



Today's agenda

- ↳ float and double
- ↳ Taking input
- ↳ operators
- ↳ if else



AlgoPrep



// Decimal → 2.2, 1.3, 4.7, 2.6 etc.

↳ float & double
↳ int (.6-7 decimal places) → long (.14-15 decimal places)

→ In Integer, default values are int

→ In decimal, default values are double.

writing float

↳ float a = 2.4f;

writing double

↳ double d = 4.2;



Quiz 1:

```
double d = 2.8;  
System.out.println(d);
```

2.8

Quiz 2:

```
float f = 3.3f;  
System.out.println(f);
```

3.3

Quiz 3:

```
float f = 3.4f;  
↳ double d = f;
```

```
System.out.println(d);
```

3.4
f

3.4
d

→ 3.4

Quiz 4:

```
double d = 3.4;
```

```
↳ float f = d, → error
```

```
System.out.println(f);
```

3.4
d

f

```
double d = 3.4;
```

```
↳ float f = (float)d;
```

```
System.out.println(f);
```



2 Golden rules of typecasting

1. If there is no loss of data then no error: implicit

2. If there is chance for loss of data then error.

We can still do this change forcefully: explicit (typecasting)

→ $\left\{ \begin{array}{l} \text{int to long} \rightarrow \text{works} \\ \text{float to double} \rightarrow \text{works} \end{array} \right.$

$\left\{ \begin{array}{l} \text{long to int} \rightarrow \text{explicit} \\ \text{double to float} \rightarrow \text{explicit} \end{array} \right.$

//operation



↳ Rule 1: Mathematical operation between decimal and non-decimal, Resultant: Decimal

↳ Rule 2: Operation between same category but different Capacity, Resultant: Higher Size

↳ a b res

int int int

int long long

long int long

long long long

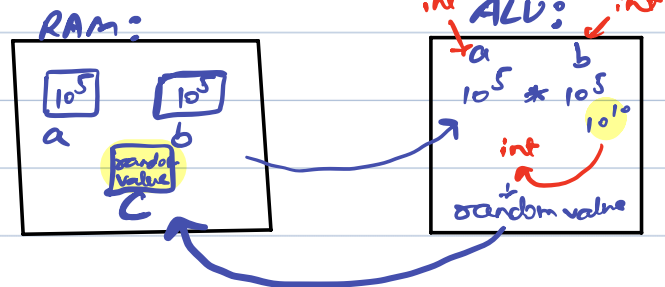
Quiz 5:

```
int a = 100000;
```

```
int b = 100000;
```

```
↳ int c = a * b;
```

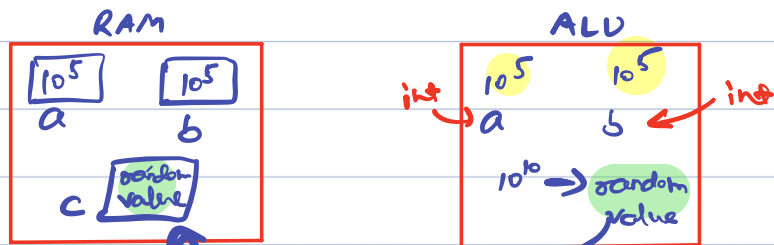
```
System.out.println(c);
```





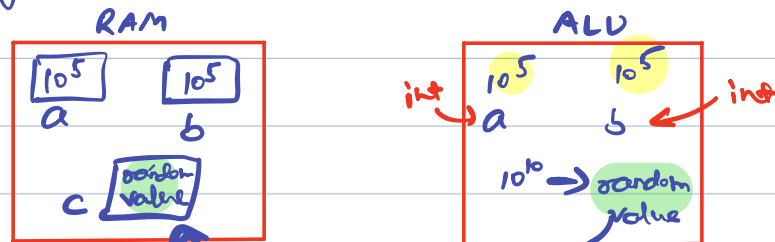
Quiz 6:

```
int a = 100000;  
int b = 100000;  
long c = a * b;  
System.out.println(c);
```



Quiz 7:

```
int a = 100000;  
int b = 100000;  
long c = (long)(a * b);  
System.out.println(c);
```

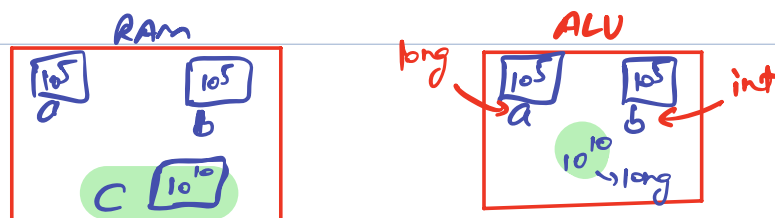


Quiz 8:

```
int a = 100000;  
int b = 100000;  
long c = (long)a * b;  
System.out.println(c);
```

\rightarrow b is correct

10^{10}





* Arithmetic operators

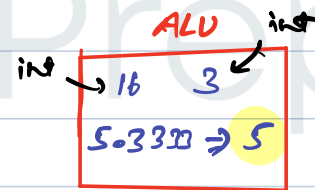
↳ $+$, $-$, $*$, $/$, $\%$ → remainder

$$\hookrightarrow 20 \% 3 = 2$$

Quiz 9:

`System.out.println(16/3);`

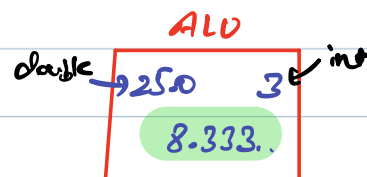
→ 5



Quiz 10:

`System.out.println(25.0/3);`

→ 8.333...



Quiz 11:

`System.out.println(35%9);`

→ 8

$$\hookrightarrow x \% 7 \rightarrow \{0, \dots, 6\}$$

$$x \% n \rightarrow \{0, \dots, n-1\}$$

Book til 9:25



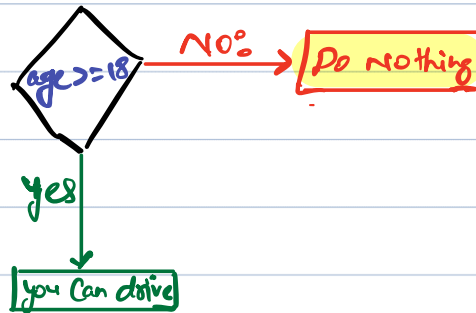
* Relational operators: used to check relation between 2 data ex: \geq , \leq , $>$ etc.

	$x=8 \ y=10$	$x=15 \ y=7$	$x=13 \ y=13$
x less than $y : x < y$	true	false	false
x greater than $y : x > y$	false	true	false
x greater than equal to $y : x \geq y$	false	true	true
x smaller than equal to $y : x \leq y$	true	false	true
x equal $y : x == y$	false	false	true
x not equal $y : x != y$	true	true	false

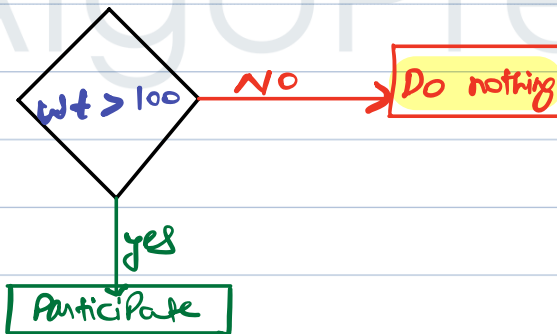


// If

1. check if person is eligible for car driving license.



2. Check if person is above 100 kg in weight. he can participate in weight lifting.



idea: when we want to do something on the basis of condition being true.

Syntax:

if (condⁿ) {
 // statement or lines you want to execute if the condⁿ is true.
}

only condⁿ which will give you true/false. (Relational OR)

}

a) $4 == 5$ ✓ (valid but give you false)
b) $4 < 5$ ✓

c) $4+5 \times \times$



→ age of person

Q) Read a number and if person is eligible, print "eligible for driving licence."

// Pseudo code

```
Scanner scn = new Scanner (System.in);  
int age = scn.nextInt();  
if (age >= 18) {  
    System.out.println ("eligible");  
}
```

Quiz 12:

int n = 20;

20
n

```
if (n >= 15) {  
    System.out.print ("Hello");  
}  
System.out.println ("Hello");
```

Hello Hello

Quiz 13:

int n = 20;

int y = 25;

20
n

25
y

```
if (n >= 25) {  
    System.out.println ("Algo prep 1");  
}  
if (y >= 25) {  
    System.out.println ("Algo prep 2");  
}
```

→ Algo prep 2



Quiz 14:

```
if (10 > 6) {  
    System.out.println("1st");  
}  
if (15 > 25) {  
    System.out.println("2nd");  
}
```

→ true
→ false

Quiz 15:

```
int x = 55;  
int y = 65;
```

55
x

67
65
y

```
if (x > 55) {  
    System.out.print("first");  
    x = x + 2;  
}  
if (y >= 60) {  
    System.out.print("second");  
    y = y + 2;  
}  
System.out.println(x + y);
```

→ false
→ true

Second 122

65 2
↓
67