOP

Student

instance variables $\Big\{$ name
mark

static variable ← fullMark

―――――――――
Student(-, ..-)
getPercent()
getGrade()

S1
```
┌───┬───┬───┐
│ A │23 │   │
└───┴───┴───┘
```
get

S2 set
```
┌───┬───┐
│ w │20 │
└───┴───┘
```
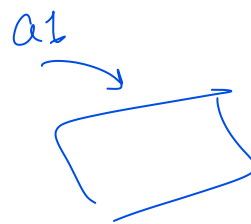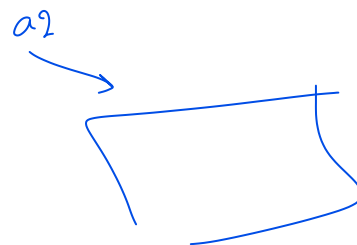
Encapsulation

Section 3
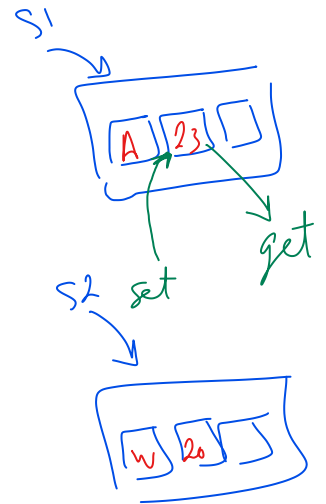
Account

Name
-balance
annualRate = 0.04
―――――――――
Account(--)
getMonthlyRate() → / 12
getMonthlyInt() → balance *
deposit(amt)
withdraw(amt)
getBalance()

a1
```
┌─────┐
│     │
└─────┘
```

a2
```
┌─────┐
│     │
└─────┘
```

a1.getMonthRate()

a2.getMonthRate()

```java
var xArr = new ArrayList<String>();
xArr.add("Abass");
```

xArr

int ⟶ Integer
double ⟶ Double

0	Abass
1	
2	

```java
var y = new HashMap<String, String>();
```

sa	Saudi Arabia
ae	Emirdes
eg	Egypt