

# Data type

P-D  
(8)

↳ boolean ✓  
↳ byte ✓  
↳ short =  
↳ \* int ↳ int  
↳ \* long ↳ long  
↳ float {  
↳ double }  
↳ char

N-PD

userdefined

class

object

collection

,

:

Java → OOPS

↳ 100% ✓  
↳ 99%

① P-D

↳ wrapper class

↳ P-D ⊂ object

Auto boxing → P.D → N.PD/object  
unboxing → object → P.D

## Variable

int ~~a~~ = 10;

~~a~~ = 20;

~~a~~ = 30

System.out.println(~~a~~); // 30



→ local  
→ instance  
→ static

```

class Test {
    int a = 0; // I → Heap
    static int c = 0; // S → method area
    static void func() {
        int b = 0; // L → stack
        b = 30;
        a = 20
    }
}

```

(HI)

⇒ method area

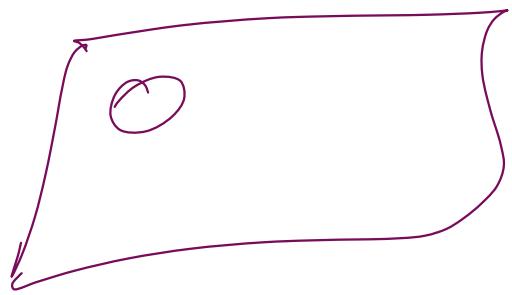
(LS)

## ~~Type Casting~~

① Widening / Implicit

↳ S.DT  $\rightarrow$  L.DT

byte b = (int) a;



② Horzrowing / Explicit  
↳ cast operator

int a = 10  
byte b = (byte) a;  
                +  
                cast operator

Tokens  
= Smallest unit

$\% \rightarrow$  Remainder  
 $/ \rightarrow$  Divide

C/B 3-7

Ex)  $a = 10$

$$S.O.P/n(a/3) = 3$$

$$S.O.P/n(a/3) = 1$$

$$\begin{aligned} a &= 10 \\ a &\leftarrow a + 1 \Rightarrow a = a + 1 \Rightarrow 11 \\ S.O.P/n(\underline{\underline{a}}) \end{aligned}$$

1st assign then Inc.

$$\begin{aligned} a &= 10 \\ S.O.P/n(\underline{\underline{a+1}}) &\quad \text{at } a = a + 1 \\ 11 &= 11 \end{aligned}$$

$\text{int } a = 10;$

$a += 20;$

$\hookrightarrow a = a + 20$

$\Rightarrow \text{And equals}$ )

$10 \rightarrow 1010$   
~~if~~

$\& \& \rightarrow \text{All cond' must feed}$

$\text{||} \rightarrow \text{If any one cond'}$   
 $\text{is feed if will}$   
 $\text{give feed}$

Ternary operator

false

var = (cond)? a : b ;  
            ↑  
            true

1011  
10 & 11      & 1100      OR 1100  
                1000      1110  
                ↙            ↙

1010  
^ 1100  
1001

instanceof

class Test

void show()

//

cc

}

psum()

Test t = new Test();

soph(t instanceof Test);

}

class Object {  
 // methods  
 // constructor  
}



class Test {

//

//



# Control Statement

## ① Selection Statement

① if true false  
if (Cond<sup>n</sup>) {  
    // Statement ✓  
}  
    }

↗

② if-else  
    =

if (Cond<sup>n</sup>) {  
    // Statements

}

else {  
    // Statements

}

int a = 10

int b = 20

false  $\rightarrow$  true

if ( $a > b$ ) {

    S.o.  $\ln$  ("a is greater")

}

}

else {

    S.o.  $\ln$  ("b is greater")

}

}

~~if else if~~

if (cond<sup>n</sup>) {  
    //

}

else if (cond<sup>n</sup>) {  
    //

    //

}

else if (cond<sup>n</sup>) {  
    //

    //

}

else {  
    //

    //

}

# Switch

switch (variable to be checked) {  
    ~~it~~

Case 0:

Statement 1  
break;

Case 2:

Statement 2  
break

:  
:  
:

default:  
Statement n;  
break;

3

$\theta_1^o$       1 → monday  
2 → tuesday  
3 → wednesday

'  
'  
j → Sunday

$$15\% \text{ } j \Rightarrow 1$$

$$16\% \text{ } j \Rightarrow 2$$

$$17\% \text{ } j \Rightarrow 3$$

$$8\% \text{ } j = 1$$

$$9\% \text{ } j \Rightarrow 2$$

267

$S / b = Q \text{ } R$

$\% \Rightarrow$  Remainder

$$a \% b \Rightarrow [0 \text{ to } b-1]$$

$\underline{\underline{b=5}}$

$$1 \% 5 \Rightarrow 1$$

$$2 \% 5 = 2 \left. \begin{array}{c} \\ \\ \\ \end{array} \right\} \Rightarrow 0 \text{ to } 4$$

$$3 \% 5 = 0$$

$$4 \% 5 = 4$$

$0 \rightarrow$  Sunday  
 $1 \rightarrow$  Monday }  
 :  
 :  
 $8 \rightarrow$  Monday  $\Rightarrow 1$   
 $9 \rightarrow$  Tuesday  $\Rightarrow 2$   
 :  
 $15 \rightarrow$  Monday  $\Rightarrow 1$

S  $\curvearrowleft$  15  
 Num $^o$ /7  
 L $\{0, 1, 2, 3, 4, 5, 6\}$   
~~11~~

~~Def~~  $\text{int } a = 10$   
~~Def~~  $\text{int } b = 5$   
~~Def~~  $\text{int } c = 26$  } map

$(a > b)$        $(a > c)$

$(b > a)$        $(b > c)$

$c \rightarrow$  greater

if ( $a > b$ ) & ( $a > c$ ) {

    System.out.println ("a is greater);

}

else if (( $b > a$ ) & ( $b > c$ )) {

    System.out.println ("b ");

else if (( $c > a$ ) & ( $c > b$ )) {

    System.out.println ("c ");

3

year = 1920;

→ leap year  $\Rightarrow$  year % 4 = 0  
→ Not leap year  $\Rightarrow$  year % 4 != 0

int year = 22;

if (year % 4 == 0) {  
 System.out.println("leap year");  
}

3

else {  
 System.out.println("Not leap year");  
}

year = 2020

if (2020 % 4 == 0)  
 System.out.println("leap year");

variable = (cond)? a : b

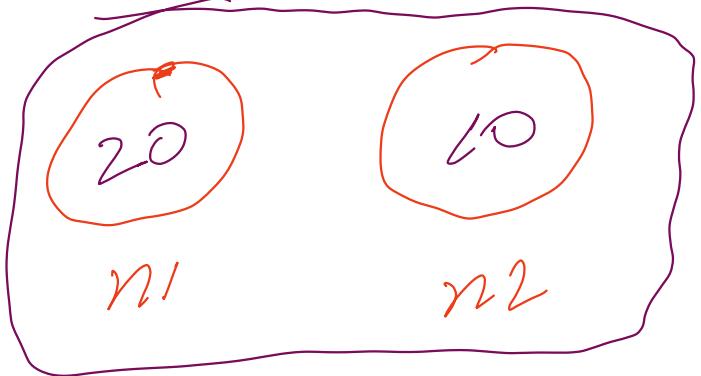
int res = (a > b)? a : b ;

if int n1 = 20 ;

if n2 = 20 ;

n1 = n2

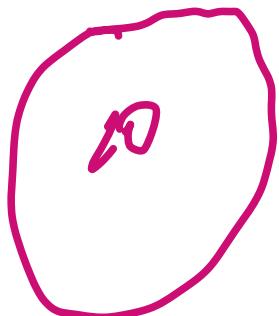
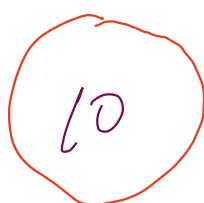
n2 = n1

$n_1 = 10$  $n_2 = 20$ 

temp =  $n_1 \Rightarrow 10$

 $n_1 = n_2$  $n_2 = \text{temp}$ 

inf temp



temp

$\text{temp} = n_1$   
 $n_1 = n_2$   
 $n_2 = \text{temp}$

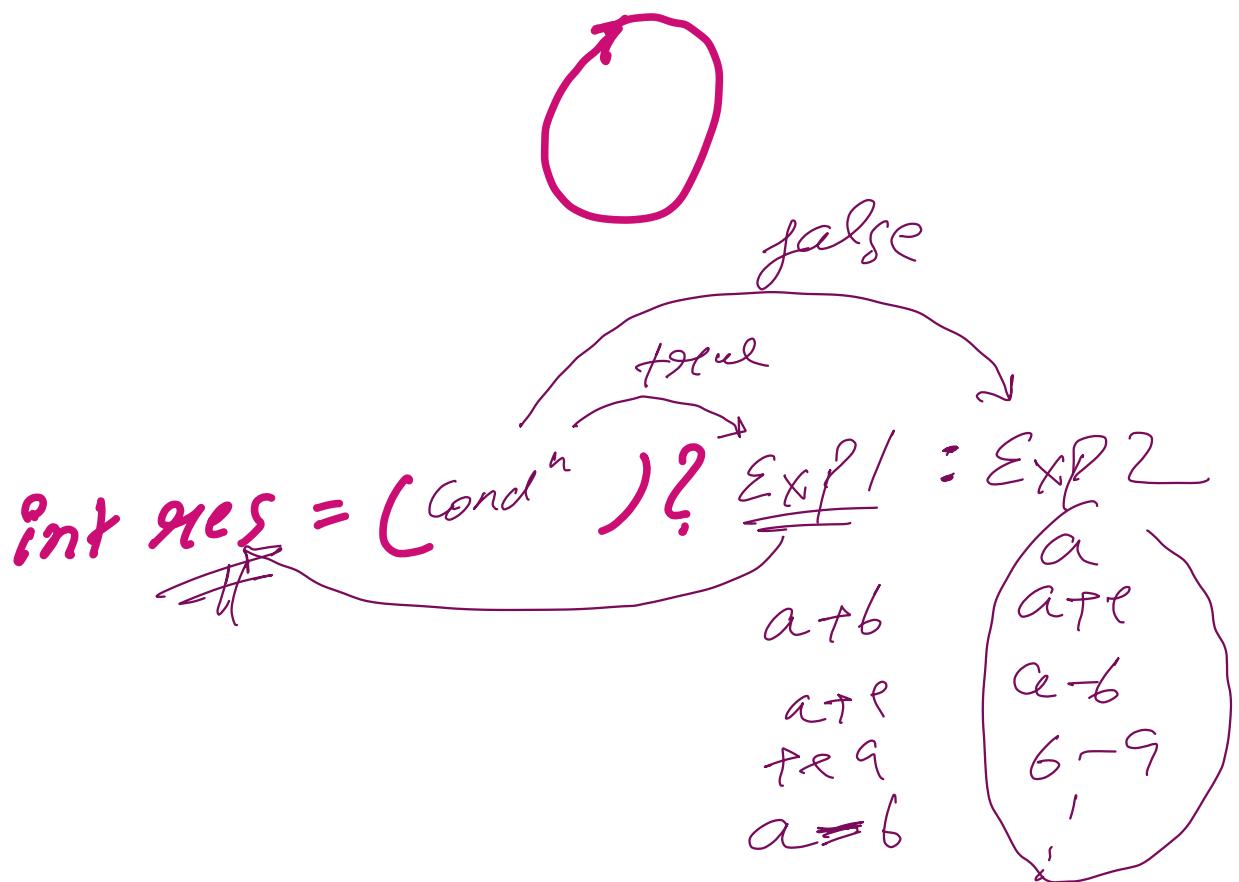
$a = 10 ;$   
 $b = 15 ; // \text{co}$

①  $a = a + b // 25$

$b = a - b // 10$

$a = a - b // 15$

$b = 10$   
 $a = 15$



$$a = 10$$

$$b = 15$$

$$a = 10 + 15 = 25$$

$$a+b$$

$$b = a - b \Rightarrow 10$$

$$\underline{a+b} - b$$

$$a = a - b \Rightarrow 25 - 10$$

# ① for loop

Concl<sup>n</sup> (true & false)

`for( exp1 : exp2 : exp3 )`

## Initialization

Inc / dec.

```
for( int i=0; i<10; i++ ) {  
    //  
    // force  
    i=0; }  
}
```

```
for( i=0 ; i<=10 ; i++ ) {  
    // Statement
```

`for(  $i=0$ ;  $i < 5$ ;  $i++$  ) {  
 // Statements  
}`

{

$i = 6$  x

Q: Point to 10;

`for(  $i=1$ ;  $i < 10$ ;  $i++$  ) {  
 cout << i  
}`

$i = 1$

for( int i=1 ; i<=5 ; i++ ) {  
    s.o.pln( i );  
    //i=1,2,3,4,  
    //5  
}

# int i=1;  
~~\*~~

for( ; i<=5 ; ite ) {  
    //statement

{

$$6 * 1 = 6$$

$$6 \times 2 = 12$$

↓      ↓  
no      ;

Hello, world

+  
"Hello" f" + "world"

no + "\*" + 1 + " = "+ (no*i*)

~~for (int i = 0, j = 0; i <= 10, j <= 10; i++, j++)~~

# While

# Syntax

Y  
while ( Cond<sup>n</sup> ) {  
    true → false

# 11 statements

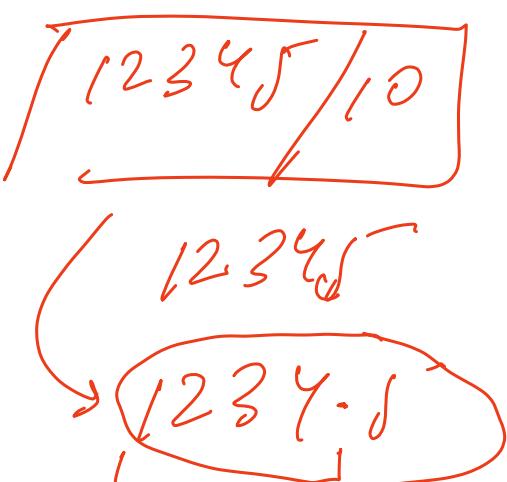
## do - while

→ do {  
→    // statements  
→    }  
→ while (cond);  
→

Q: Count no of digit

int no = 12345;

5.0. ph( no/10 ); //



```

int no = 12345 ;
int count = 0 ;

while(no!=0){           //12345,1234,123,12,1,0
    count++ ;           //5
    no = no/10 ;        //1234, 123,12,1,0
}

System.out.println(count);

```

Sum  $\Rightarrow 1\cancel{2}\cancel{3} + 4 + \cancel{5}$   
 $\Rightarrow ??$

$\rightarrow \cancel{x} \rightarrow \cancel{x} \rightarrow \cancel{x} \quad \overbrace{\hspace{1cm}}$

$\text{int } no = 12345;$   
 $1\cancel{2}\cancel{3} + 4 + \cancel{5} = \cancel{15}$

$(12345 / 10) \Rightarrow \cancel{5}$

$1234 \quad (no = no / 10)$   
 $no / 10 \Rightarrow 4$

$$n^o = n^o / co$$

$$123\% \Leftrightarrow 3$$

no 1

2

3

2

1

int sum = 0; // G

while (no != 0) {

rem = no % 10;

sum = sum + rem

no = no / 10;

}

g.o.ph(sum);

`int n = 12345,`

$\hookrightarrow 54321$

$5 \quad 4 \quad 3 \quad 2 \quad 1$

$\underbrace{5}_{\hookrightarrow} \rightarrow 54$

$\hookrightarrow 5 \times 10 + 4 \Rightarrow 54$

$54 \rightarrow 543$

$\hookrightarrow 54 \times 10 + 3$

$540 + 3 \Rightarrow 543$

$543 \rightarrow 5432$

$\hookrightarrow 543 \times 10 + 2$

$res = \sum x * 10 + rem$

11  
54  
 $\downarrow$   
 $res$

$res = res * 10 + rem$

$res * 10 + rem$

→ X → X → X →

Scanner sc = new Scanner(<sup>System.in</sup>);

class Scanner {

    nextInt() => Input of Integer

    next() → String

    nextLine() → String

    |

    |

    |

3

while ( cond<sup>n</sup> ) {

  //

  //

}

  --> p --- sc - - -

do {

  → int n1 = sc.nextInt();

  → int n2 = sc.nextInt();

  → String symbol = sc.next(  
                       <sup>'or'</sup>)

                       sc.nextLine());

  switch ( symbol ) {

    case "+": s.o.p/n(n1+n2);  
                 break;

    case "-": s.o.p/n(n1-n2);  
                 break;

  };

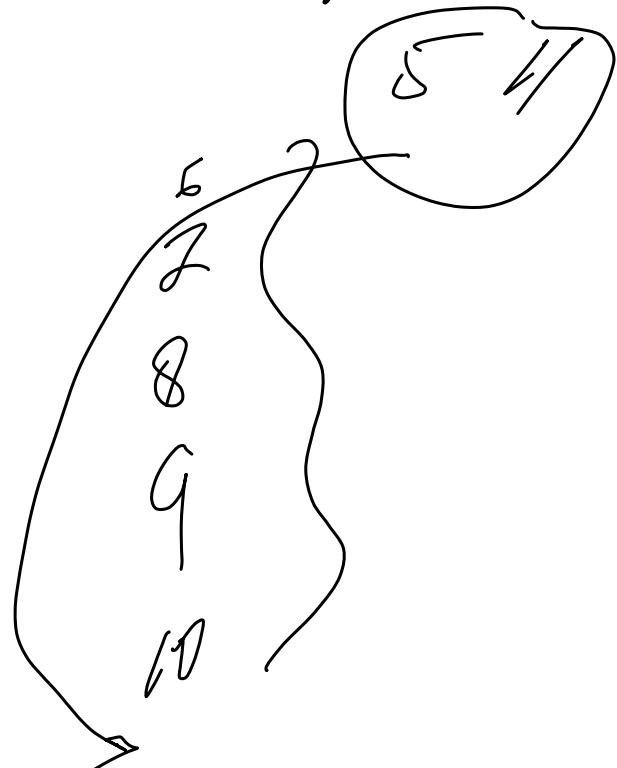
{      }

s.o.phn("do you want to  
continue --- )  
response = sc.next();

}

while(response.equal("y"))

```
for( io=1 ; io<=10 ; io++ ) {
```



```
for( io=1 ; io<=10 ; io++ ) {
```

```
    if( io==5 ) {
```

```
        break;
```

```
    }  
    System.out.println (" " + io );
```

```
}
```

```
public class show {  
    public static void main(String[] args) {  
        for(int i=1 ; i<=10 ; i++){  
            System.out.println(i);  
            if(i==5){  
                break;  
            }  
        }  
    }  
}
```

$i = 1$

$i = 2 - 3, 4, 5$

$i = 1, 2 - 3, 4, 5$

Diagram illustrating the execution flow of the for loop. The loop iterates from  $i=1$  to  $i=5$ . At  $i=5$ , the condition  $i==5$  is true, so the `break` statement is executed, causing the loop to terminate. The output is  $1, 2 - 3, 4, 5$ .

```
public class show {  
    public static void main(String[] args) {  
        for(int i=1 ; i<=10 ; i++){  
            if(i==5){  
                break;  
            }  
            System.out.println(i);  
        }  
    }  
}
```

$i = 1, 2, 3, 4, 5$

Diagram illustrating the execution flow of the for loop. The loop iterates from  $i=1$  to  $i=5$ . At  $i=5$ , the condition  $i==5$  is true, so the `break` statement is executed, causing the loop to terminate. The output is  $1, 2, 3, 4$ .

for( $\text{int } i=1; i<=5; i++$ ) {  $i=1$

    for( $\text{int } j=1; j<=5; j++$ ) {  $j=1$

        S.O.P/h("i")

        S.O.P/h("j")

}

1	2	3	4	5
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	-	-	-	-
5	-	-	-	-



1  
2  
2

3 3

3 3

Y Y

J J

S S

J —

```
public class show {  
    public static void main(String[] args) {
```

```
        for(int i=1 ; i<=5 ; i++){  
            for(int j=1 ; j<=5 ; j++){  
                System.out.println("i: " + i); // i = 1  
                System.out.println("j: " + j); // j = 1, 2, 3  
            }  
        }  
    }
```

Handwritten output of the program:

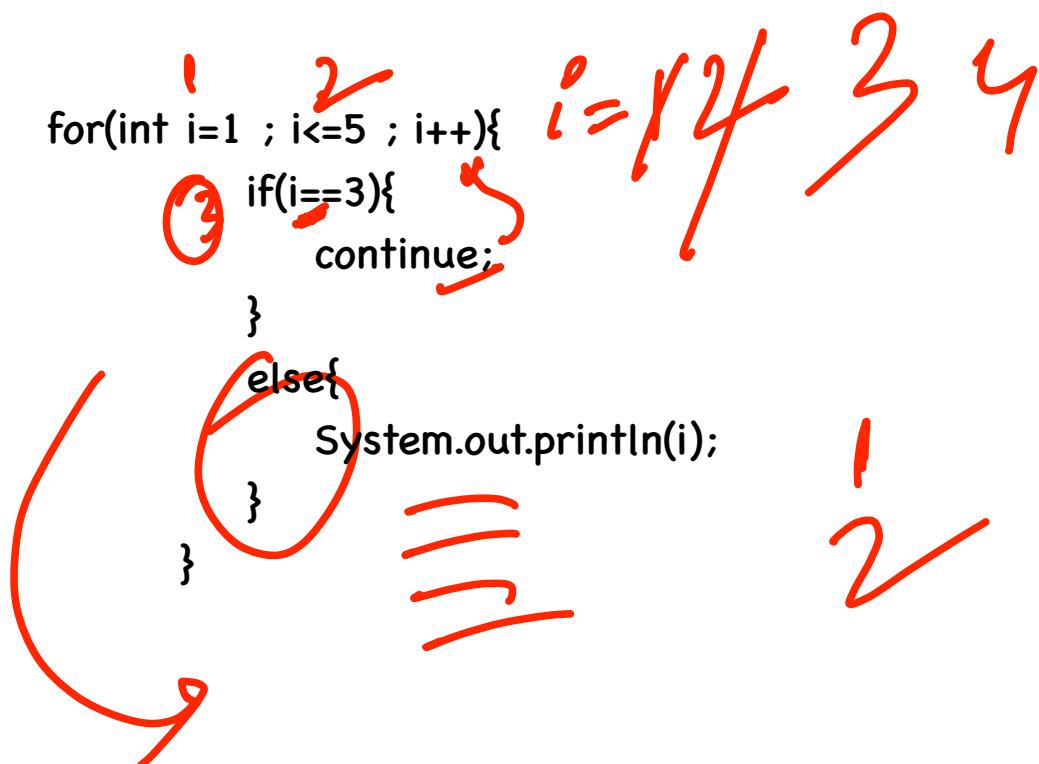
[	1	2		
	,	,		
[	1	2		
2	2			
	2			
3	2			
	3			
4	3			
5				

$$i = 1 \rightarrow j = 1$$

$$(i=2) \rightarrow j = 1$$

$$i = 3 \rightarrow j = 1$$

5



int sum() {  
    int a = 10  
    int b = 20  
    return (a+b);  
}

psum() {

    classname objname = new classname(  
        )  
        objname - method name()

class Scanner {

    ⇒ nextInt() {

        // return int value

}

next() —

nextLine() —

,

;

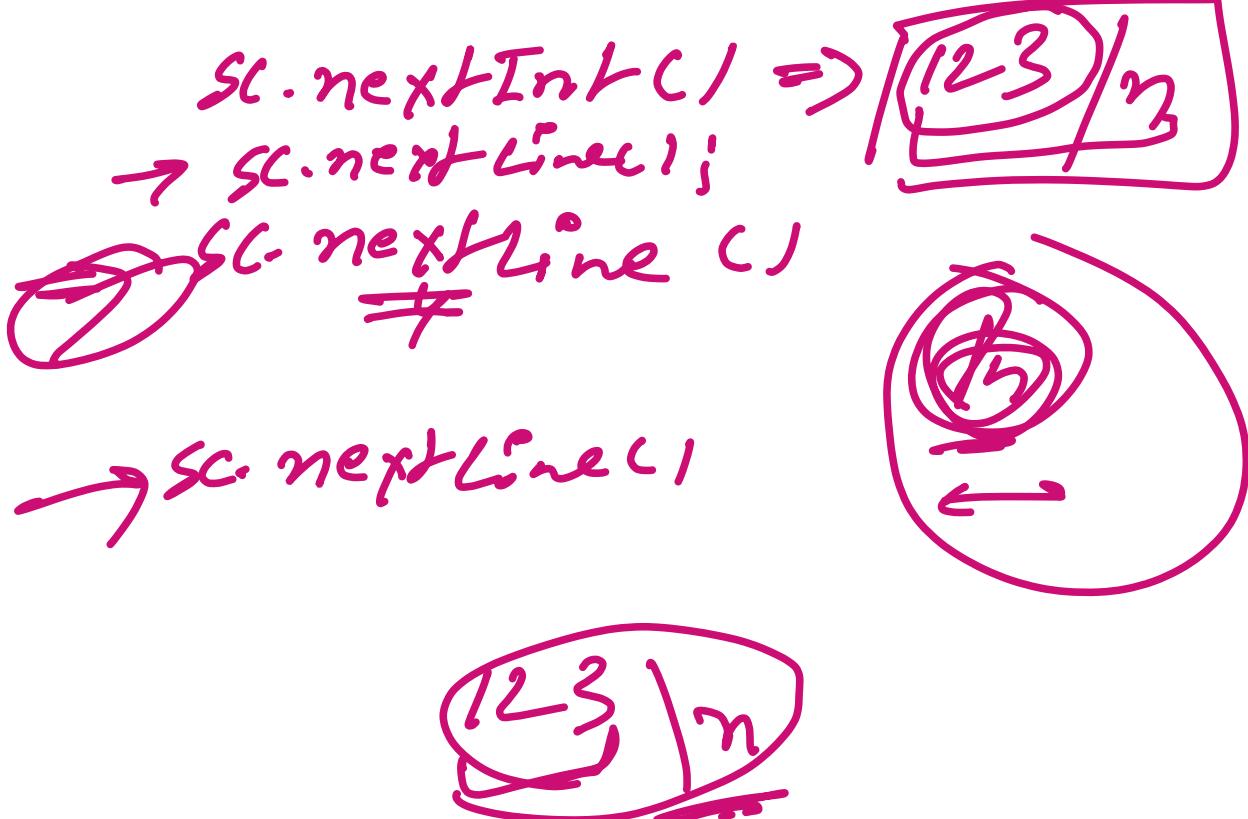
}

Scanner sc = new Scanner(System.in)

int a = sc.nextInt();

String s1 = sc.nextLine(); —

String s2 = sc.nextLine(); —



Class Student {

```

private int Id;
private String name;
private double no;
void print(){
    System.out.println()
        (name)
        (no);
}
}

```

PSU MC) {

Student std = — —  
std. per

① Byte b = 10 + 2 "n  
int i = 0;  
loop

② int i = 0;  
~~byte b =~~ (Byte) 10

public

private

protected

default / package - prot -

## Access Modifier

↳ define whether other classes  
can use a particular  
field or invoke a  
particular method

class package child  
classes world

	class	package	child classes	world
public	✓	✓	✓	✓
private	✓	✗	✗	✗
protected	✓	✓	✓	✗
default / package private	✓	✓	✓ <i>inside package</i>	✗ <i>outside package</i>

## Within the Same Class

```
package Access;

public class Student {

    public int a=5 ;
    private int b = 10 ;
    protected int c = 15 ;
    int d = 20 ;
    void print(){
        System.out.println(a);
        System.out.println(b);
        System.out.println(c);
        System.out.println(d);
    }

    public static void main(String[] args) {
        Student std = new Student() ;
        std.print();
    }
}
```

## within same package but outside class

```
package Access;

public class Employee {
    public static void main(String[] args) {
        Student std = new Student() ;
        System.out.println(std.a);
        System.out.println(std.b);
        System.out.println(std.c);
        System.out.println(std.d);
    }
}
```

## From ChildClass

```
package Access;

public class ChildDemo extends Student{
    void print(){
        System.out.println(a);
        System.out.println(b);
        System.out.println(c);
        System.out.println(d);
    }
}
```

## From Outside Package

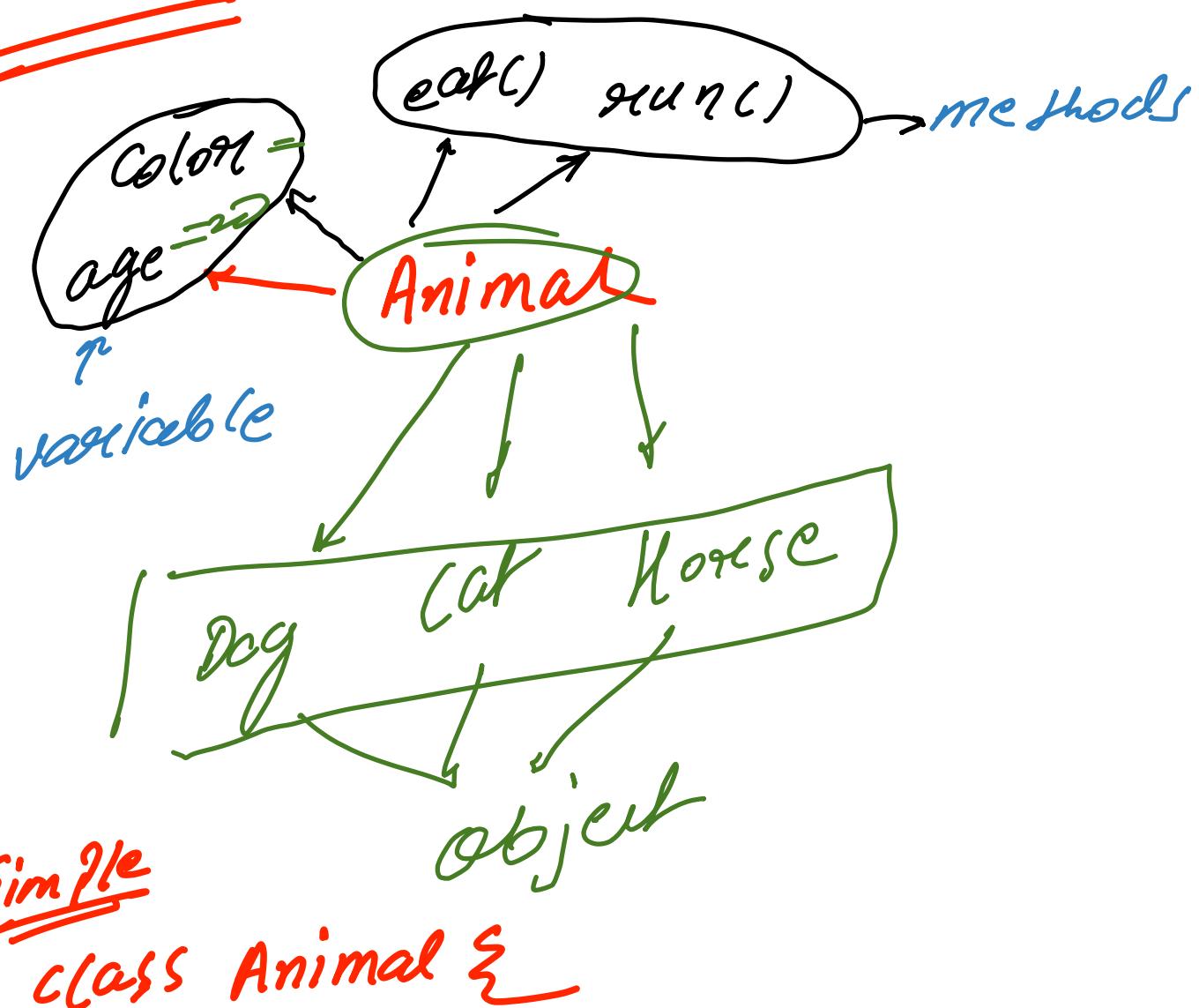
```
package Access2;

import Access.Student;

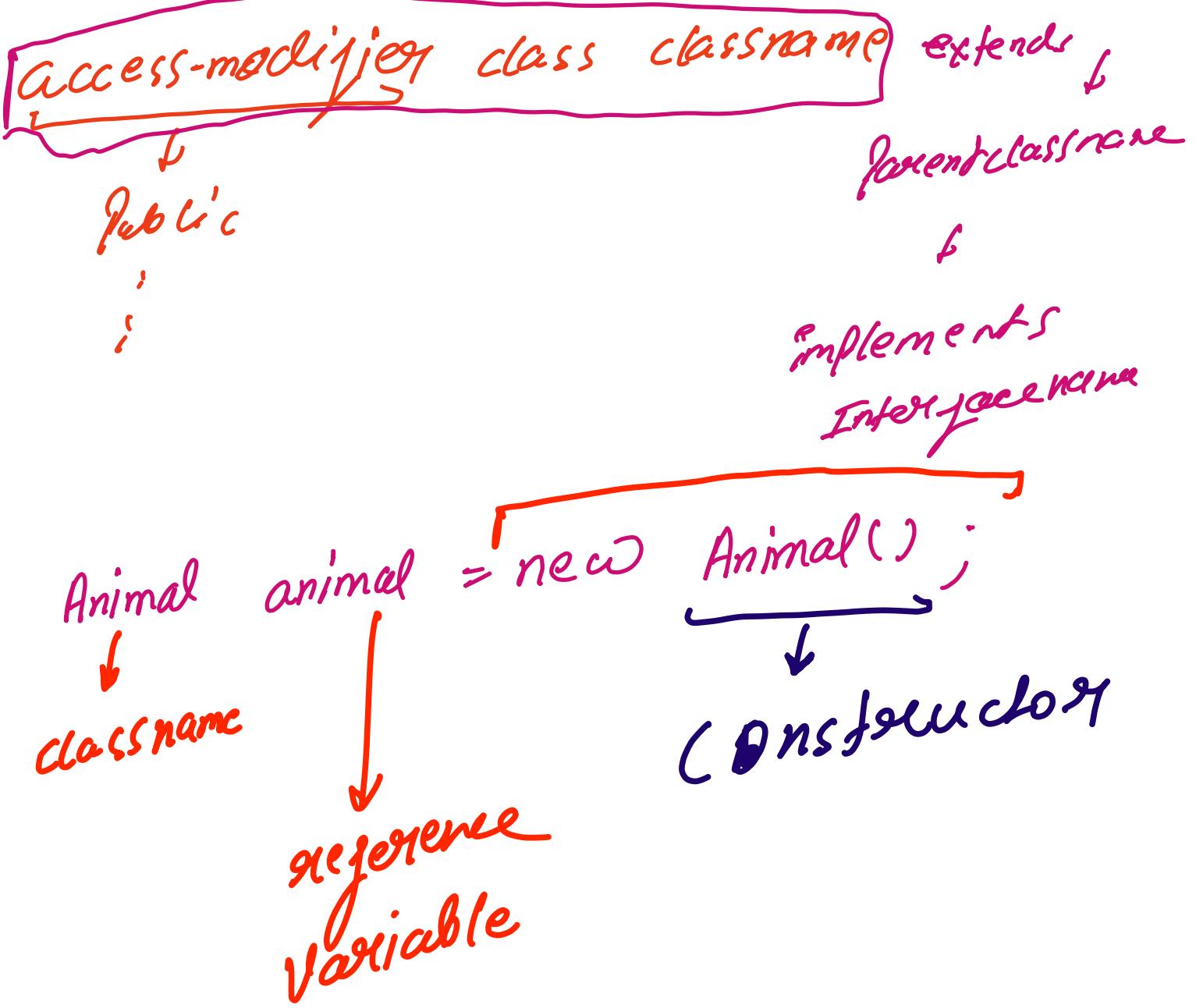
public class ChildDemo extends Student {

    void print(){
        System.out.println(a);
        System.out.println(b);
        System.out.println(c);
        System.out.println(d);
    }
}
```

# Class



3



Animal dog = new Animal(); ✓  
 Animal cat = new Animal(); ✓  
 Animal tiger = new Animal(); ✓



```
public class Animal {  
  
    int age ;  
    String color ;  
  
    void eat(){  
        System.out.println("I am eating");  
    }  
  
    void run(){  
        System.out.println("i am running");  
    }  
  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        Animal dog = new Animal(); →  
        → dog.age = 20 ;  
        → dog.color= "Brown" ;  
        → System.out.println(dog.age);  
        → System.out.println(dog.color);  
  
        System.out.println("=====");  
  
        → Animal cat = new Animal() ;  
        cat.age=10;  
        cat.color="White" ;  
        → System.out.println(cat.age);  
        System.out.println(cat.color);  
  
    }  
}
```

$age = 20$   
 $color = \text{brown}$   
`run()`  
`eat()`

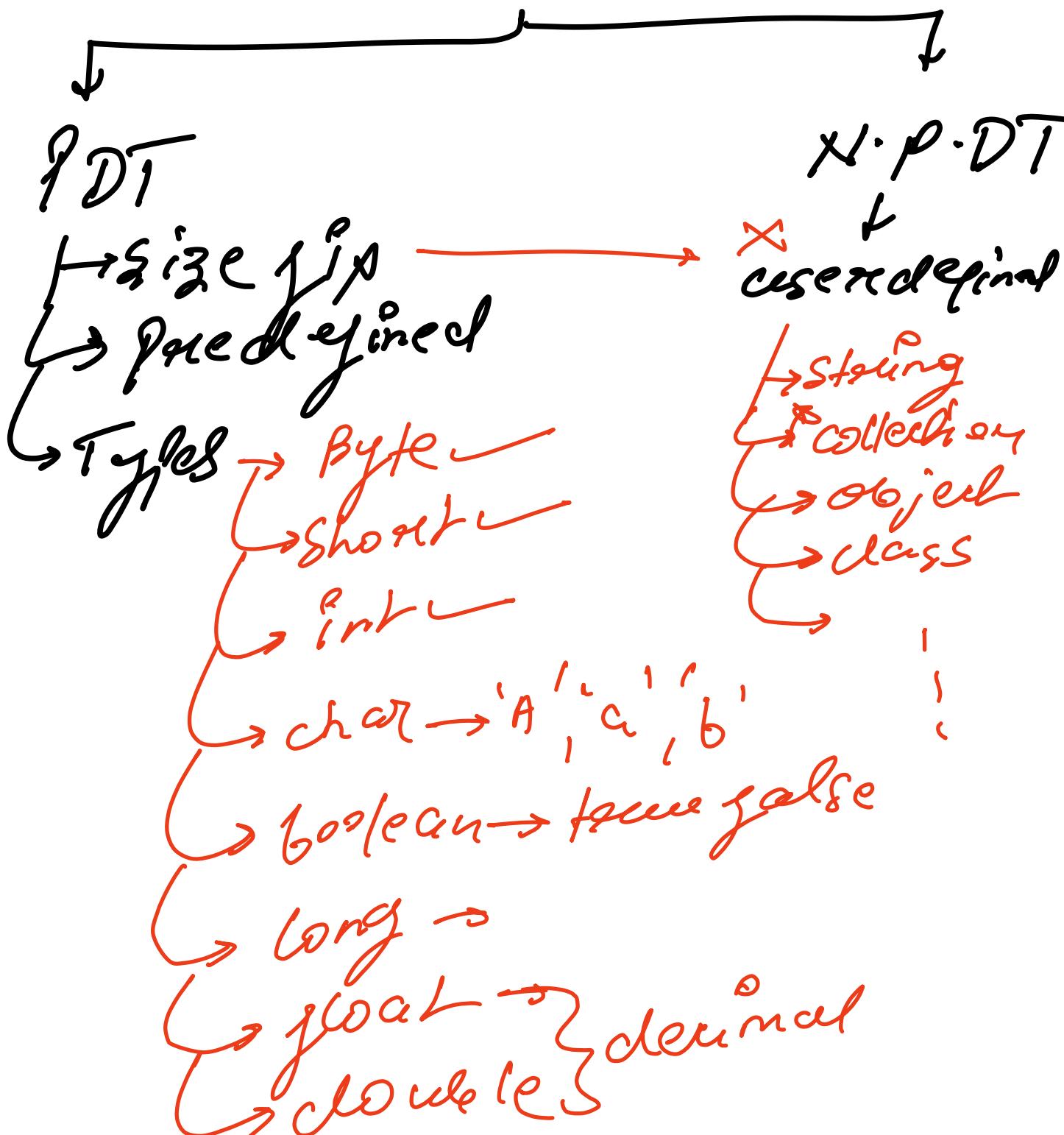
$age = 10$   
 $color = \text{white}$   
`run()`  
`eat()`

dog

cat

Heap?

# DATA TYPE



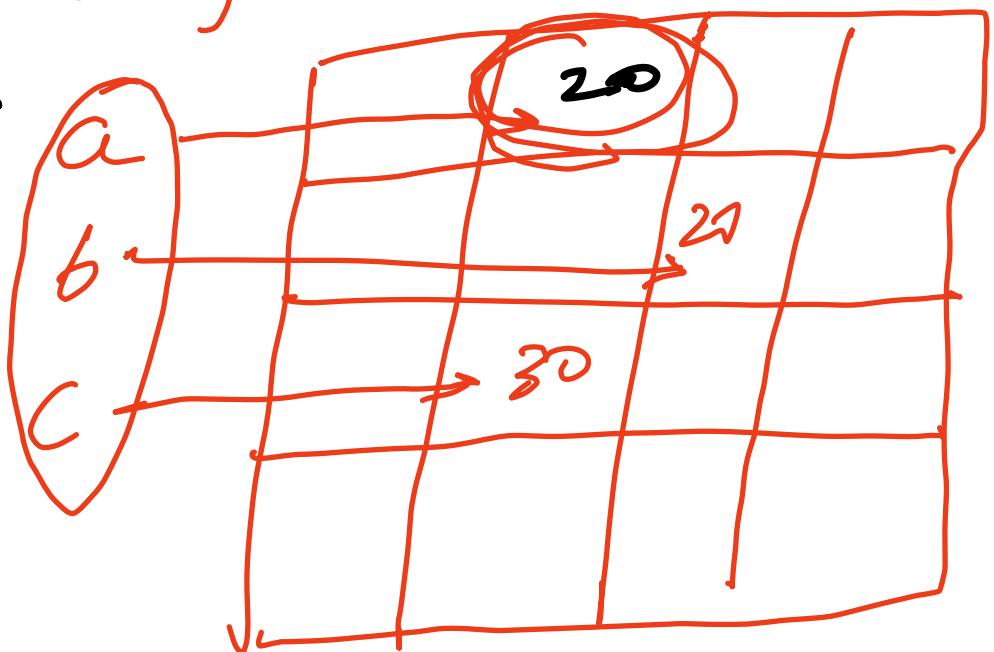
~~String~~ name = "Arun Kumar Sharma"

~~int a = 10; j =~~

~~for (a = 10;~~

$\rightarrow a = 20; j$



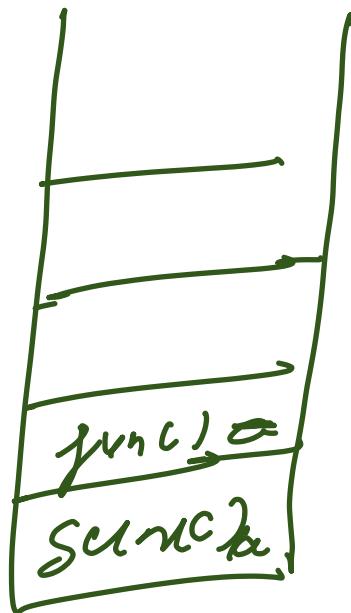


# Types

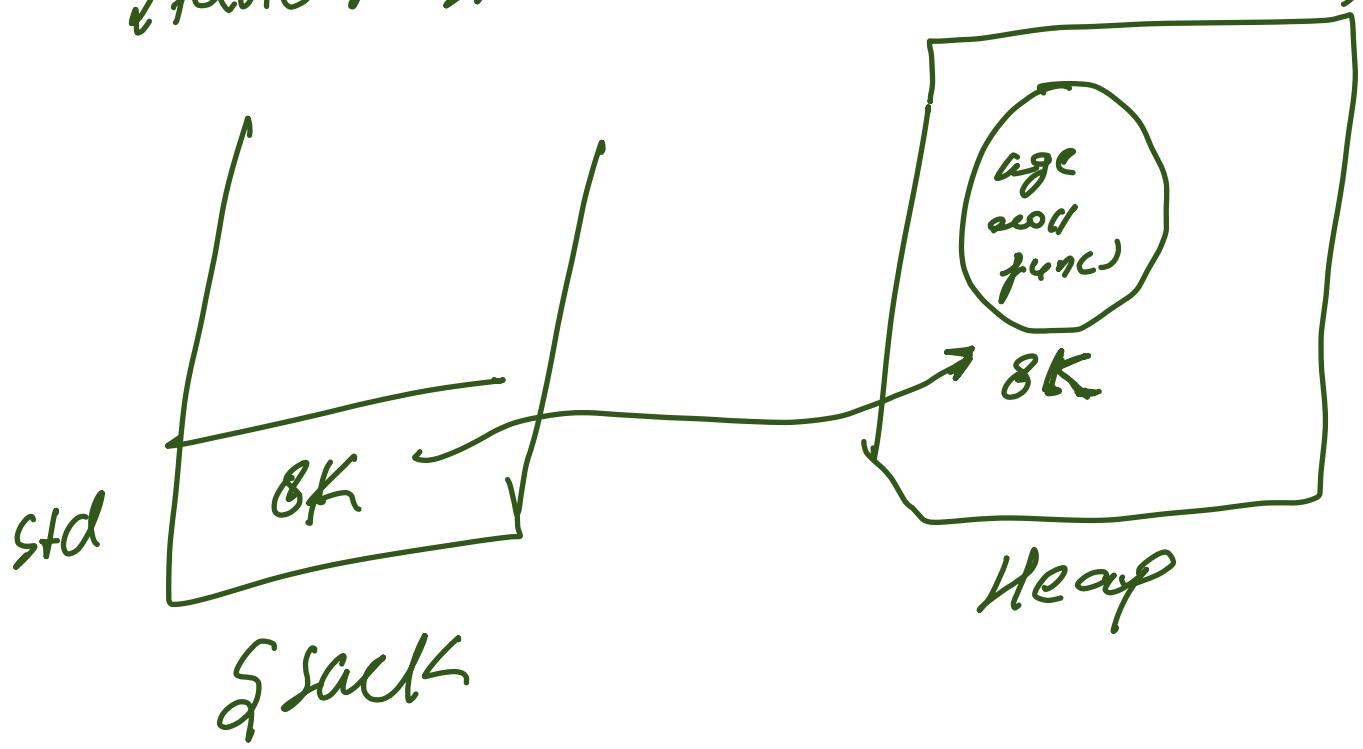


## local :

```
class student {  
    → int b = 20; // instance  
    static c = 30; // static  
  
    void run() {  
        → int a = 10; // local variable  
        s.o.println(b);  
    }  
  
    → static void run() {  
        → s.o.println(a) X  
        → s.o.println(b) ✓  
        → s.o.println(c) ✓  
    }  
}
```



Student std = new Student();



$a + 1$

$$\hookrightarrow \textcircled{a} = a + \underbrace{1}_{\text{1st}}$$

2nd

$$+ a \Rightarrow \textcircled{a} = a + \underbrace{1}_{\text{1st}} \quad \textcircled{1}$$

$$a \oplus a \oplus a$$

$$a = \cancel{a + 1}$$

$$\begin{aligned} a &= 40 \\ b &= 20 \end{aligned}$$

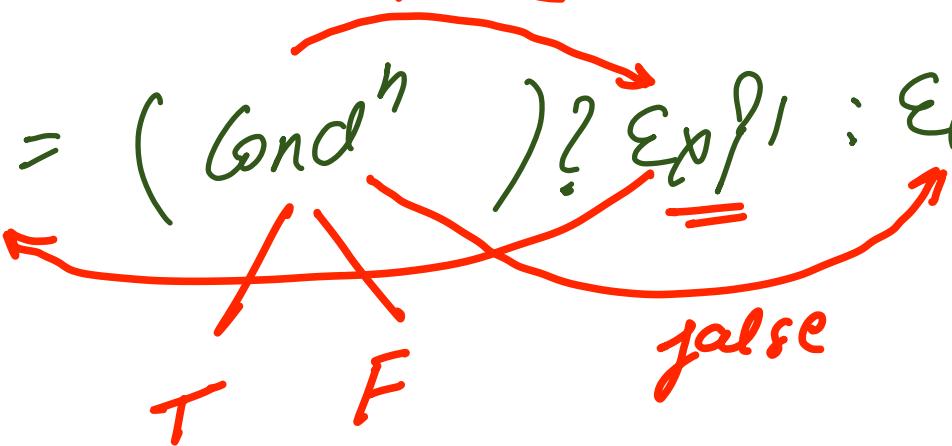
$$\text{if } (a > b \quad || \quad a \geq 30) \quad ) \{$$

}

-

variable = (cond<sup>n</sup>) ? Expr<sub>1</sub> : Expr<sub>2</sub>

True  
False  
 $T$        $F$



$$a = 20$$
$$b = 30$$

int max = (a < b) ? a : b

$a < b$   
20 < 30  
true

int max = 30 ;

① if (condition) {  
    true                  false } } } } } }

三

$$\begin{array}{lll} a > b & a = c^{10} & a > b \\ a! = 20 & a! = 8 & b > a \end{array}$$

if-else

if(Cond){

2

3

else ε

if else-if

if (Cond<sup>n</sup>) {

else-if (Cond<sup>n</sup>) {

else-if (Cond<sup>n</sup>) {

}

Ex:  $a = 10$   
 $b = 20$   
 $c = 30$

$\{ \text{if } (a > b) \}$

{

~~else~~  $\{ \text{if } (a > c) \}$

{

|

|

|

$ij(\text{Cond}^n)$  }  
 ~~$\neq$~~   
 $ij(\text{Cond}^n)$  }  
6  
2

}

switch (variable to be tested) {

case 1: statements  
break

case 2: statements  
break

case 3: statements  
break

default: statements  
break

}

$a = \text{co}$

$b = \text{ro}$

$c = " * " .$

Case " $\neq$ " =

Case "-" = =

,

,

,

,

$\text{if } \text{no} \text{ } \bar{\text{y}} = 1 \text{ } \&$   
 $\text{s.o.pln("monday")}$   
 $\text{else if } \text{no} == 2 \text{ } \&$   
 $\text{s.o.pln("Tuesday")};$   
 $\vdots$   
 $6 \rightarrow \text{Sat}$   
 $0 \rightarrow \text{Sunday}$   
 $8 \rightarrow \text{Monday}$   
 $9 \rightarrow \text{Tuesday}$   
 $\vdots$   
 $15 \rightarrow \text{Monday}$   
 $16 \rightarrow \text{Tuesday}$

$8 \rightarrow 1$   
 $9 \rightarrow 2$   
 $10 \rightarrow 3$   
 $\vdots$   
 $15 \rightarrow 1$   
 $16 \rightarrow 2$

$$\textcircled{10} \mid \gamma \Rightarrow 3$$

$$8 \mid \textcircled{D} \Rightarrow \textcircled{1}$$

$$9 \mid \gamma = 2$$

$$15 \mid \gamma = 1$$

$$16\% \geq 2$$

$$8\% \geq 1$$

$$2\%, \text{ if } \geq 2$$

remainder  $\Rightarrow 0 \dots n-1$

$0 \dots n-1$

$0 \dots 6$

$$3\% \geq 2$$

$\{$

1  
2  
3  
4  
 $\}$

5  
6

6

$N \% D \Rightarrow$  range of mod  $\Rightarrow 0$  to  $D-1$

$j(N \% D)$

$\hookrightarrow \text{rem} = N$

$$\text{ex: } 2 \% 7 = 2$$

$$3 \% 7 = 3$$

⋮

$$8 \% 7 = 1$$

$$9 \% 7 = 2$$

int no = 15;      ② → ⑥

switch( no%7 ) {

case 1: "monday" =  
break;

case 2: "tuesday" =  
break;

⋮

$$\begin{aligned}a &= 10 \\b &= 20 \\c &= 30\end{aligned}$$

if(  $a > b$  &&  $a > c$  ) {  
    s.o.pln ("a");

{

else if(  $b > a$  &&  $b > c$  ) {  
    s.o.pln ("b");

{

else if(  $c > a$  &&  $c > b$  ) {  
    s.o.pln ("c");

{

~~#kap~~ → divisible by 4

$$2 \mid 4 \quad 7^0 \mid 4 \Rightarrow 3$$

$$8^0 \mid 4 \Rightarrow 0$$

$$9^1 \mid 4 \Rightarrow 1$$

$$12^0 \mid 4 \Rightarrow 0$$

int year = 2022 ;

if (year % 4 == 0) {  
 System.out.println("Leap Year");

}

else {  
    cout << "Not a leap year";

variable = (Condition) ? a : b

int n1 = 10

int n2 = 20

int max = (n1 > n2) ? n1 : n2 ;

→ X → Y →

Positive no  $\Rightarrow$  1 & 7

① → ① / ⑦

② 3 4 5 6

N = 7

for (i=0; i<7)

if (i=1 & i!=N)  
 $N \% i == 0$

2x8

$\Rightarrow 1 \rightarrow \delta$

$$7^0 \% 2$$

$$8^0 \% 2 \Rightarrow 0 \neq$$

$$7^0 \% 3 \neq$$

$$9^0 \% 4 = 1 \neq$$

int no = 8;  
bool isprime = false; i

for (i=2; i<no; i++) {

if (no % i == 0) {

isprime = false

}

{

if (isprime) {

System.out.println("prime")

```
    }  
else {  
    s->oplн ("non Feline").
```

$$A = 10$$

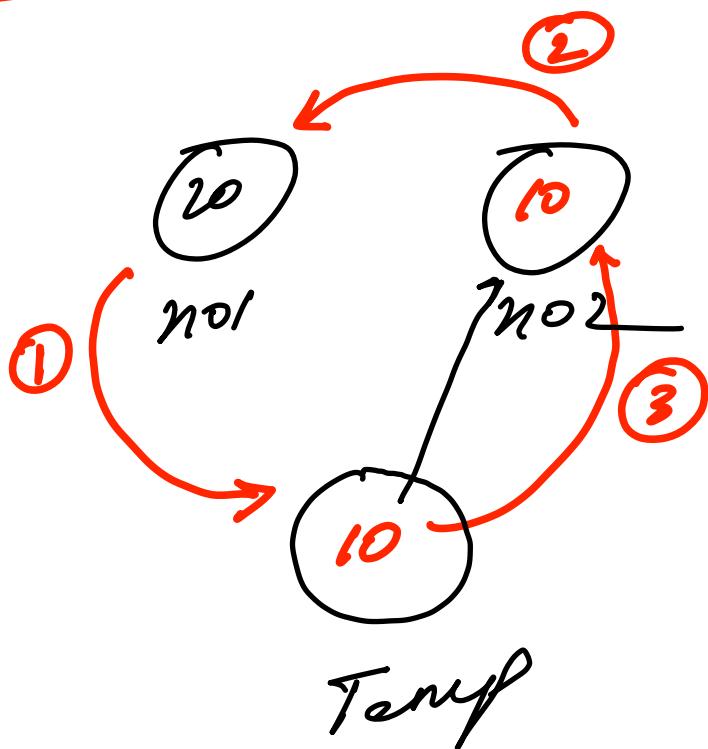
$$B = 20$$

$$\left. \begin{array}{l} A = 20 \\ B = 10 \end{array} \right\} \text{of}$$

```
A = B ;  
B = A ;
```

$$\text{temp} = 10$$

```
no1 = 20  
no2 = 10
```



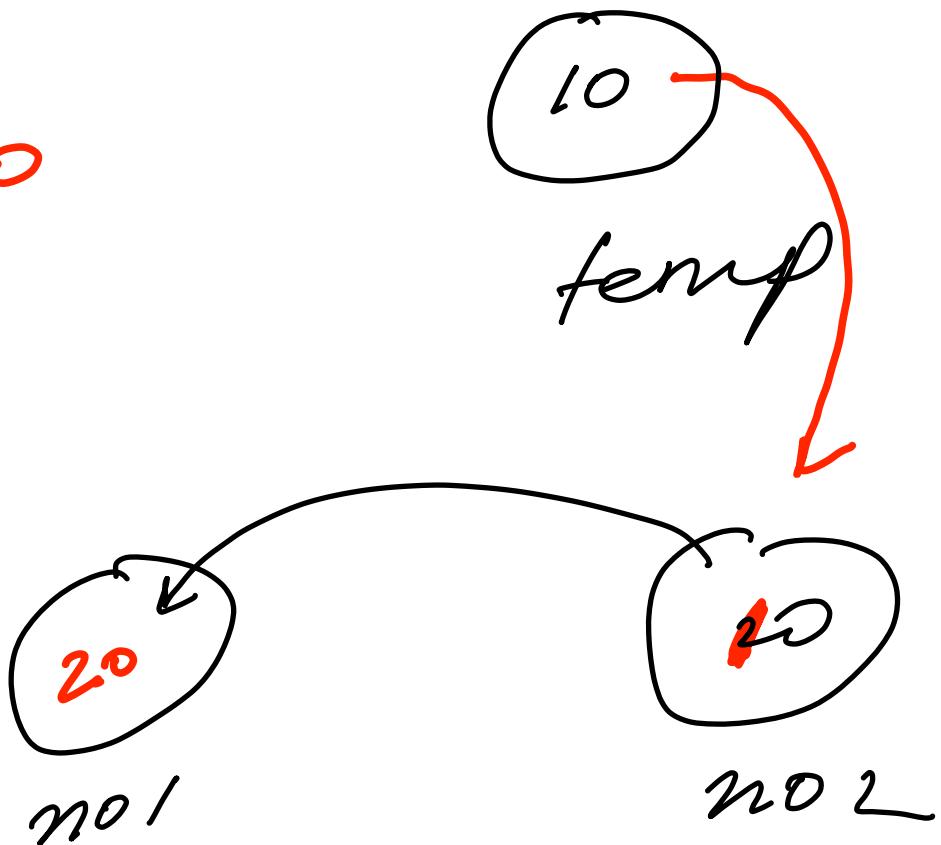
$$\text{int temp} = no1 /$$

$$no1 = no2$$

$$no2 = \text{temp}$$

$no1 = 10$

$no2 = 20$



$int temp = no1;$

$no1 = no2$

$no2 = temp$

$$\left. \begin{array}{l} a = \underline{a+b} \\ b = a - b \\ a = a - b \end{array} \right\} \quad \begin{array}{l} n_{01} = 10 \quad // 30 \\ n_{02} = 20 \end{array}$$

$$\textcircled{a+b-\beta} \quad \begin{array}{l} n_{01} = \underline{10+20} \\ n_{02} = n_{01} - 20 = 10 \\ n_{01} = 30 - 10 = 20 \\ n_{01} - n_{02} \end{array}$$

$$\begin{array}{l} n_{01} = n_{01} + n_{02} \\ n_{02} = n_{01} - n_{02} \\ n_{01} = n_{01} - n_{02} \end{array}$$

$n = 7 \rightarrow$  prime ↗  
↙ ↘  
1 7

2 3 4 5 6 ~~7~~  
↙ X

$13 \rightarrow$  ~~2 5 12~~

$\sqrt{2 \dots n-1}$

$n \% i == 0$

~~1 2~~

$\frac{18}{\cancel{2}} = 9$

int  $n = 7$

boolean prime = true;

for ( $i=2; i < n; i++$ ) {

if ( $n \% i == 0$ ) {

`isPrime = false;`

{

{

`if (isPrime) {`

`"Prime"`

{

`else {`

{

`"NOT Prime") ;`

{

$$5! \Rightarrow 5 \times 4 \times 3 \times 2 \times 1$$

Ent ans =)

for( i=5; i>=1; i-- ) {

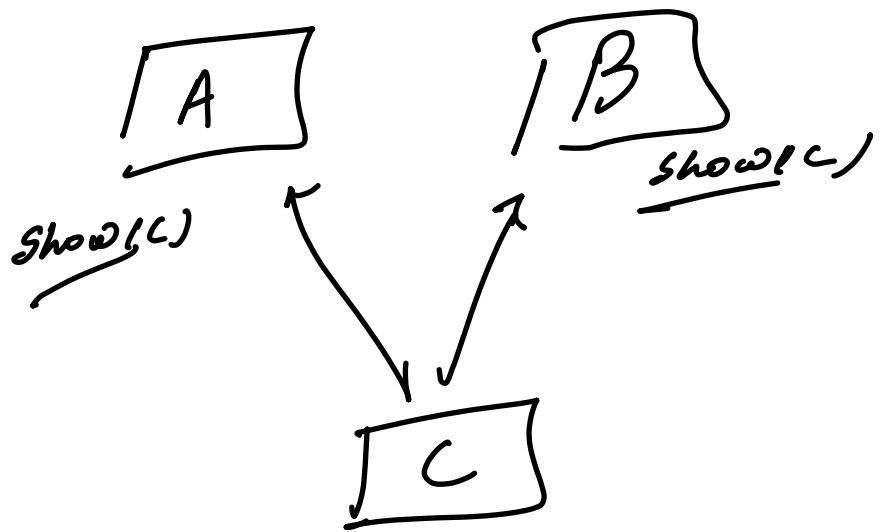
ans = ans \* i

5 \* 4 \* 3 \* 2 \* 1

}

120 5 -

ans = ans \* ?



interface I1 {

→ void sum();

—  
—  
—  
—

}

Interface I2 {

void sum();

—  
—

}

class A implements I1, I2 }

Void Sum() {

—

—

—

}

class A  $\Sigma$

sumc)  $\Sigma$

$\Rightarrow$  "Hi A"

{

class B  $\Sigma$

sumc)  $\Sigma$

$\Rightarrow$  "Hi B"

{

class A {

    void sum () {  
        =

}

class B {

    void sum () {  
        =

}

}

class C extends A, B {

}

psum () {  
    CC = new CC();  
    C.sum();

Interface I1 {

void sum();

}

Interface I2 {

void sum();

}

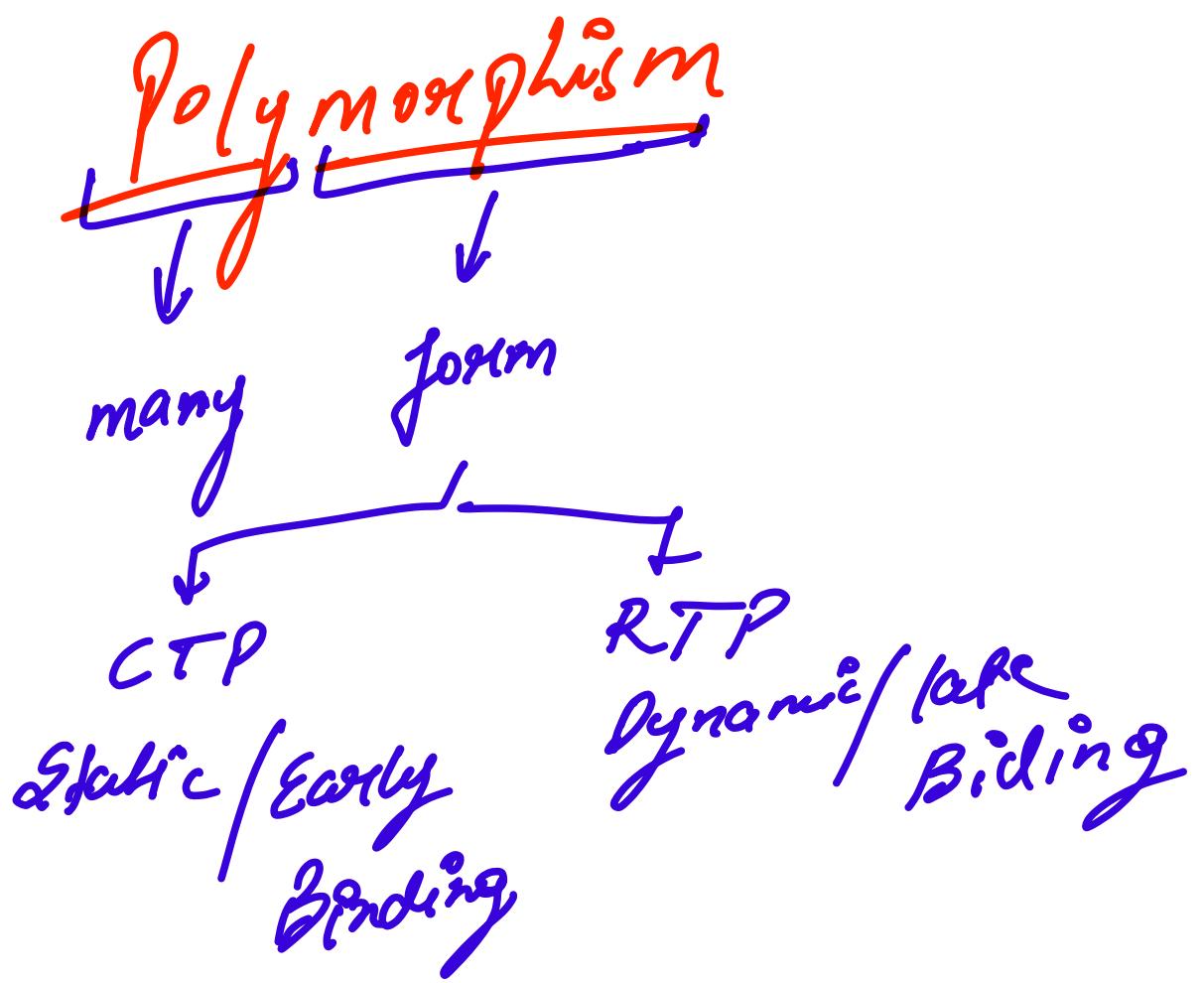
Class C implements I1, I2 {

public void sum() {

}

}

- ① class inherit a class  
↳ extends
- ② class inherit interface  
↳ implements
- ③ interface inherit interface  
↳ extends
- ④ interface ~~inherit~~ class



o to n  
show (int... a) {

}

byte  $\Rightarrow$  short  $\xrightarrow{\text{int}} \xrightarrow{\text{char}}$  long  $\rightarrow$  float  $\rightarrow$  double

class Test {

void show( int a ) {  
 cout << a ; }

}

psvmc {

Test obj = new Test();  
obj.show('a')

int

# Runtime Time Poly



Method overriding

```
class Parent {  
    void show() {  
        System.out.println("Hi from A");  
    }  
}  
  
class child extends Parent {  
    void show() {  
        System.out.println("Hi from B");  
    }  
}
```