

MODULE 1

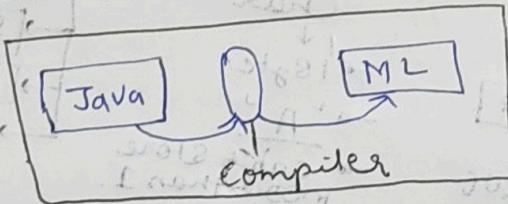
Date - 09/9/2024

Lecture 1

What is Java & Why we are learning this?

Machine - 0 - OFF } 01 is called Low-level lang.
understand only 1 - ON } see machine lang.
One lang.

- Object-Oriented lang: Create Replica of these Entity.
Car(वाहन) - Real World Entity → Create Replica of these Entity.
Define through Programming.
- Java is an OO programming Lang.
- Example - Uber, Rapido → we book our ride
Zomato
- We write code in Java, then our code to be understood by machine, Compiler comes into play,
convert/change our code into machine lang.



Lecture 2

```

public class HelloWorld {
    public static void main(String[] args) {
        // we want to print Hello World !
        System.out.println("Hello World");
    }
}
  
```

- Code getting Executed TOP to DOWN.

Library - `java.lang.System`

`java.io.PrintStream`

`import java.util.*;` → Knows How to print

`println` → prints anything on Next Line

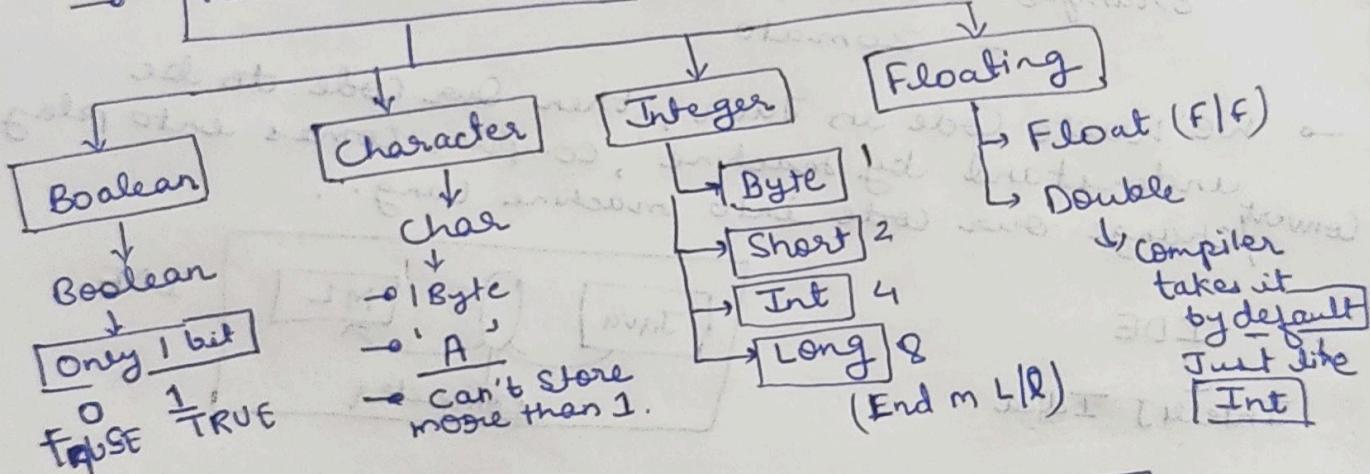
↳ it doesn't affect printing directly, but it gives you access to other utilities

Datatype

→ Primitive Data Type

And

NON- Primitive Data type



1 Byte - 8 bits

Byte Range - 1 Byte - 2^{8-1}
 $2^7 / 76543210$

Short - $2^{15} / 32768 \rightarrow [-128 \text{ To } 127]$

[memory]
KB, GB, MB

Float | Double - 7 Decimal digits

Only Take 6-7 digits after (.)(Decimal) → That's why use double.

Variables

Containers for storing data values.

Camel Case Convention

FirstData, shortData

11/09/24
L-4

Rules for declaring a Variable

- ① Starts with alphabet
- ② White space not allowed.
- ③ Reserved keywords can't be used for Variable Name.
- ④ Name is Case sensitive.

Taking Input From User

→ Scanner → Class

Blueprint for Creating Any Object.

Eg-

`Scanner inputHelper = new Scanner(System.in);`

Scanner is a Special class in Java which Helps you to take input from the User.

Taking Input ← Read from the Keyword.

`int number = inputHelper.nextInt();`

method to Read from the Keyword.
(Integer in the case)

`Scanner S = new Scanner(System.in)`

`int a = S.nextInt();`

`import java.util.Scanner`

library

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

`Scanner SC = new Scanner(System.in);`

`int a = SC.nextInt();`

`System.out.print("My age is ", a);`

`}`

Input age: 10 + 10 = 20

Output: 20

Age = 10 + 10

Age = 20

Age = 20

```

System.out.println("Provide Your Height");
float H = sc.nextFloat();
System.out.println("Your Height - ");

```

Conditionals

If - Else

```

if (money > 50)
{
    System.out.println("I will drink Juice");
}

```

```

else
{
    System.out.println("I will drink Water");
}

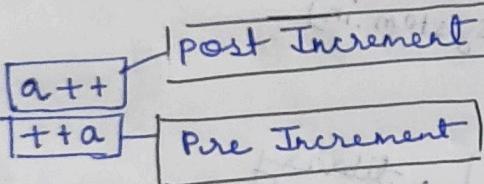
```

Operators

++ Increment Operator

4-5

12/09/20



$a = 5$ direction
 $b = ++a + a$ or $6 + 6 = 12$
 $b = a + ++a$ First change value
 $5 + 6 = 11$ i.e. 6

$b = a + [a++]$ post increment
 $5 + 5 = 10$ ↓
 float do the operation
 Then
 First give the value & then perform
 the operation.

Left To Right

$$b = \underline{++a} + \underline{a+t}$$

$a=5$

\downarrow \downarrow
16 6
↓ ↓
12

if then it becomes $\frac{1}{2}$

Imp Ques
at least
2-3
Que
comes from
site.

Value of $b = 12$

$a=5$

$$b = \underline{++a} + a+t + (a+t)$$

\downarrow \downarrow
6+6+7
= 19

Value of a is 5 here $\rightarrow a$ becomes $\frac{1}{2}$ after this $(a+t)$ is evaluated

$a=5$

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

\downarrow
 $5+6=11$

Value of a is used in the expression, but $a++ \rightarrow$ value of a is used in the expression, but after this a becomes $\frac{1}{2}$.

SO if we have "two left / right" operation

Postfix Operator

just add "left" & "right" & evaluate both

$--a$ Pre-decrement

$a--$ Post-decrement

first this will decrease value of $a = 4$

$$a=5$$

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

here value of $a=4$ then it becomes 5

$4+4+5$ here a value is 5 then it reduces to 4.

$$b=13$$

$a=4$

(some time not !) ?

(for 2nd time + ?)

+1

$$\left\{ \begin{array}{l} a=a+1 \\ \quad \quad \quad a=a+1 \\ \quad \quad \quad a=a+5 \Rightarrow a+=5 \\ \quad \quad \quad a=a+6 \Rightarrow a+=6 \text{ and } 6 \neq 11 \text{ (so !)} \\ \quad \quad \quad +a \end{array} \right.$$

the result of 2nd part is 11

$$a=a-1 \rightarrow a-=1 \text{ is removed}$$

$$a=a-5 \rightarrow a-=5 \text{ and } 5 \neq 0 \text{ so } 5=0$$

$$a=a-b \rightarrow a-=b \text{ and } 7=0$$

$+, -, *, /$ - Arithmetic Operators.

$\% \rightarrow$ modulo operator (gives remainder)

Checking whether a is divisible by b or not

```
→ Scanner sc = new Scanner(System.in);
System.out.print("Please enter number a: ");
int a = sc.nextInt();
System.out.print("Please enter number b: ");
int b = sc.nextInt();
if ((a % b) == 0)
{
    System.out.println("a is divisible by b");
}
else {
    System.out.println("a is not divisible by b");
}
```

Logical Operators

& - and operator \rightarrow Both/All Cond" need to TRUE

|| - or operator \rightarrow Only one Cond" need to be TRUE

! - not operator \rightarrow Either Cond" True Or False.

if (Rain will come)

I will not Go School.

?

if (! Rain will come)

{ I will Go School }

Not

if (!a) || your Cond" always want that it Should

be TRUE but if a = true & you are

putting ! that is !a then it

becomes false.

a = True \Rightarrow !a = False

a = False \rightarrow !a = True

if (a != 5) || a == 5 then Condⁿ is False

7 1 - 31
8 2 -
9 3 - 31
10 4 -
11 5 - 31
12 6 -

S.O.P ("a is a valid number");

}

→ if - else

→ if - else - if - else

→ Switch Case

L-5

13/09

LOOPS

When You need to repeat things Again & Again.
Like Same line of code getting executed again & again

- ② There should be an update after every loop to monitor loop progress.
- ① Stopping point.
- ③ From where you want to start a loop?
To what I want?

For Loop

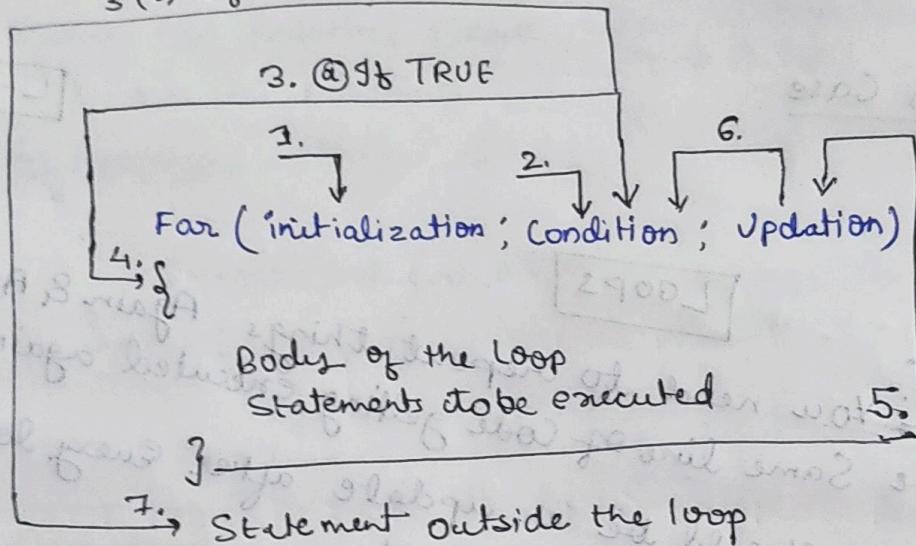
- ① initial
- ② Condition (Allow us to execute loop)
- ③ update.

For (ini. ; condⁿ ; update)
 ↓
 Stopping.

→ Print Hello World 5 times.

For (int loopCounter = 1; loopCounter \leq 5; loopCounter++)
 {
 S.O.P ("Hello World");
 }

3(b) If false.



I CBU Cycle → Initialise Condition Body Update.

Sum of natural Numbers.

Int / long sum = 0;

for (int i = 1; i <= n; i++) {

(good) sum = sum + i

}

System.out.print(sum);

Let's suppose,

You have a no. $N = \frac{2345}{5432}$

Reverse
the no.

Very Important Question

While Loop

Initialise

while (Condition)

{

Body Statement

}

Update

Eg - int i = 1;

while (i <= N) { S.O. P("HelloWorld") }

i++

initialisation
Condition of (i <= N) is true
body : S.O. P("HelloWorld")
update : i++

→ Initialisation is something that happen only for 1 time in loop that's realised later why in while loop it is outside of loop

2345
↓
Reverse 5432

(Modulo) % 10

10) 2345 (2345
- 20
- 34
X 34
- 45
- 5

$$\begin{aligned}2345 \% 10 &= 5 \\2345 / 10 &= 234 \\234 \% 10 &= 4 \\234 / 10 &= 23 \\23 \% 10 &= 3 \\23 / 10 &= 2 \\2 \% 10 &= 2 \\2 / 10 &= 0\end{aligned}$$

1 | 5

$$5 \times 10 + 4 = 54$$

$$54 \times 10 + 3 = 543$$

$$543 \times 10 + 2 = 5432$$

10) 234 (23
- 20
- 34
X 34
- 45
- 5

10) 23 (2
- 20
- 3
X 3
- 3
- 0

[do-while]

do {

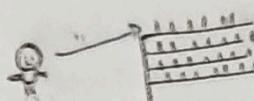


} while (condition) go True

→ at least one line going to execute the code.

Nested Loop

Direction → moving in 2 direction.



Labour Planted

```
for (int labourRow = 1; labourRow <= 4; labourRow++)
```

```
{   for (int plant = 1; plant <= 10; plant++)
```

```
{       S.O.P ("Planted no.: " + plant + " for row " + labourRow)
```

```
}
```

Practice Ques.