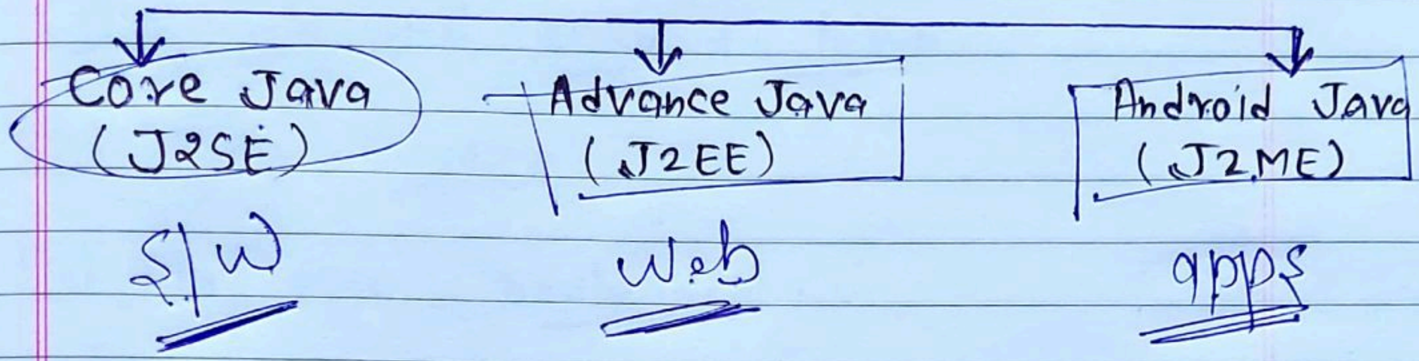
Java Full Course

*. Flavours Of Java :-



Core Java (J2SE) — S/W

Advance Java (J2EE) — Web

Android Java (J2ME) — apps

#. Core Java Syllabus :-

- Introduction to Java.
- Features of Java.

#. Core Java Syllabus :-

- Why Learn Java?
- Introduction to Java.
  1) Syntax of Java
  2) Installation of Java (JDK)
  3) First Java Program
  4) Compilation & Execution process of Java.

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Why Learn Java? # features

1. Simple and easy to learn.
2. Open source.
3. Platform independent.
4. Secure.
5. Embedded. [C++ , Java]
6. Compiled & interpreted
7. Robust
8. Large library & frameworks

Why Java so. popular

i) s/w
ii) Web
iii) apps.

Java Full Course

- Datatype
- variable
- Identifier
- Keyword
- Input & Output
- Control flow :-
  - → Conditional Statement.
  - → Looping Statement.
  - → Transfer Statement.
- Operators
- Java methods
- Java Array
- Java String

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Q. What is Java? full explaination.

Ans-> Java is a Class based high-level, Object-oriented programming language developed by "James Grosling" and his friends in the year 1995.

Note:- (i) The first version of java (JDK 1.0) was released on the year Jan-23rd-1996 by "Sun microsystem". 2010

(ii) Latest version of Java (JDK 16) on the day 16th-march-2021. by "Oracle".

Syntax:-

```
class class-name
{
    public static void main(String args[])
    {
        // Code
    }
}
```

Param

JVM

Java Comments:- (i) Single line (//)
(ii) Multi-line (/* - - - - - - - - - - - - */)

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Source Code

~~Installation~~ of Java (JDK 16)

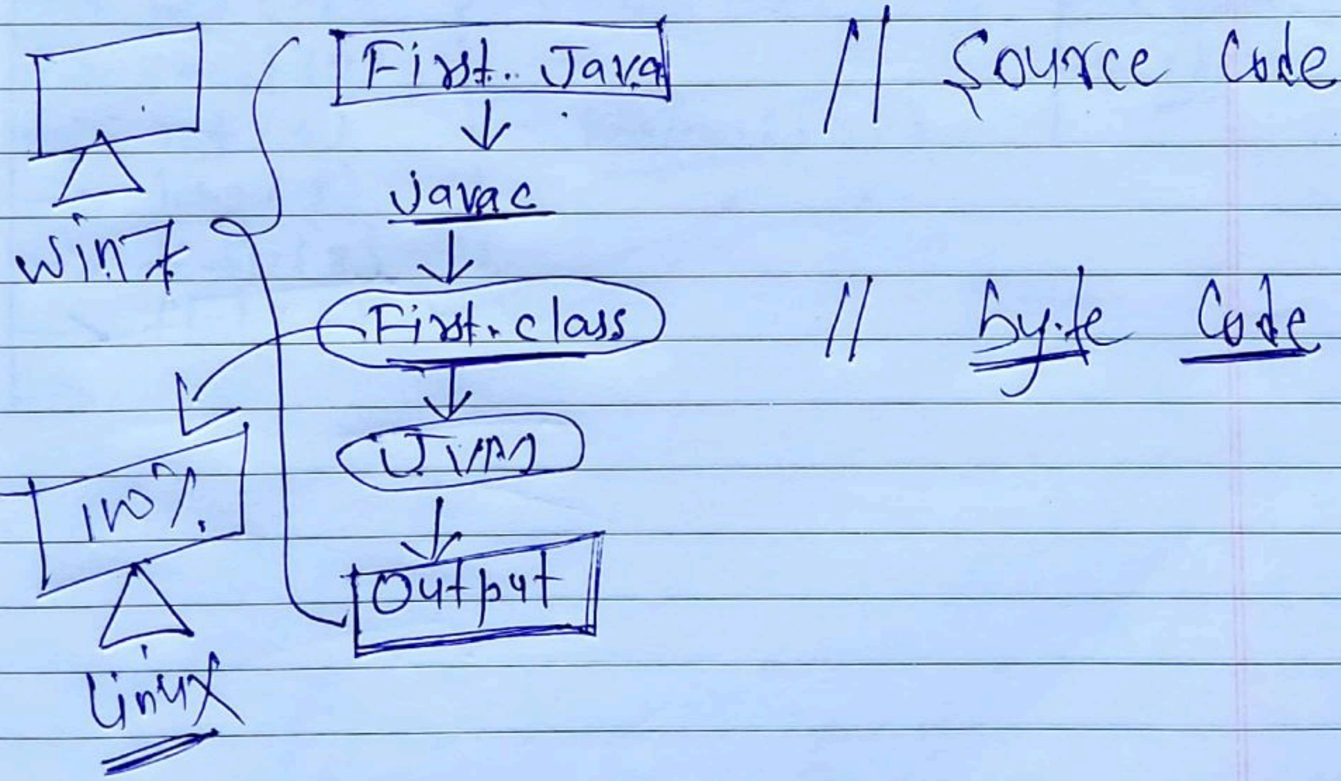
Installation of Eclipse IDE

History

Oak → Java

Q. First Java program?

Compilation & Execution process of Java :-



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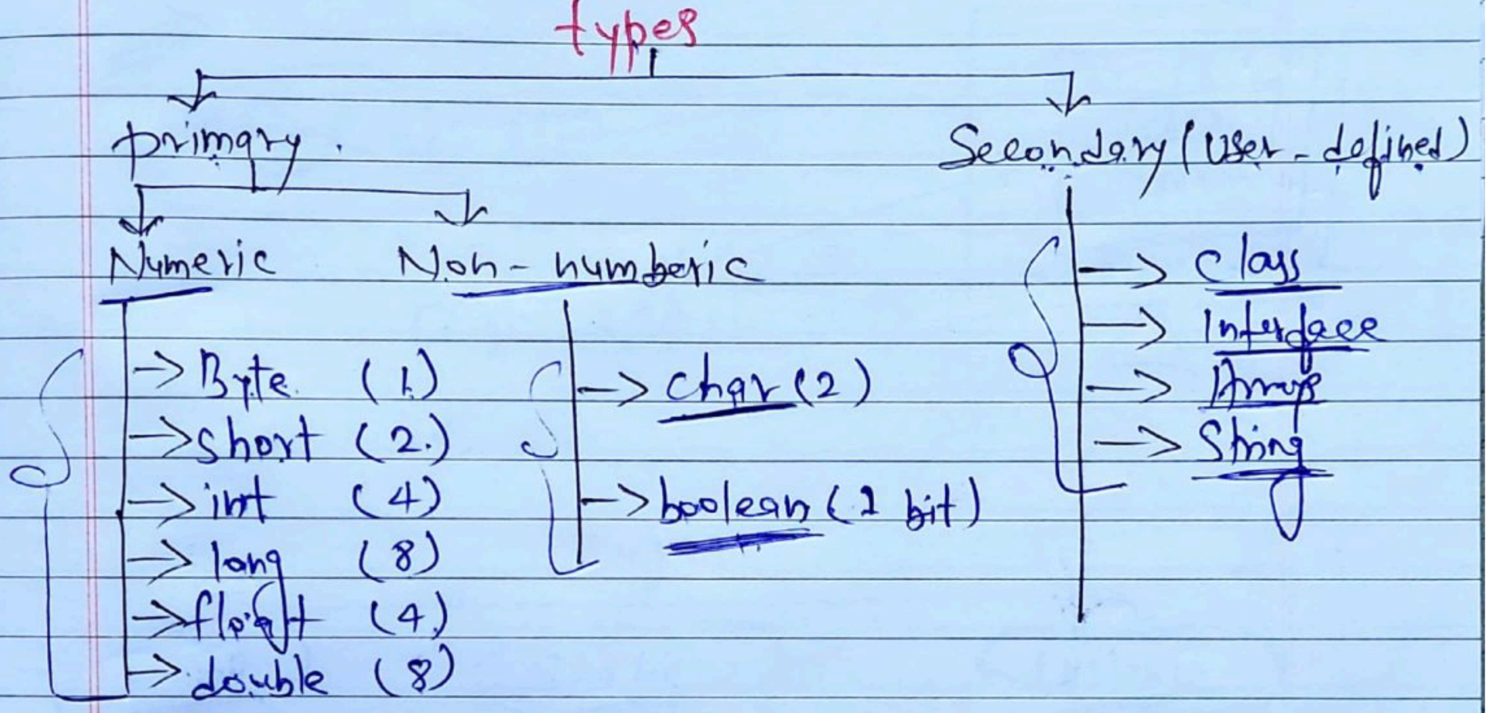
Q. What is Datatype ? full explaination.

Ans⇒ Data type Specifie the different types of values that are stored on the variables.



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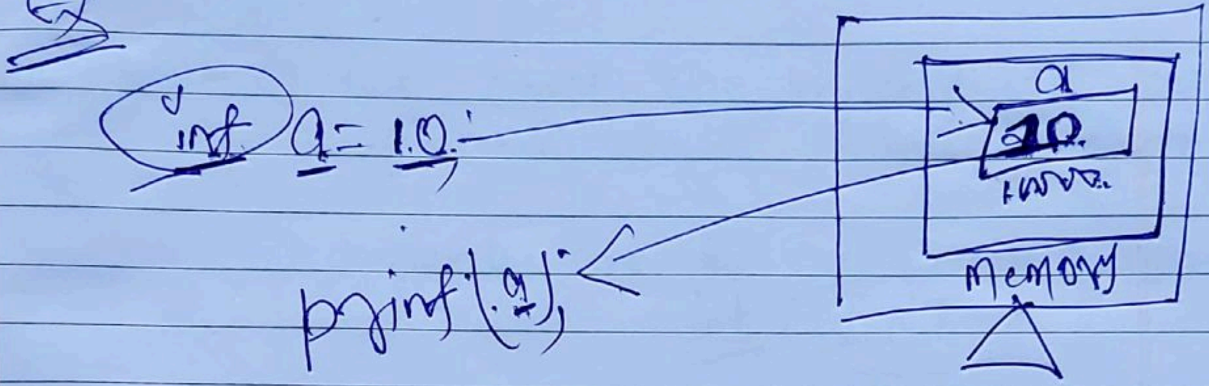
Q. What is variable? full explaination.

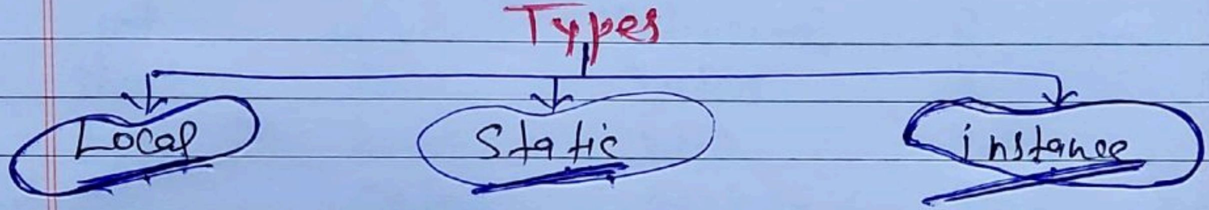
Ans -> variable is the name of memory location where we stored different types of values.

Ex



```
int a= 10;

print(a);
```



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Q. What is Keyword.? full explaination.

Ans-> Keywords are the reserved word whose meaning is already defined in the java compiler.

pdf

Note :- We can't use keyword for our personal use. int ~~char~~ = 10;

⊙ Keywoords are the Case - sensitive.

{ a -> a
a -> A

int -> $\boxed{INT}$

Java keywords:-

50

byte	else	extends	import	Switch
Short	for	implements	class	Case
int	do	final	interface	Const *
long	while	finally	new	goto *
float	break	try	native	Strictfp **
double	Continue	Catch	instanceof	enum ****
void	default	throw	package	assert ***
char	private	throws	return	abstract
boolean	protected	Static	this	transient
if	public	volatile	Super	Synchronized

Note:- i) * (not used)
** (added in 1.2 v)
*** (1.4 v)
**** (5.0 v)

ii) null, true, false used as a literals in Java.
1 0

50 + 3 literals

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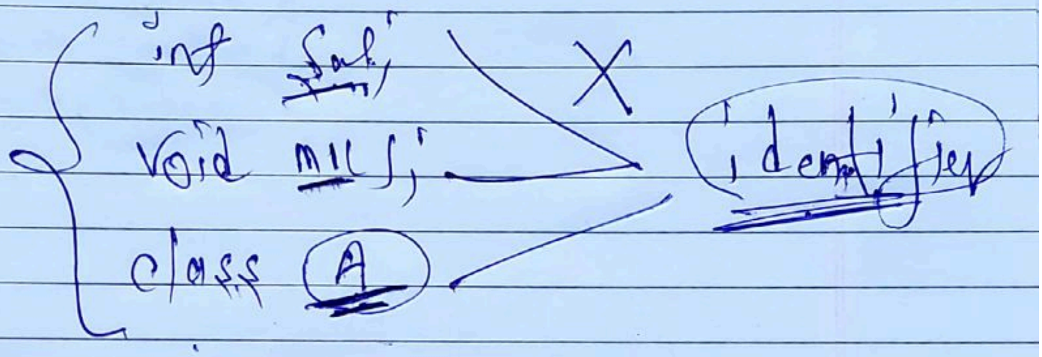
Q. What is identifier? full explaination.

Ans-> identifiers refer to the name of variables, methods, classes and so on.

Ex:-



```
int sal;
void m1(){;
class A
```

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Input & Output :-

input -> Scanner class (java.util.Scanner) *

Syntax:-

```
Scanner obj-name = new Scanner (System.in);
```

Scanner class methods

1) nextInt() -> for integer value
11) nextLine() -> for string value
111) nextDouble() -> for double value

Output -> System class (java.lang.System)

Syntax:-

```
System.out.print("___");
```

Q. W.A.P. to add two numbers?

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#. Control flow :-

① Conditional Statement

- → if
- → if - else
- → else if.
- → nested if - else

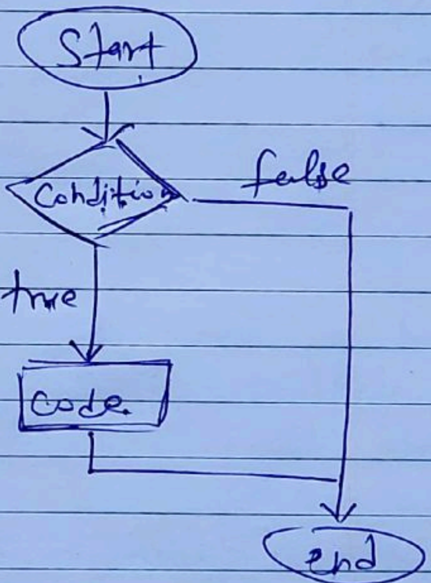
if Statement :- It is used when we want to test a single condition.

Syntax :-

```
if(condition)
{
    // code;
}
```

Program

flow chart :-

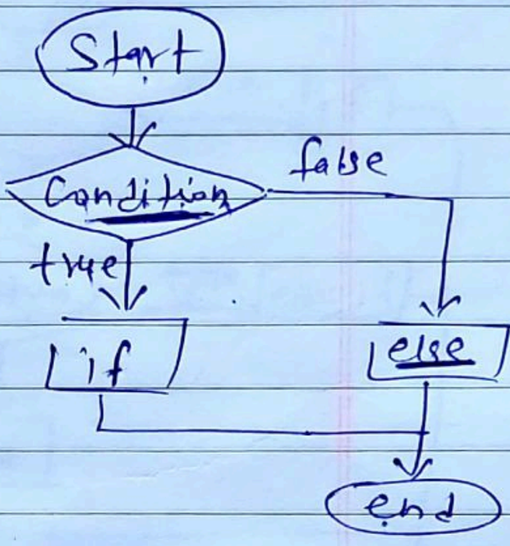


*. if - else Statement :- It is used when we want to execute too Statements for a single condition.

Syntax :-

```
if (condition)
{
  Statement 1;
}
else
{
  Statement 2;
}
```

flowchart :-



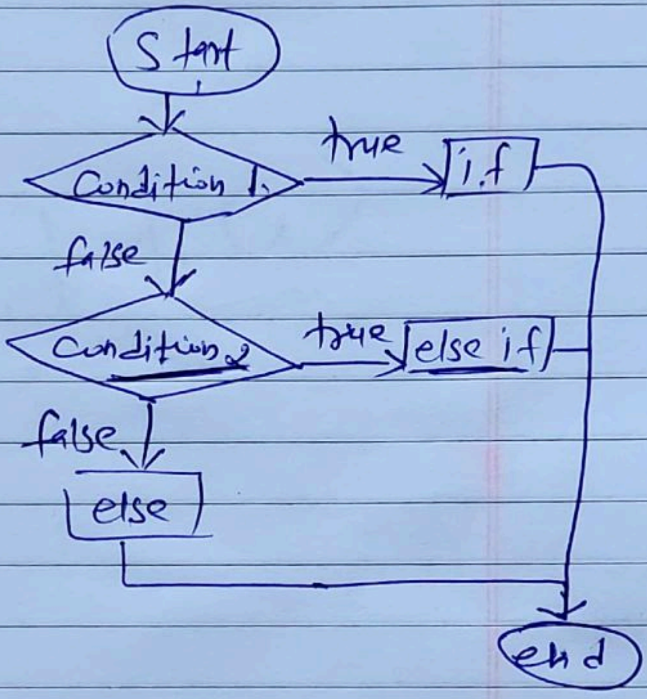
⊙ Example

*. **else-if Statement** :- It is used when we have only one if block, multiple else-if blocks and at the last else block.

Syntax:-

```
if (Condition1)
{
    Statement 1;
}
else if (Condition 2)
{
    Statement 2;
}
else
{
    Statement 3;
}
```

flowchart :-



(4)

*. **nested if-else** :- whenever, we define if-else block inside another if-else block Called nested if-else.

Syntax:-

```
if(Condition 1)
{
   if(Condition 2)
   {  'code'
   }
   else
   {  'code'
   }
}
else
{
   if(Condition 3)
   {
   }
   else
   {
   }
}
```

flowchart:-

H.W

Program (a>b>c)

#. Control Flow :-

(2) Looping Statement

- → for
- → while
- → do-while
- → for-each

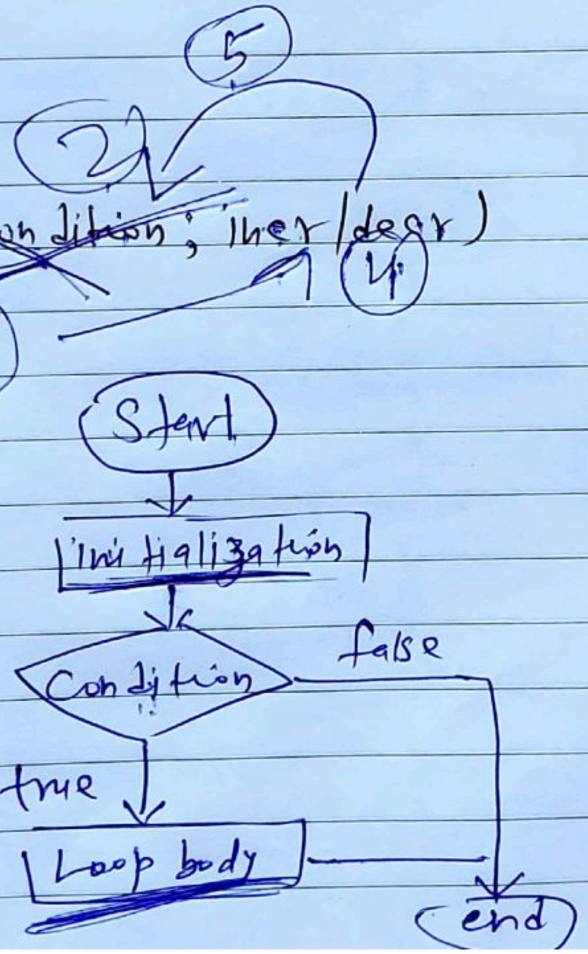
Loop :- Whenever we want to repeat certain Statements several times then we should write those Statements inside loop body.

(1) for loop :-

Syntax :-

```
              1              2         5
for(initialization; condition; incr/decr)
{                                    4
    // code        3
}.
```

Flowchart :-



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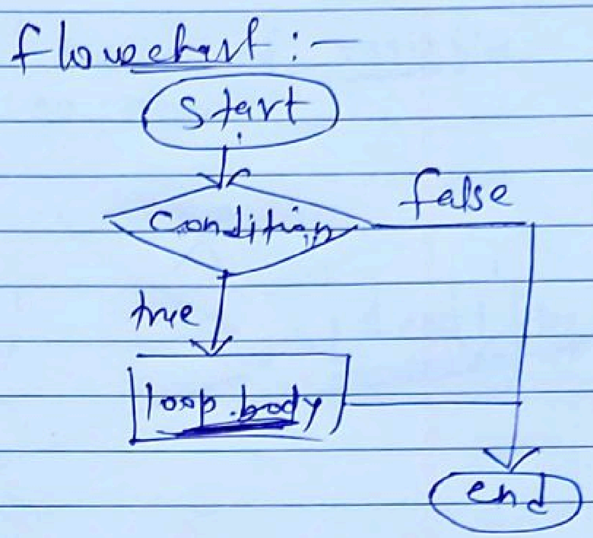
2) while loop :-

Syntax :-

```
while(condition)
{
    // code;
};
```

flowchart :-

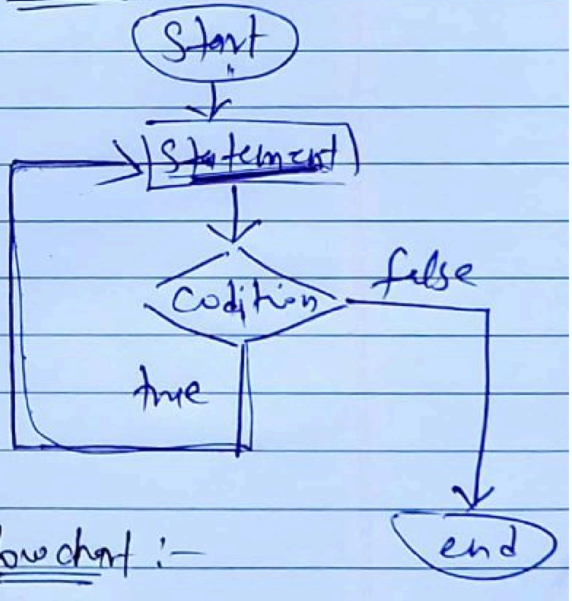


3) do-while loop :-

Syntax :-

```
do
{
    statement;   1
}
while(condition);
```

flowchart :-



4) for-each loop :- Array

```
for(datatype var1 : var2)
{
    //statement;
}
```

flowchart :-

H.W

Array program

#. control flow:—

(3) Transfer Statement

- → break
- → Continue
- → return

Java Full course

Q. What is switch Statement? full explaination.

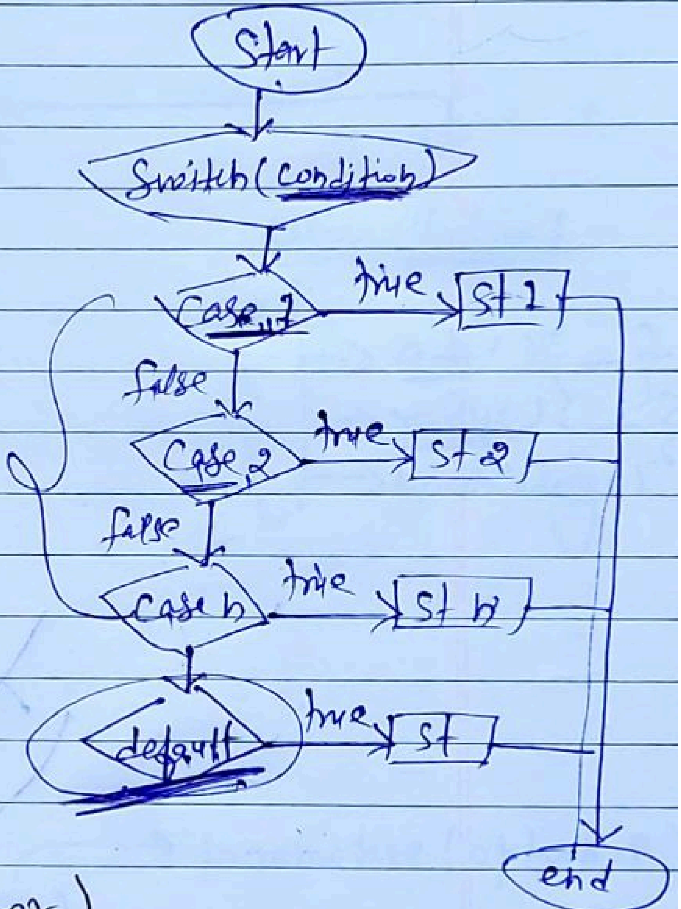
Ans → Switch is a multiple choice decision making Selection statement, it used when we want to Select only (one Case) out of (multiple Cases.)

Syntax:-

```
Switch (exp)
{
        Case 1: Statement 1;
                break;
        Case 2: statement 2;
                break;
          |
          |
        Case n: Statement n;
                break;

        default: statement;
}
```

Flowchart :-



Program (Arithmetic operator)

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Q. What is Operator? full explaination.

Ans → Operator is a Symbol that is used to perform operations according to user requirement. / + *.

Types :-

1) Arithmetic operator (+, -, *, %, /)

2) Relational operator (==, !=, >, <, >=, <=)

3) Logical operator (&&, ||, !)

4) increment / decrement

pre / post increment (++a / a++).

pre / post decrement (--a / a--)

5) Assignment operator (=, +=)

6) Ternary operator (? :) a>b>c

Java Full course

Q. What is **method**? full explaination.

Ans → Method is a group/block of code {___} which take input from the user, processed it. and give output.

Note:- • Method runs only when it Called.

• Code reusability.

Types

pre-defined

- → print();
- → Sort();
- → nextInt();
- → Sleep();
- → Concat();

user defined

- → add(){__}
- → raju(){__}
- → LearnCoding()

Syntax:-

```
return-type method-name(....)  → parameters (optional)
{

    // Statements;

}
```

Java Full Course

Q. What is arrays? full explaination.

Ans→ Arrays is an object in java, which Contains similar type of data in a contigous memory location.

Syntax:- i) data-type [ ] var-name ;

ii) data-type var-name [ ] = { 10, 20, 30 }

iii) int a[ ] = new int[5];

Note :- ① Array index starts with 0.

10	20	30	40	50
0	1	2	3	4.

Type

i) 1.D ARRAY

ii) 2.D Array

Java Full course

Q. What is Strings? full explaination.

Ans → • String is a pre-defined class in Java but we can also use as a datatype.

• Strings are the sequence of characters and its index starts from 0. "ankit";

Syntax:- i) String str = new String("ANKUSH");

ii) String str = "ANKUSH";

→ Can't change

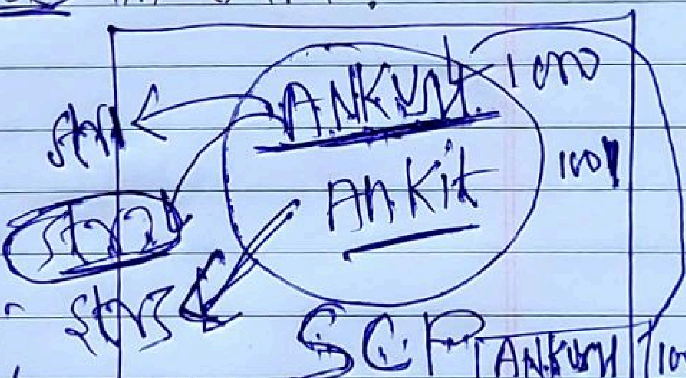
#. Why Strings are immutable in Java?

String str1 = "ANKUSH";
KUMAR

String str2 = "ANKUSH";

String str4 = "ankit",

String str3 = new String("ANKUSH");



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Q. What is class & Object? full explaination.

Ans → Class is a group of elements having common properties and behaviours.

Note :- (i) class is virtual
(ii) Object is real

```
Person P = new
        person();
```

```
class person
{
    age;
    Height;
    weight;
    +
    eat();
    Teach();
    sleep();
}
```

Types :-

- → User-defined
  - → A
  - → Person
  - → Animal
- → pre-defined
  - → System
  - → Strings
  - → Scanner

Date : / /

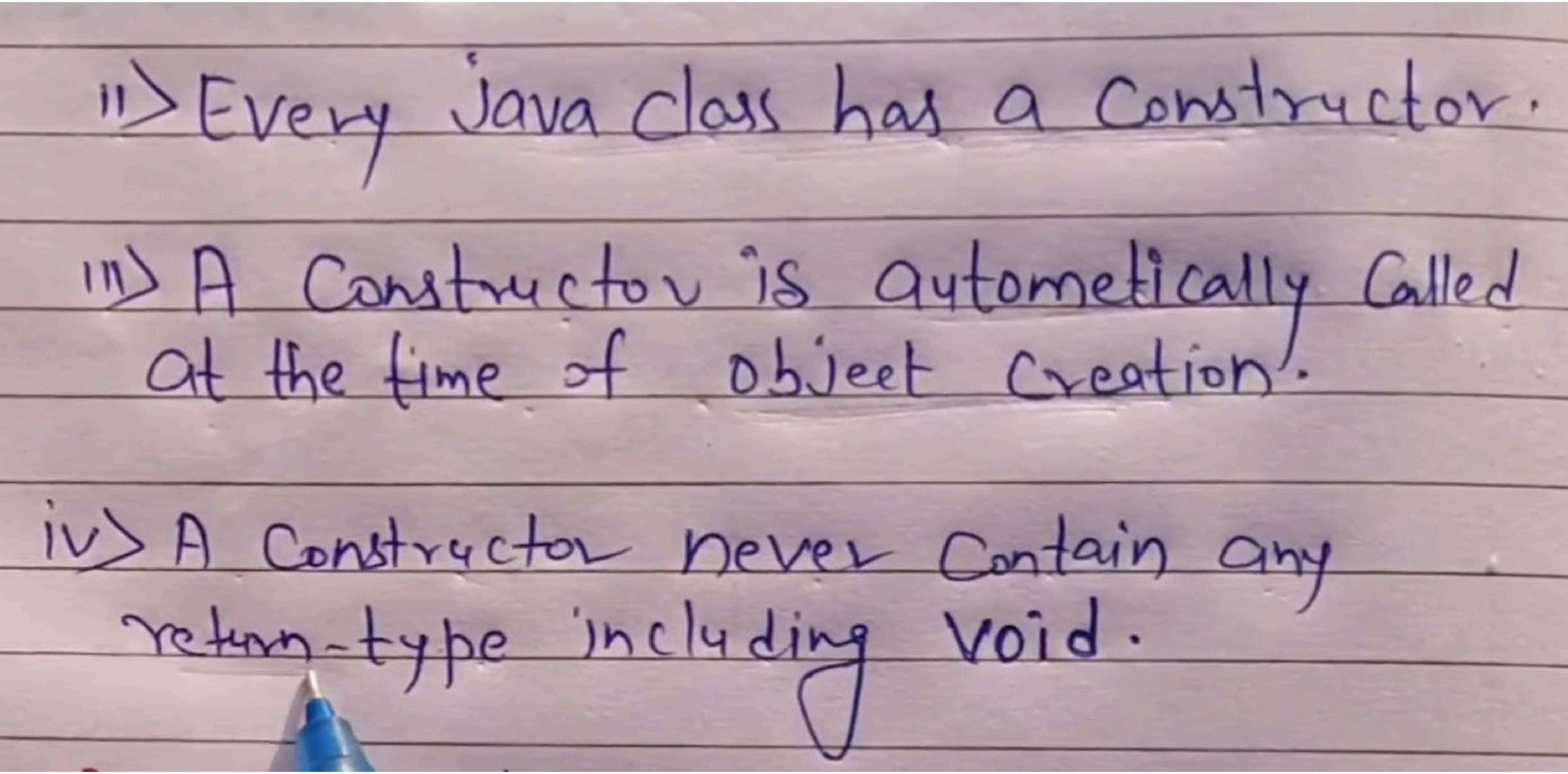
Constructor

Q. What is constructor? full explaination.

Ans→ Constructor is a special type of method whose name is same as class name.

Note:- i) The main purpose of Constructor is initialize the object.

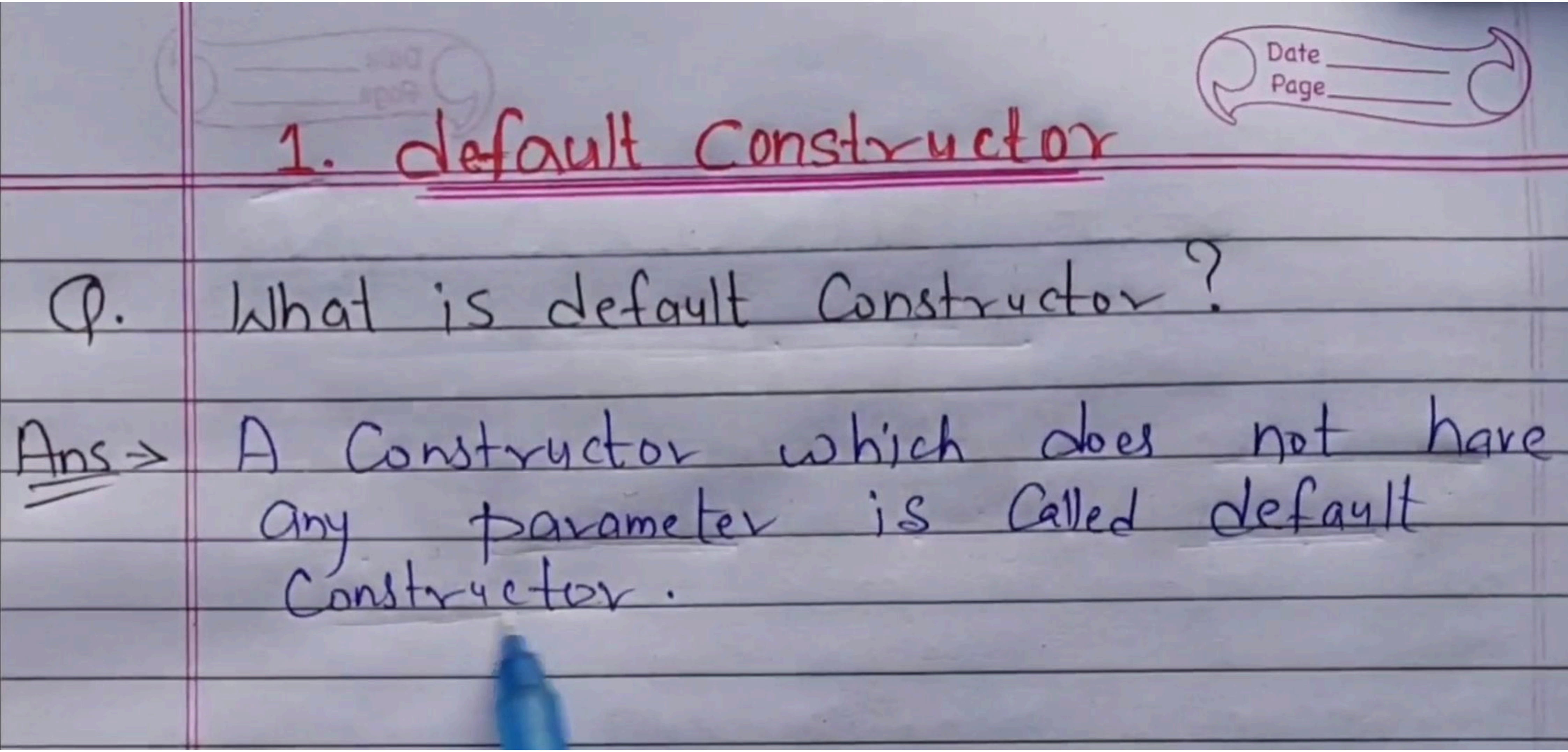
ii) Every java class has a Constructor.



ii> Every java class has a Constructor.

iii> A Constructor is autometically Called at the time of object creation.

iv> A Constructor never Contain any return-type including void.



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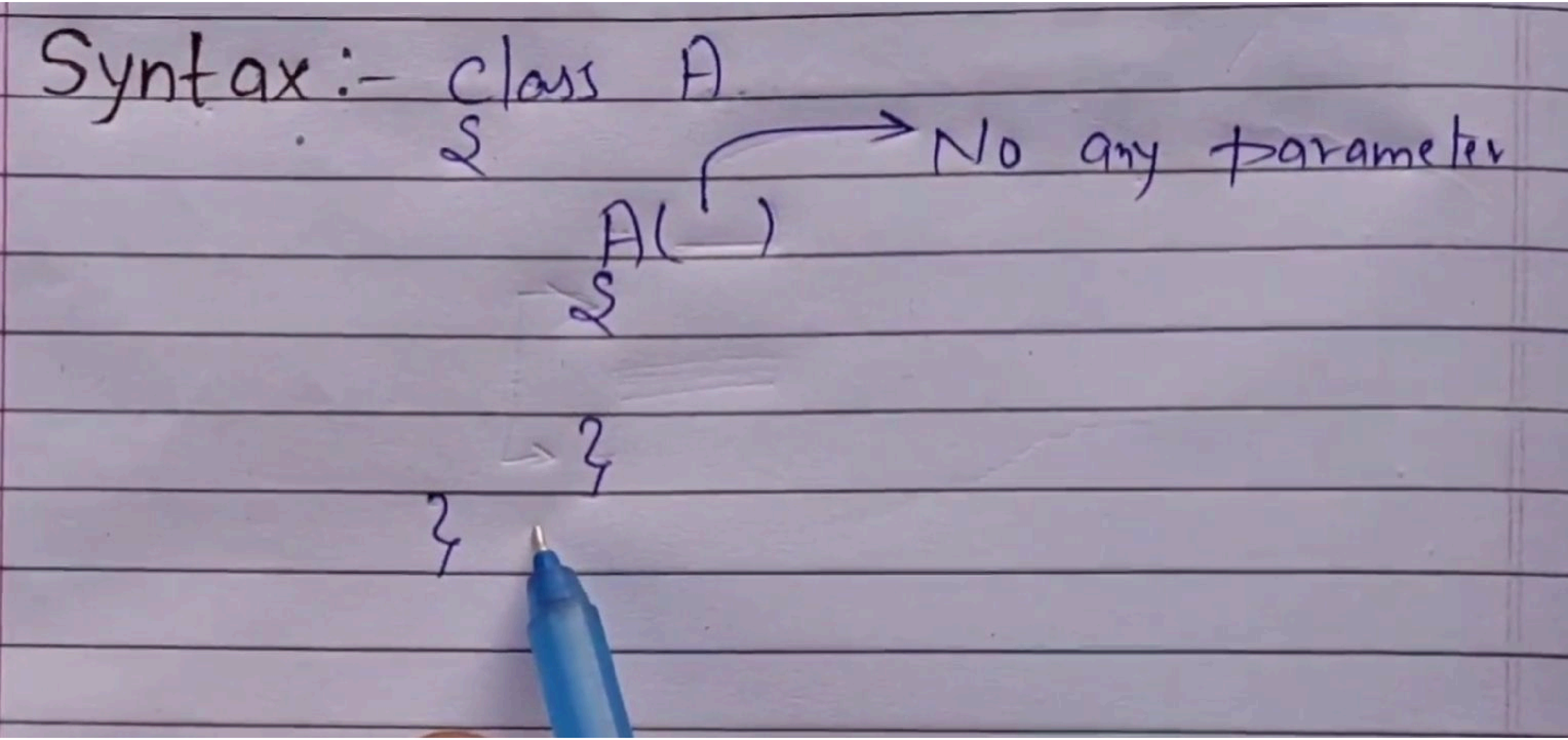
1. default Constructor

Q. What is default Constructor?

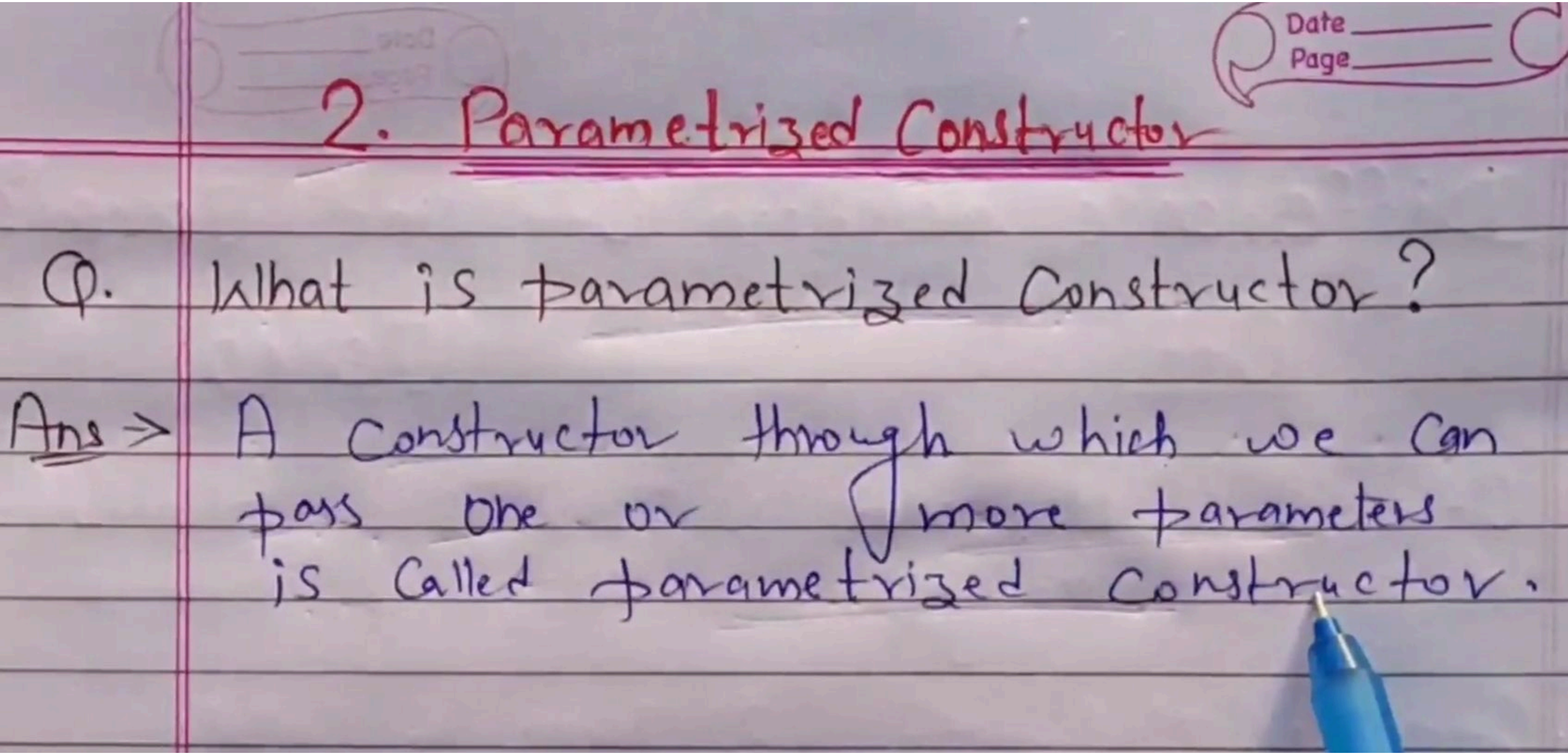
Ans → A Constructor which does not have any parameter is Called default Constructor.



Syntax :- class A

```
class A
{
     A( )  → No any parameter
     {

     }
}
```



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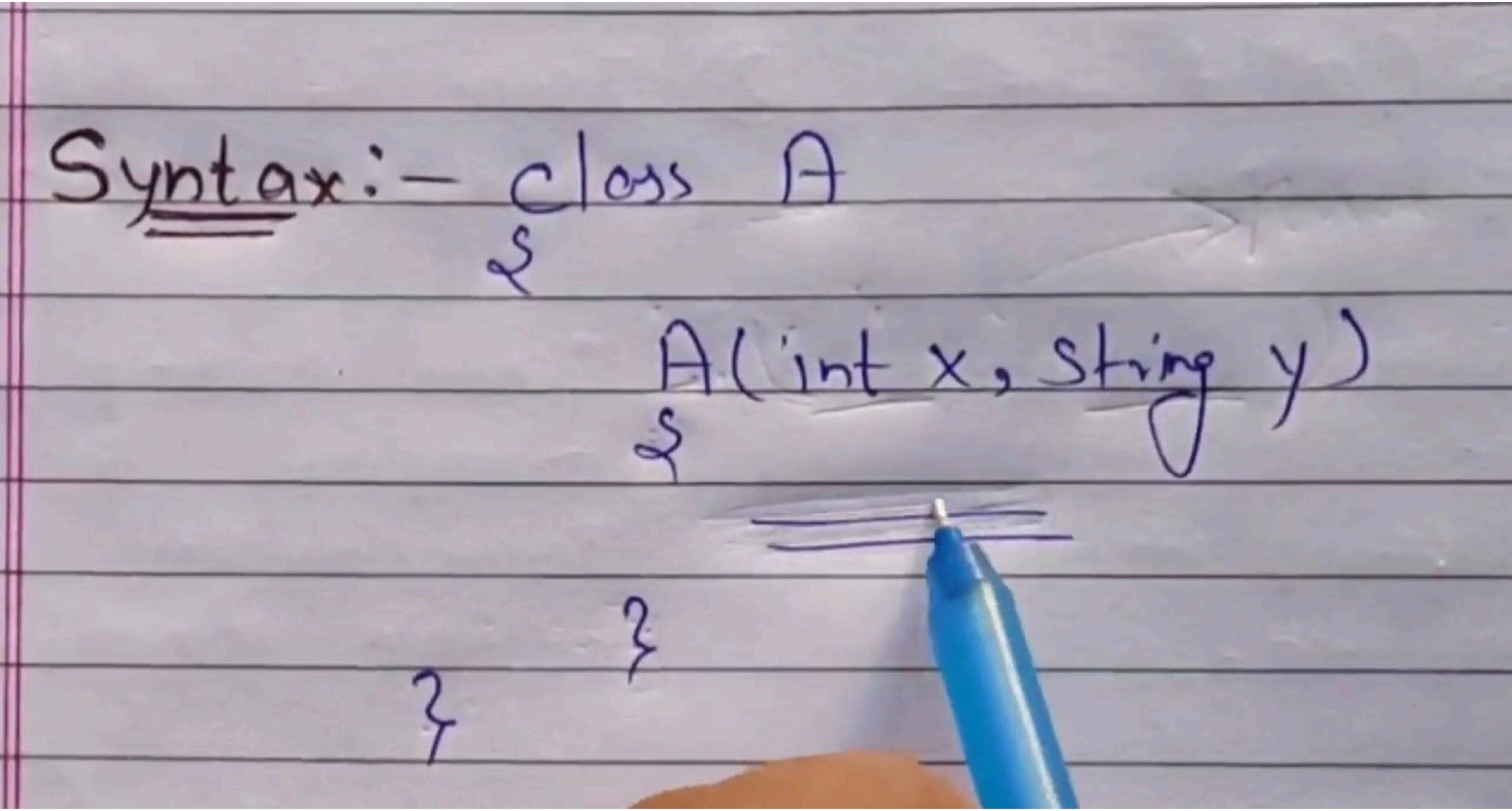
2. Parametrized Constructor

Q. What is parametrized Constructor?

Ans → A constructor through which we can pass one or more parameters is called parametrized constructor.



Syntax:-

```
class A
{
      A(int x, String y)
      {
            ________
            ________
      }
}
```

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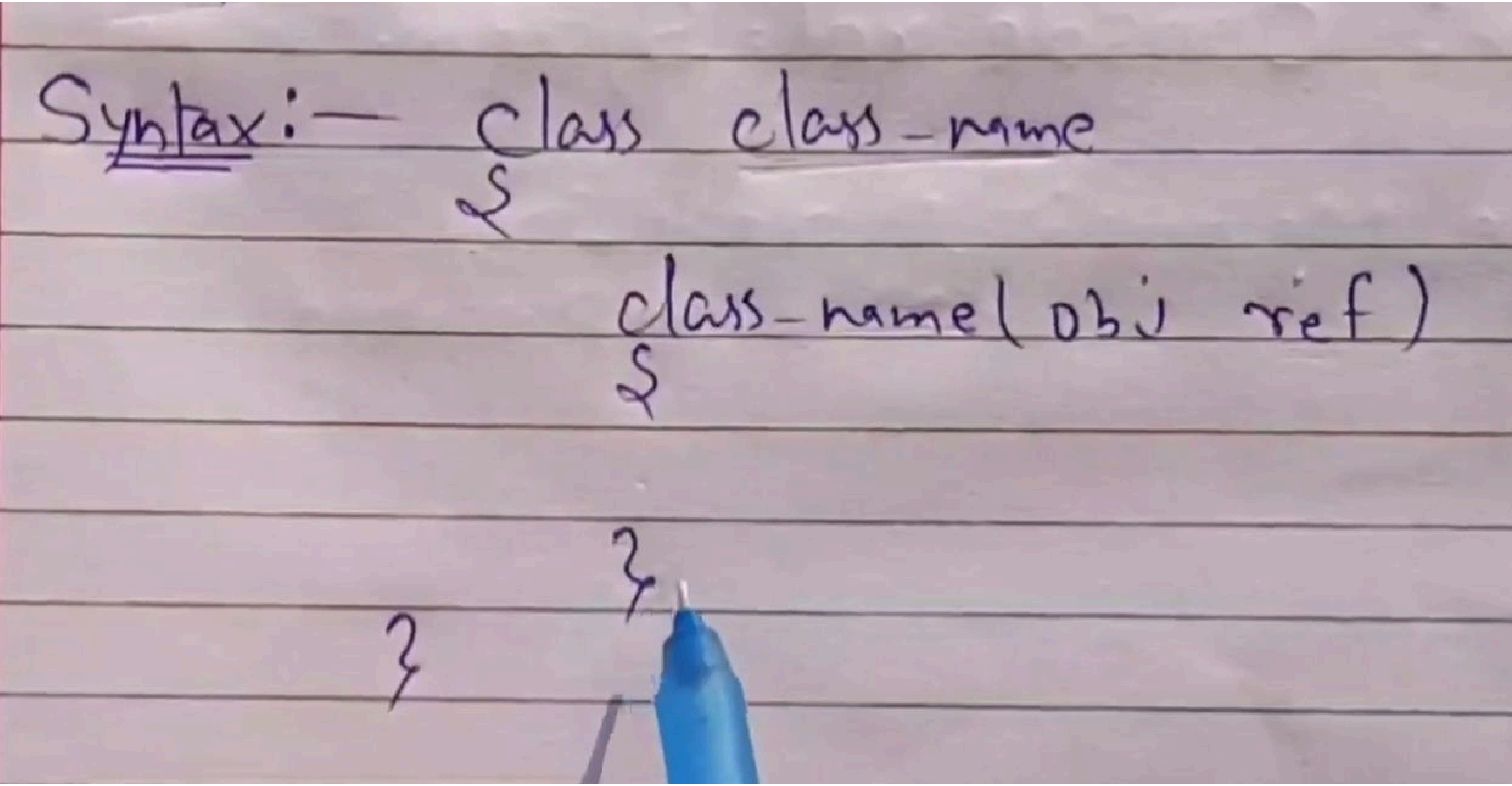
3. Copy Constructor

Q. What is Copy Constructor? full detail.

Ans → Whenever we pass object reference to the constructor then it is Called copy constructor.



Syntax:—

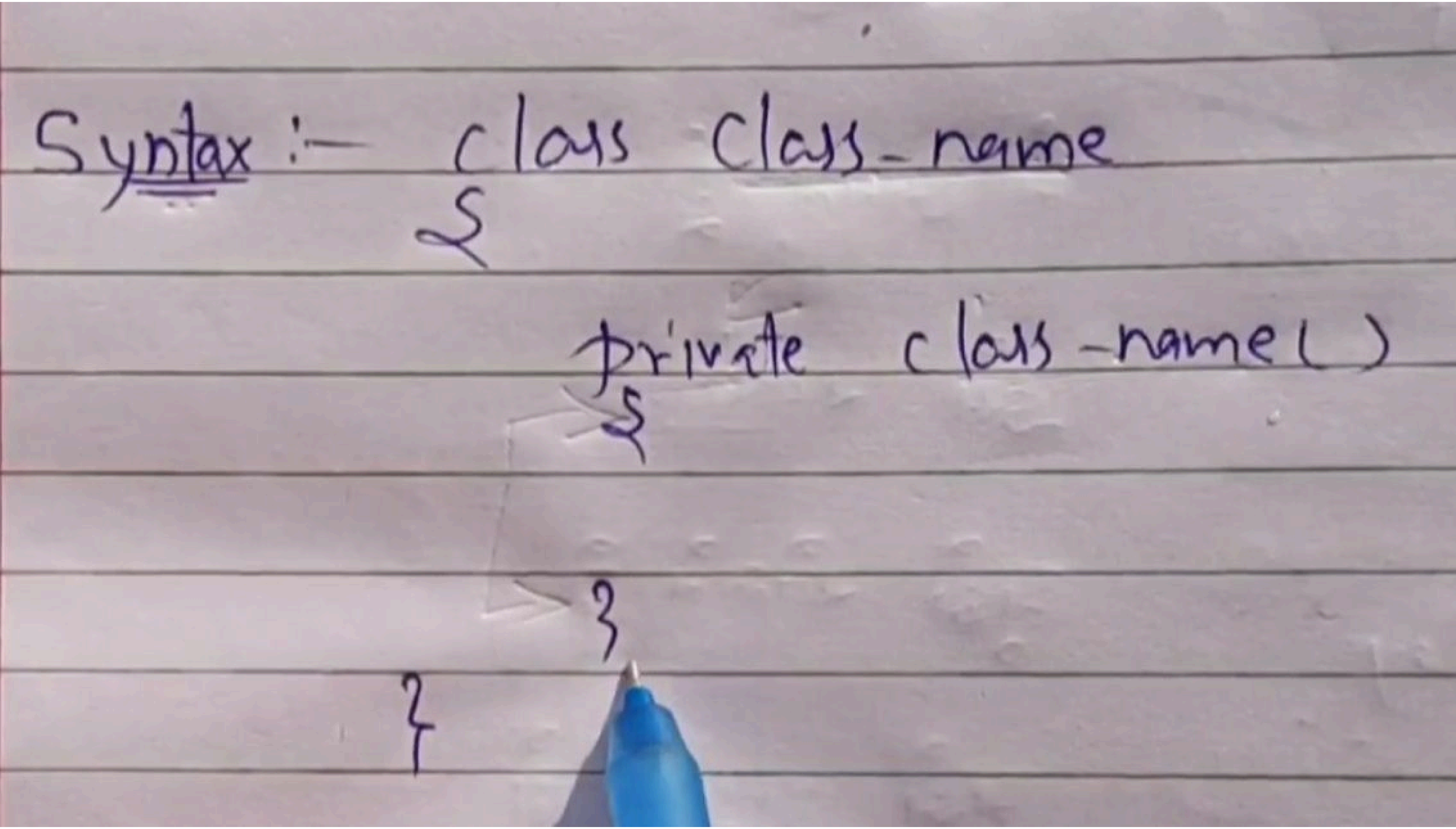
```
class class_name
{
    class_name(obj ref)
    {

    }
}
```

4. Private Constructor

Q. what is private constructor ?

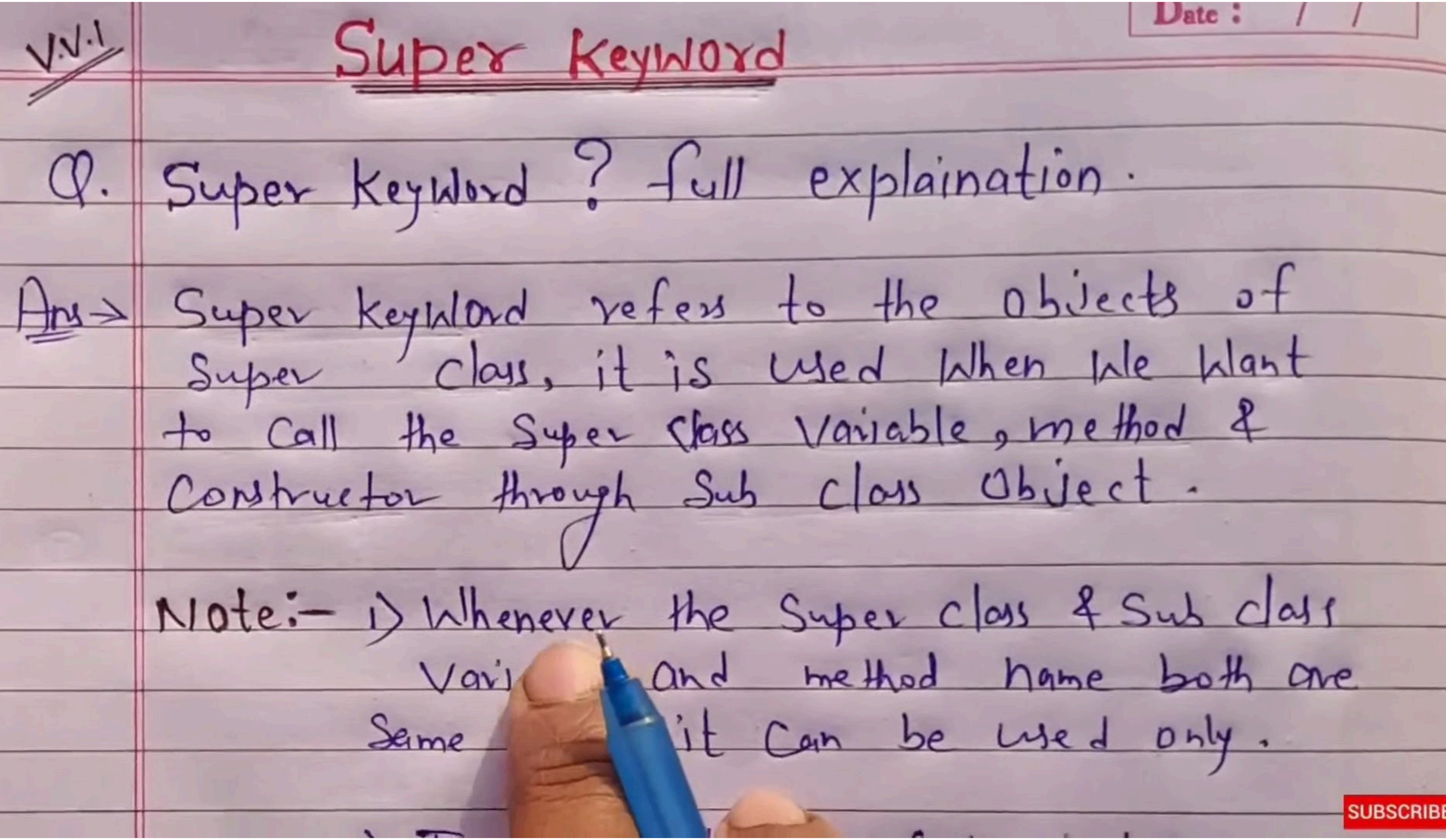
Ans→ In java, it is possible to write a constructor as a private but according to the rule we can't access private members outside of class.



Syntax :-

```
class Class-name
{
        private class-name( )
        {

        }
}
```



V.V.I

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Super Keyword

Q. Super Keyword ? full explaination.

Ans → Super keyword refers to the objects of super class, it is used when we want to call the super class variable, method & constructor through sub class object.

Note:- 1) Whenever the super class & sub class Vari[illegible] and method name both are same [illegible] it can be used only.

Note:- 1) Whenever the Super class & Sub class Variable and method name both are Same than it Can be used only.

11) To avoid the Confusion between Super class and Sub classes variables and methods that have Same name we should use Super keyword.

v.v.i

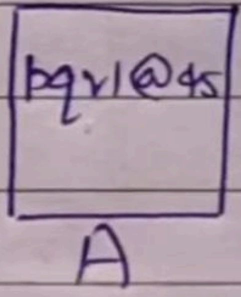
this Keyword

Q. What is this keyword? full explaination.

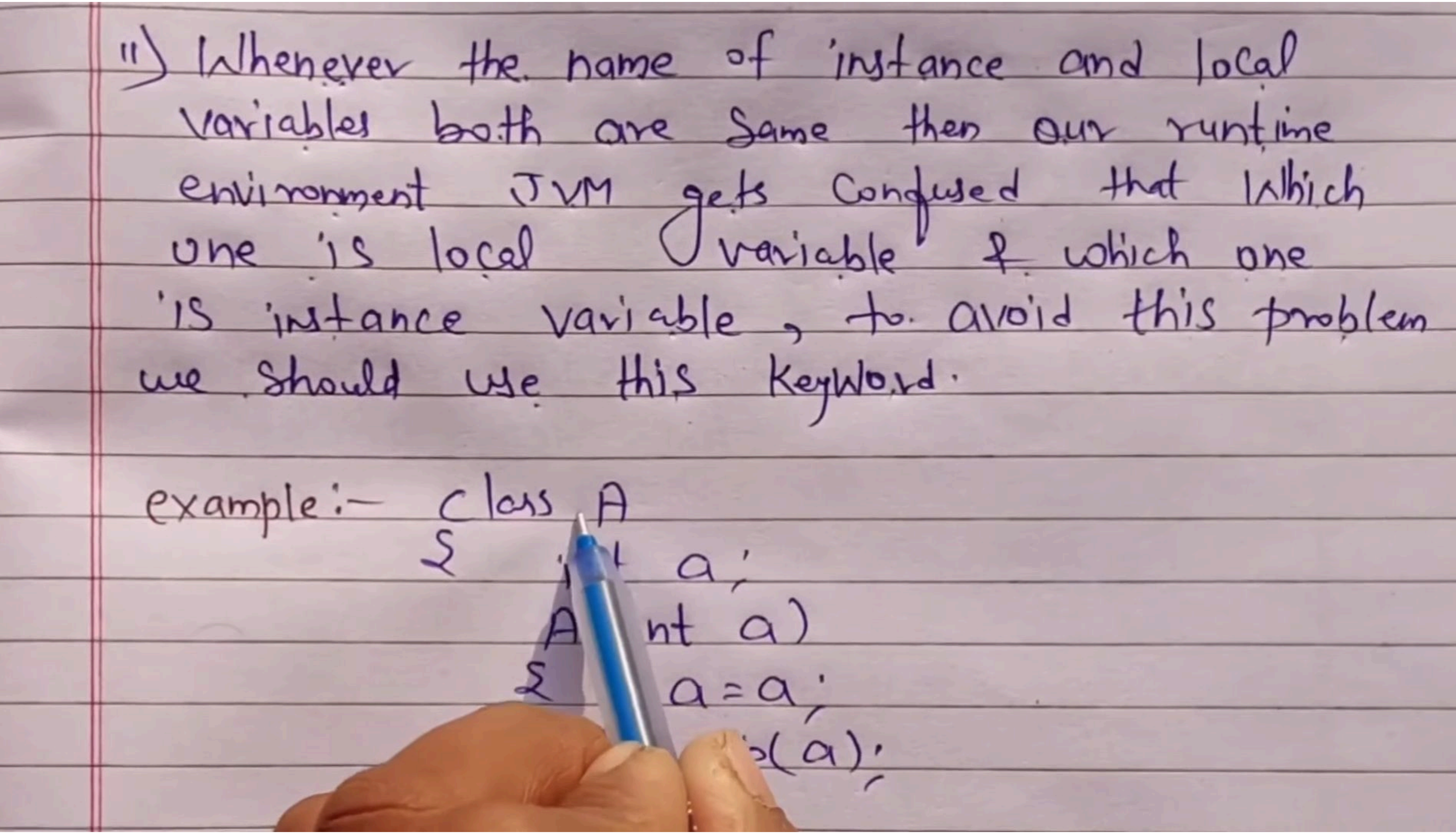
Ans → 1) this KeyWord refers to the Current object inside a method or Constructor.

example:-
```
class A
{

}
```



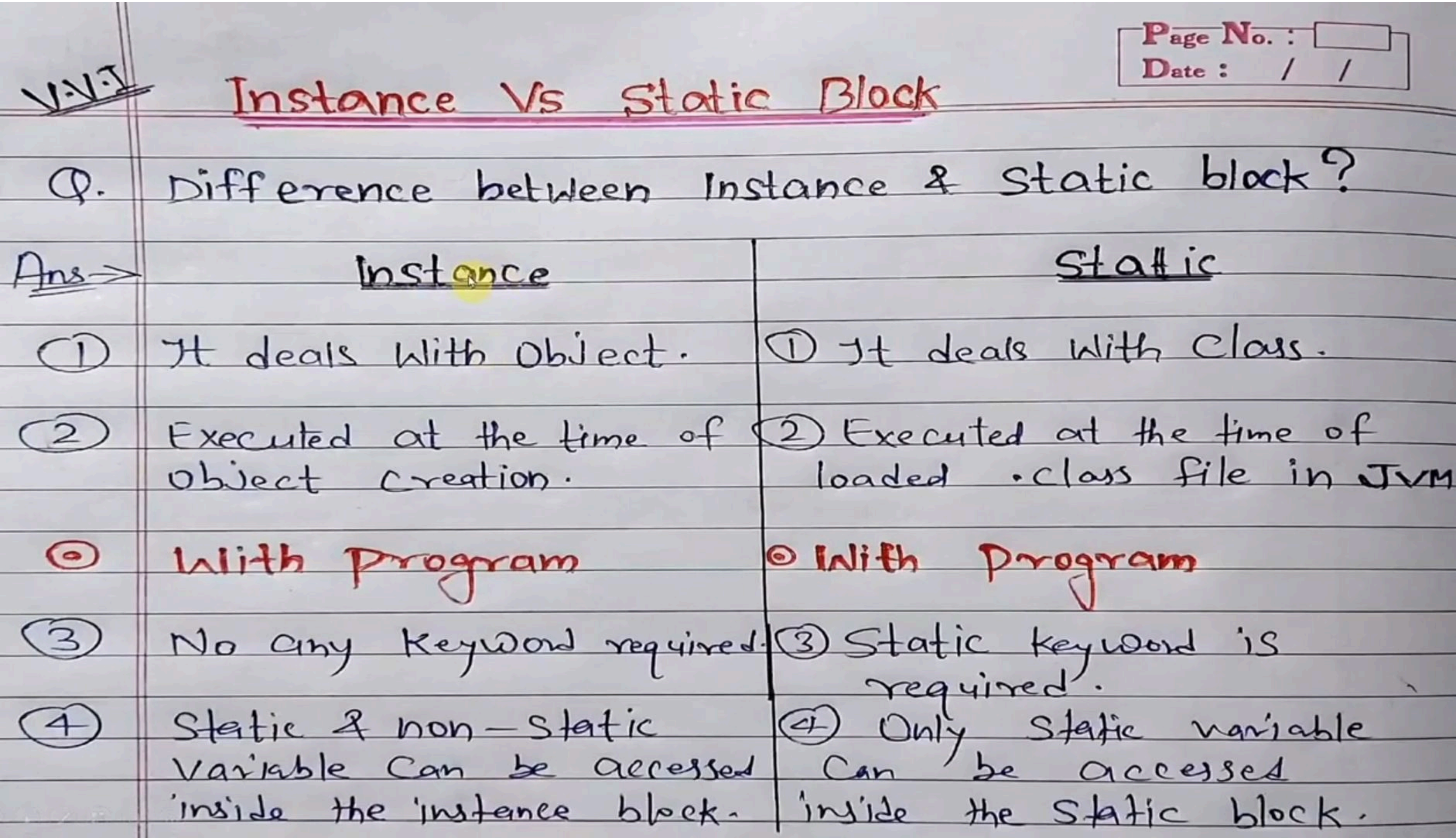
```
A r=new A();
```



ii) Whenever the name of instance and local variables both are same then our runtime environment JVM gets confused that which one is local variable & which one is instance variable, to avoid this problem we should use this keyword.

example:-

```
class A
{
      int a;
      A(int a)
    {
      a=a;
      [illegible]o(a);
```



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V.V.I

Instance Vs Static Block

Q. Difference between Instance & Static block?

Ans->

	Instance	Static
①	It deals with Object.	① It deals with Class.
②	Executed at the time of object creation.	② Executed at the time of loaded .class file in JVM
⊙	With Program	⊙ With Program
③	No any Keyword required.	③ Static keyword is required.
④	Static & non-static Variable Can be accessed inside the instance block.	④ Only static variable Can be accessed inside the static block.

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Q. What is encapsulation? full explaination.

Ans -> Encapsulation is a mechanism through which we can binding the data members and member methods in a single unit.

Ex ->

```
class Bank
{
    priv bal;
    privat pwd;
        +
    void Deposit();
    void withdraw();
    void checkBal();
}
```

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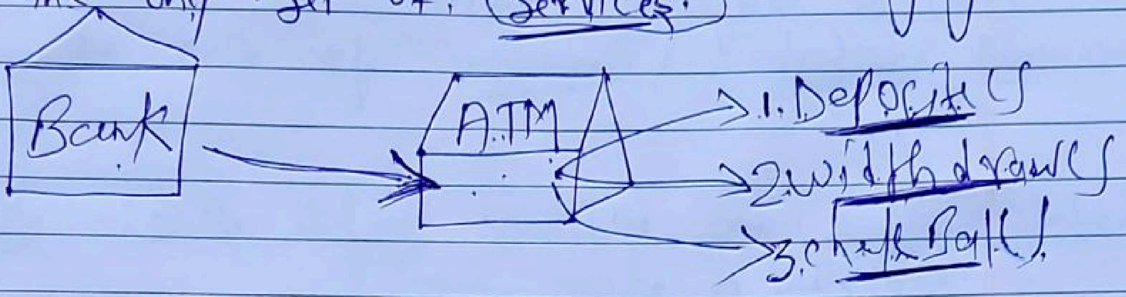
Q. What is abstraction? full explaination.

Ans-> Abstraction is nothing but hiding the essential information and highlight the only set of Services.



In Java, we can achieve abstraction in two ways:-

- -> abstract class (0-100%) -> 1
- -> interface (100%) -> 2

Abstract class:-

(·) If a class contain at least one abstract method is called abstract class.

(·) we can't create objects of abstract class.

(·) It contains both abstract and non-abstract method.

(·) Whenever the action is common but implementations are different than we should use abstract method.

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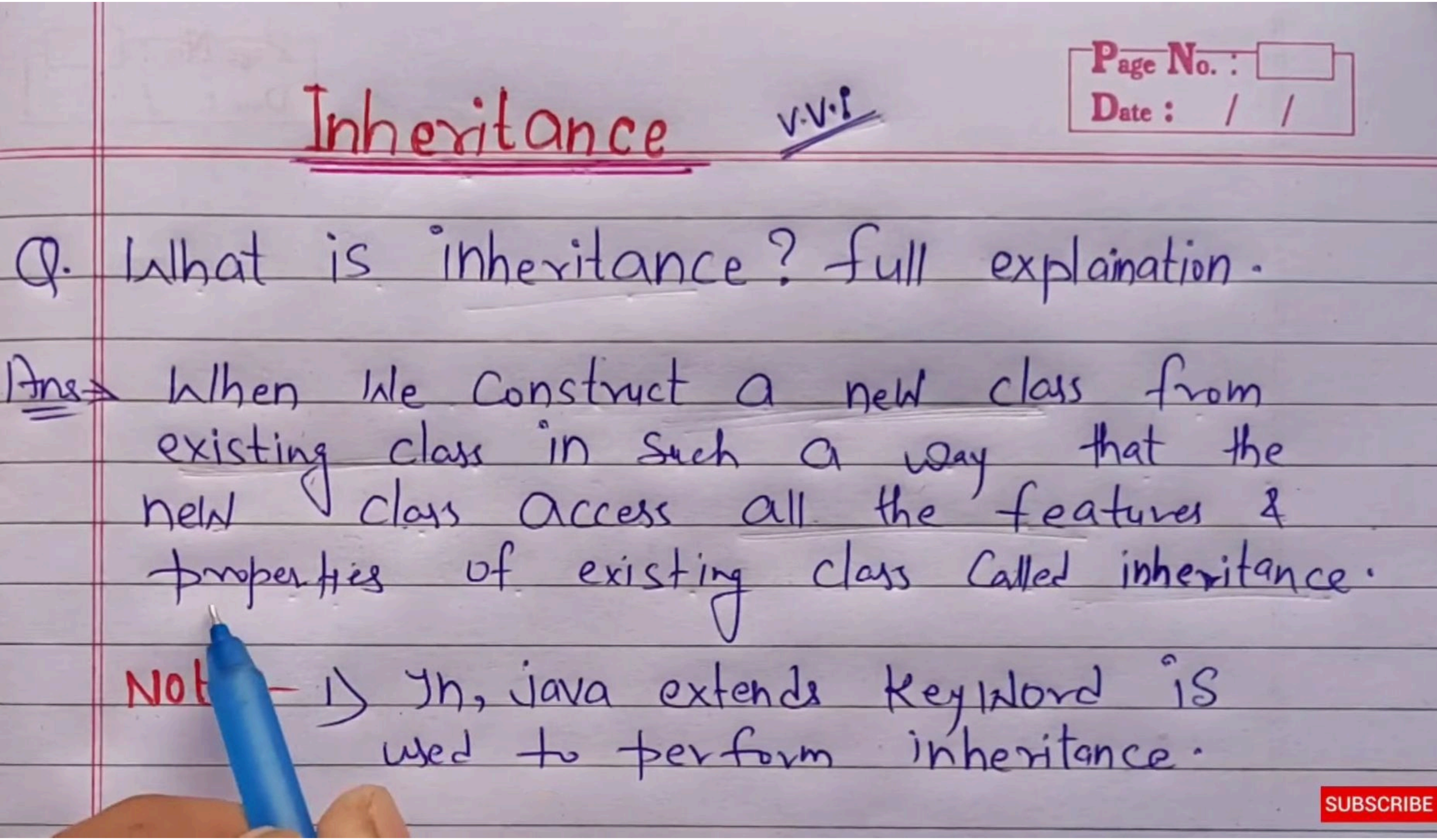
Q. What is interface? full explaination.

Ans-> Interface just like a class, which contains only abstract method.
To achieve interface in Java by the help of implements / interface keyword.

Note:- ⊙ By default variables are public + static + final inside a interface.

⊙ By default methods are public and abstract.

⊙ From JDK 1.8V onwards interface can have default & static methods.
{—} {—}



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Inheritance v.v.i

Q. What is inheritance? full explaination.

Ans⇒ When We Construct a new class from existing class in such a way that the new class access all the features & properties of existing class Called inheritance.

Not — 1) In, java extends Keyword is used to perform inheritance.

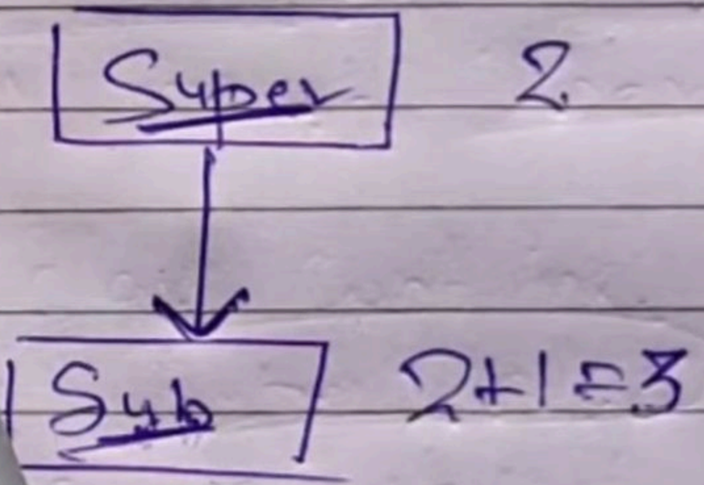
ii) It provides Code reusability.

iii) We can't access private members of class through inheritance.

iv) A Sub class contains all the features of Super class so, We should create the object of Sub class.

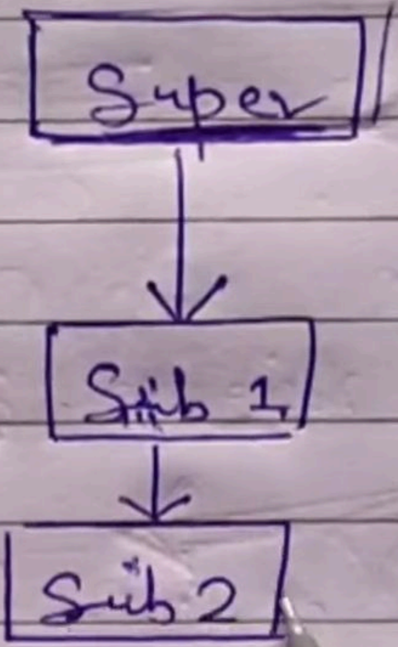
v) Method overriding only possible through inheritance.

Types :- 1> Single / Simple inheritance

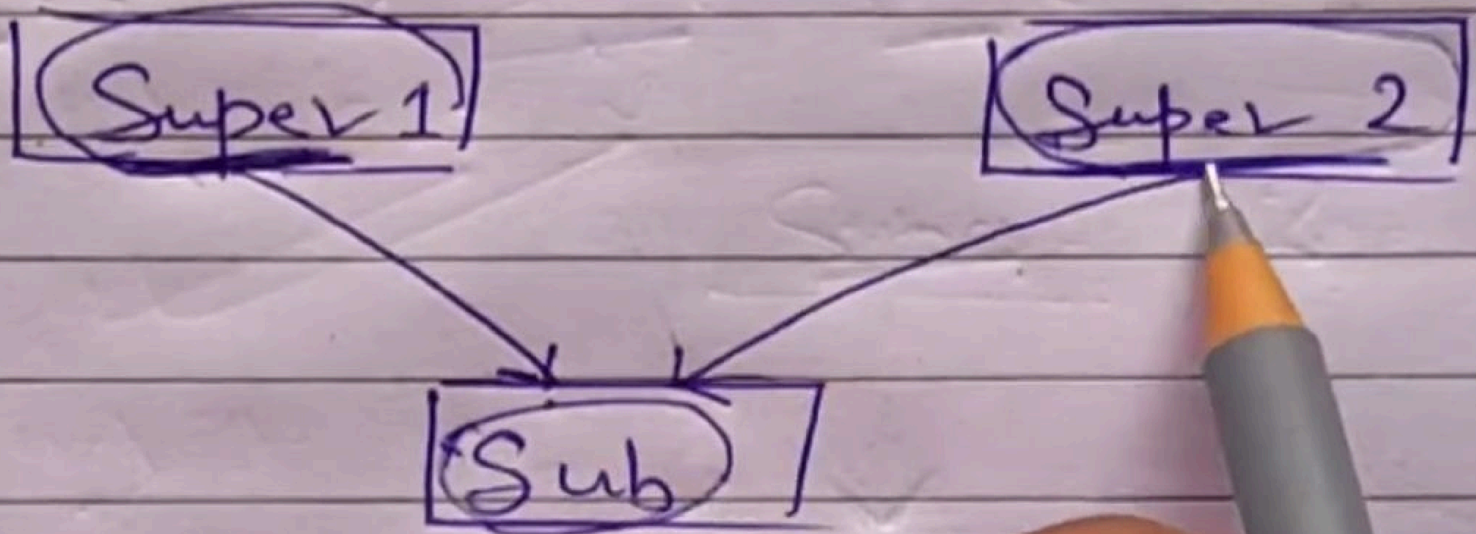


inheritance

ii) Multi-level inheritance :-

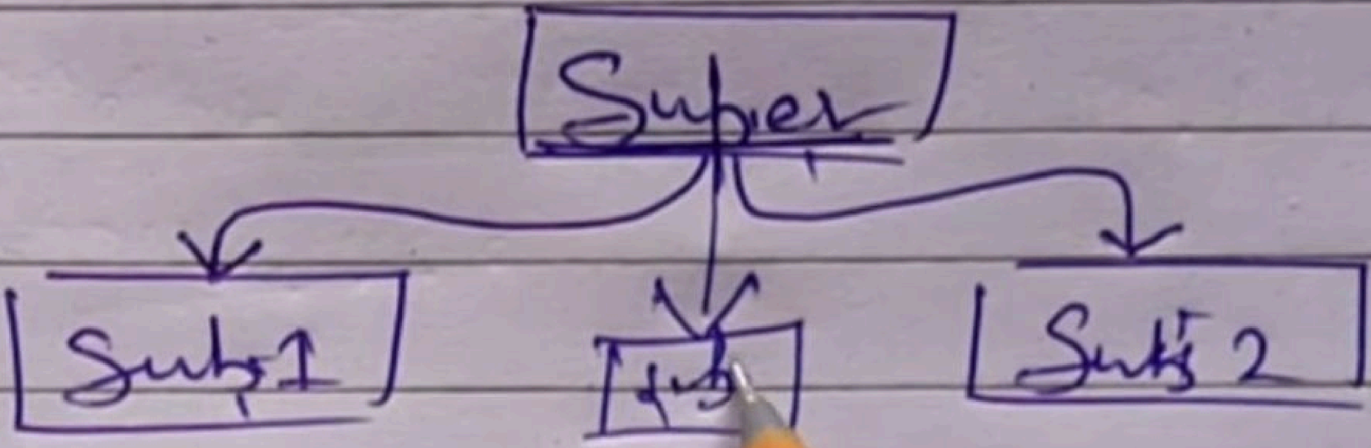


iii) Multiple inheritance:-



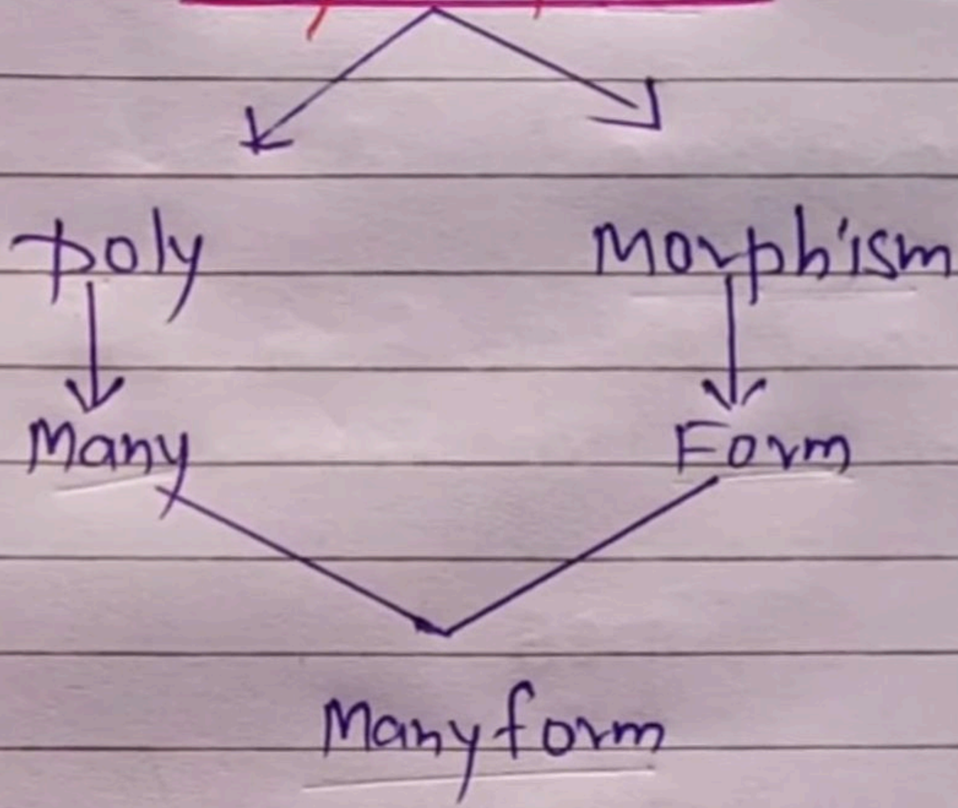
iv) Hierarchical

iv) Hierarchical inheritance :-



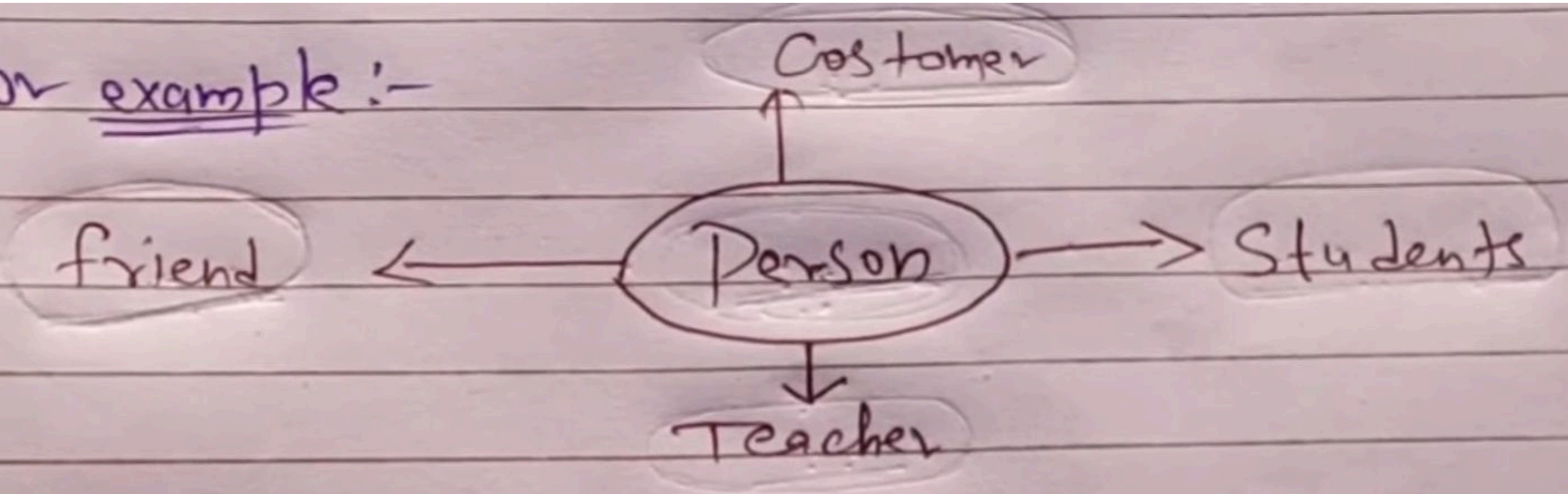
V.V.I

Polymorphism



Polymorphism is the greek word whose meaning is "Same object having different behaviour".

For example :-

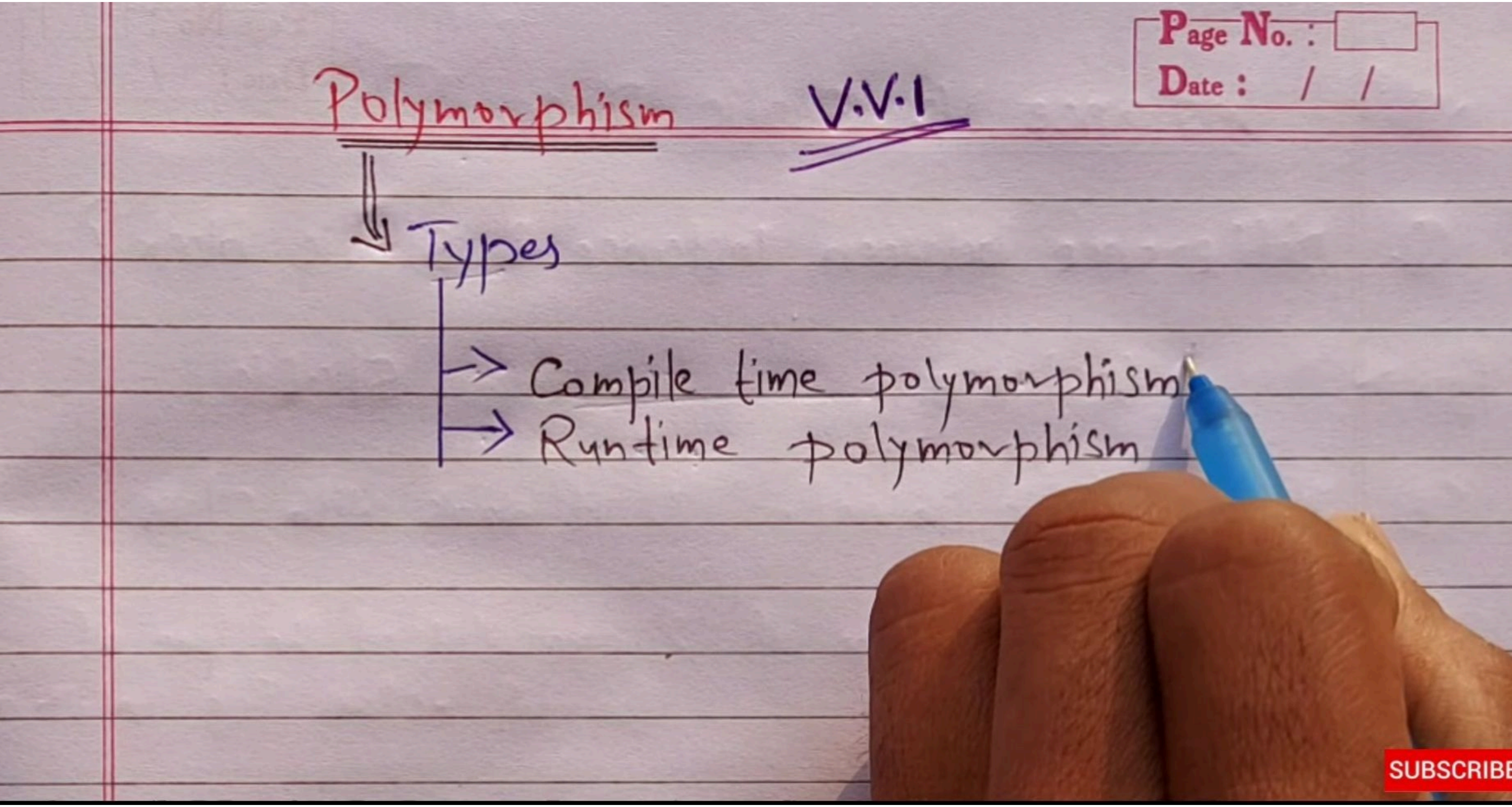


i) void person(Teacher)

ii) void person(Students)

iii) void pers (friend)

iv) void s (customer)



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Polymorphism V.V.I

Types

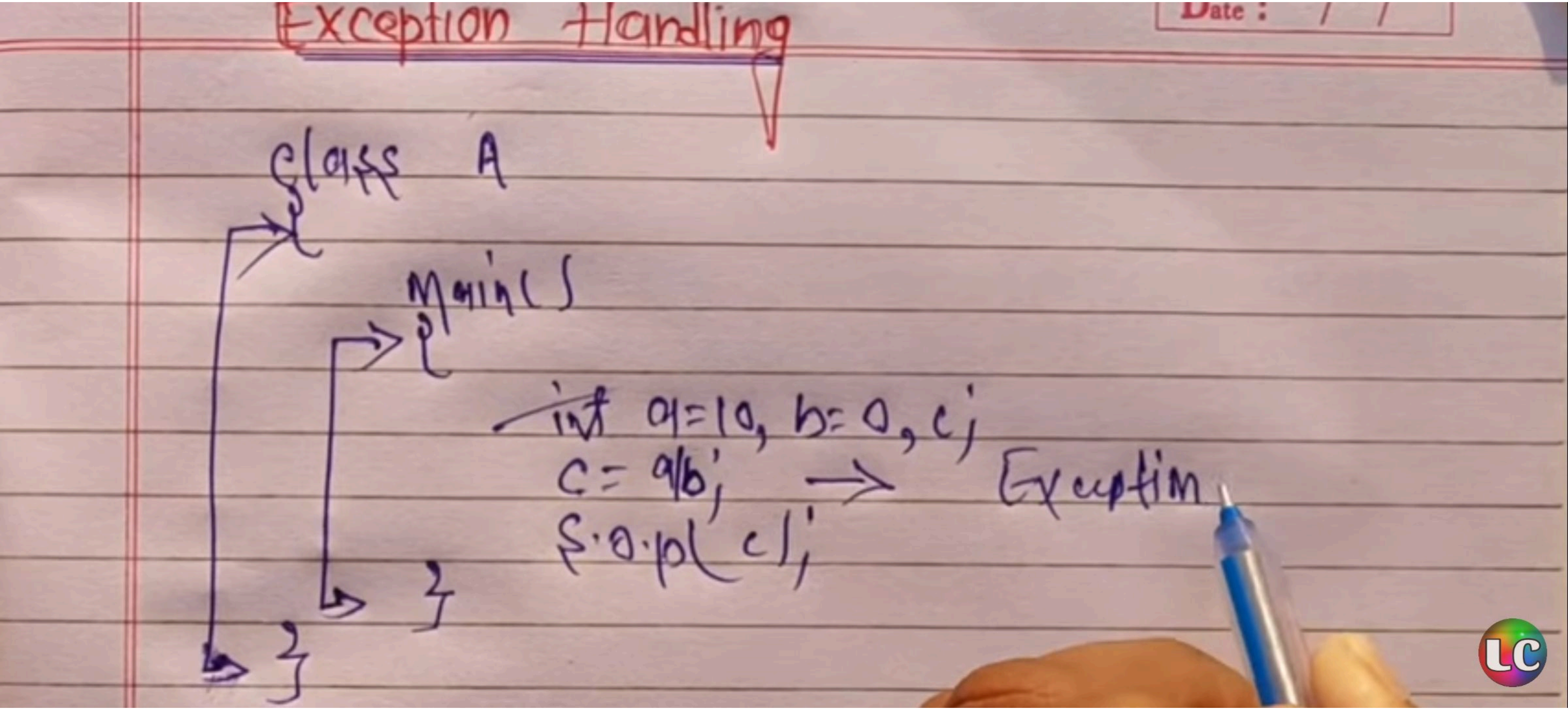
- → Compile time polymorphism
- → Runtime polymorphism

V.V.I

Exception Handling

Q. What is Exception? (full explaination)

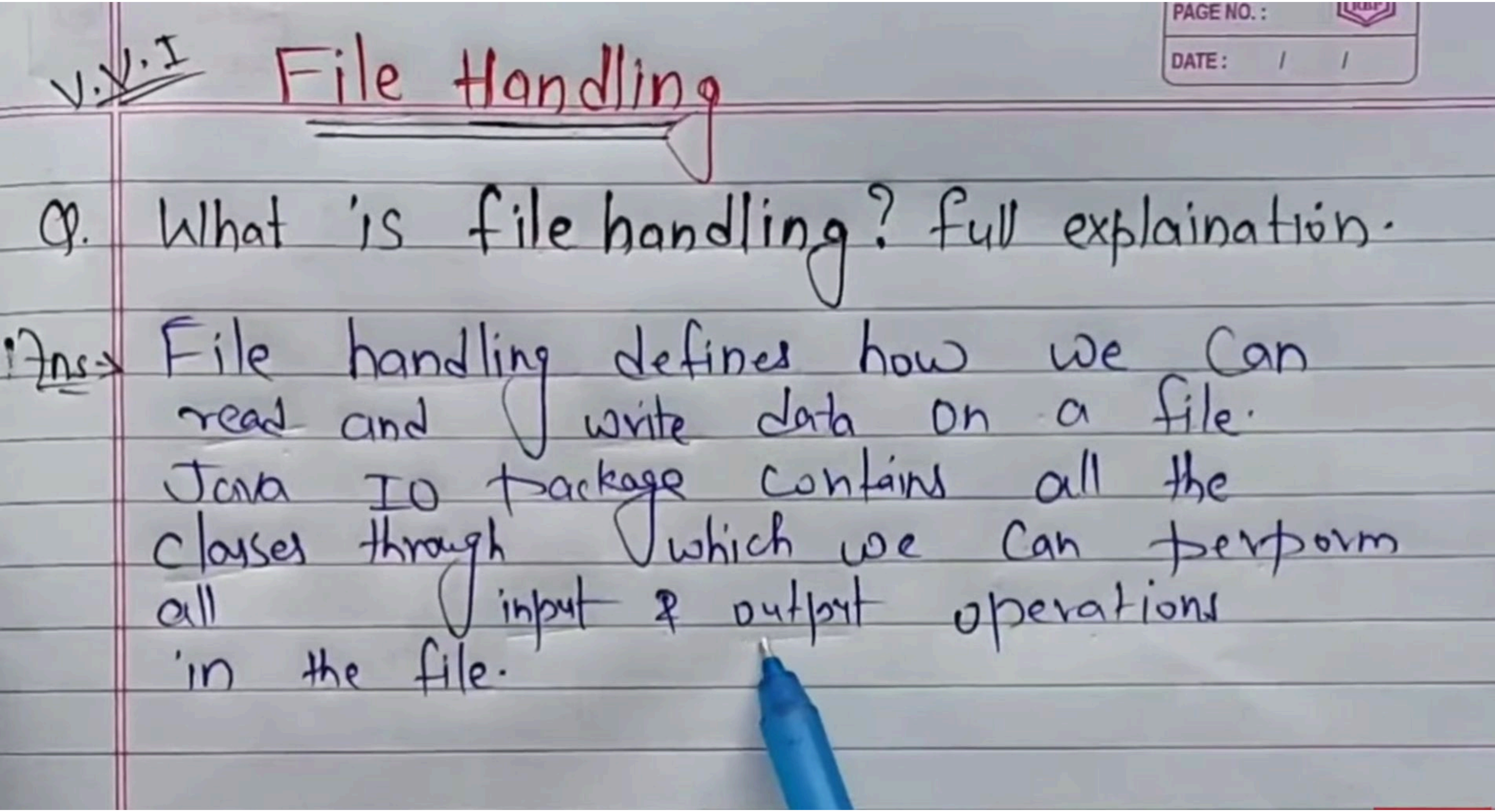
Ans → An exception is unexpected/unwanted/abnormal Situation that occured at runtime Called exception.



Exception Handling

Date : / /

```
class A
{
    main()
    {
        int a=10, b=0, c;
        c = a/b;  →  Exception
        S.o.p(c);
    }
}
```



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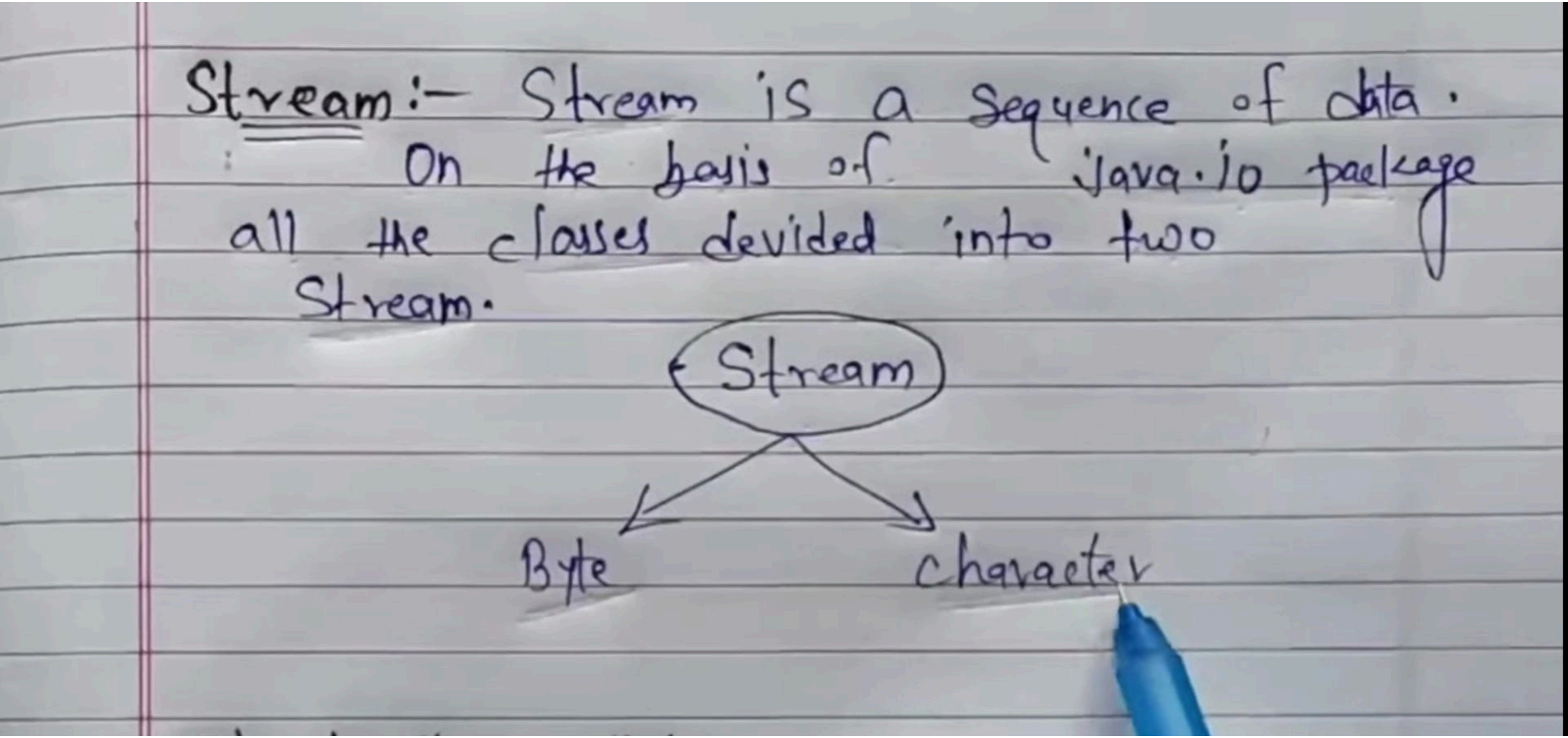
V.V.I

File Handling

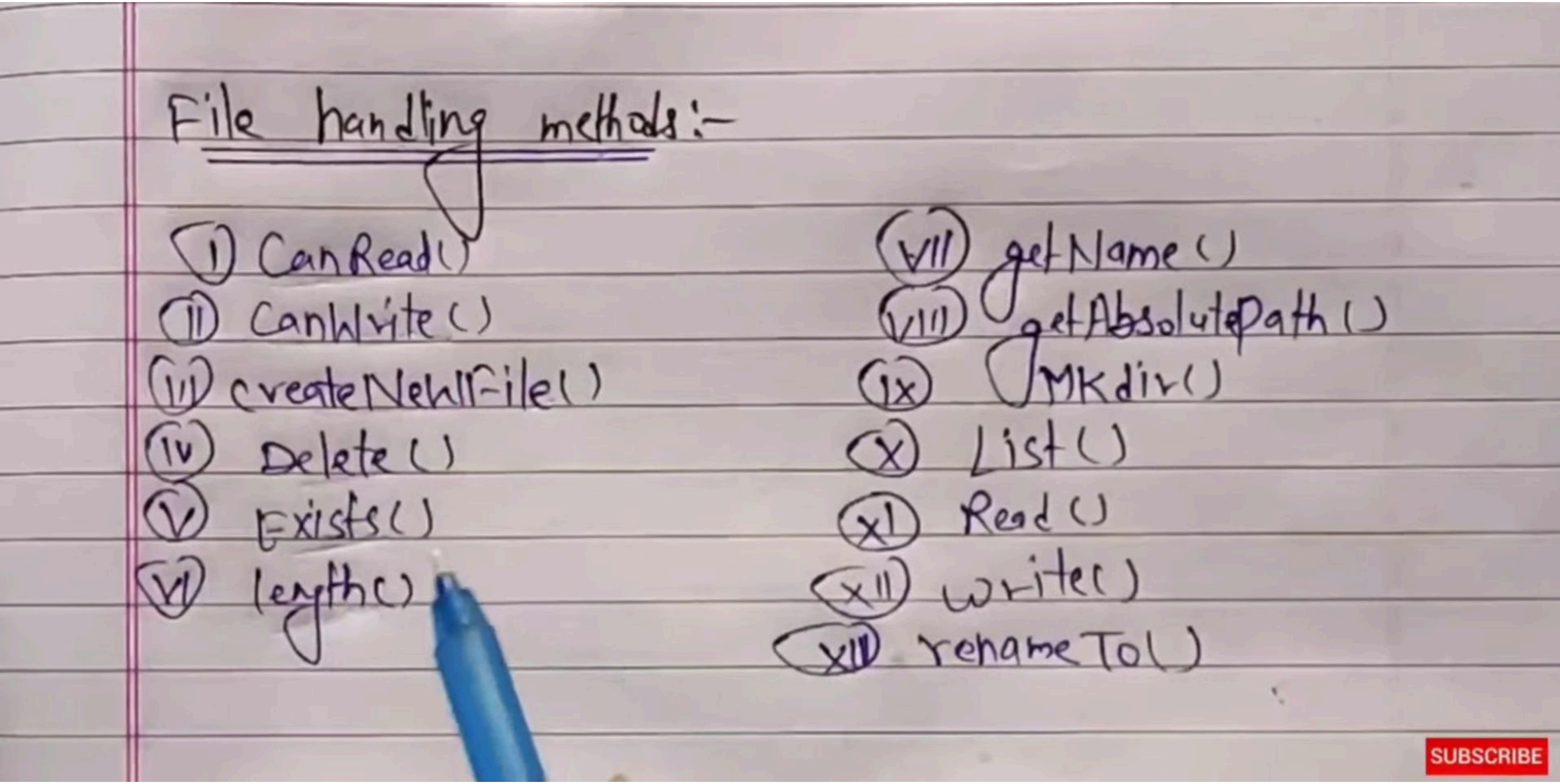
Q. What is file handling? full explaination.

Ans.→ File handling defines how we Can read and write data on a file. Java IO package contains all the classes through which we Can perform all input & output operations in the file.



Stream :- Stream is a sequence of data. On the basis of java.io package all the classes devided into two Stream.

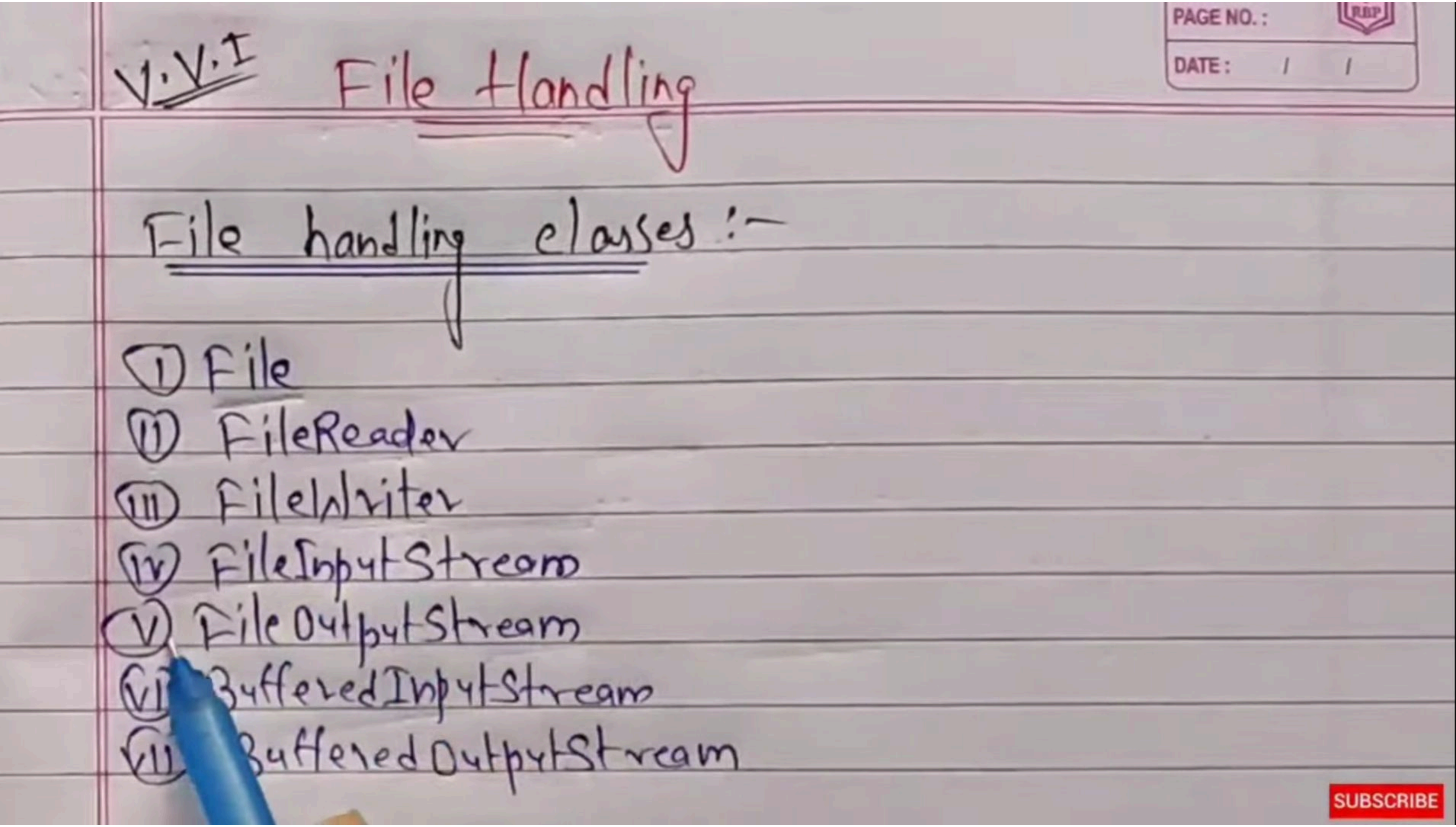
Stream
Byte
character



File handling methods:-

(i) CanRead()
(ii) CanWrite()
(iii) createNewFile()
(iv) Delete()
(v) Exists()
(vi) length()

(vii) getName()
(viii) getAbsolutePath()
(ix) MKdir()
(x) List()
(xi) Read()
(xii) write()
(xiii) renameTo()

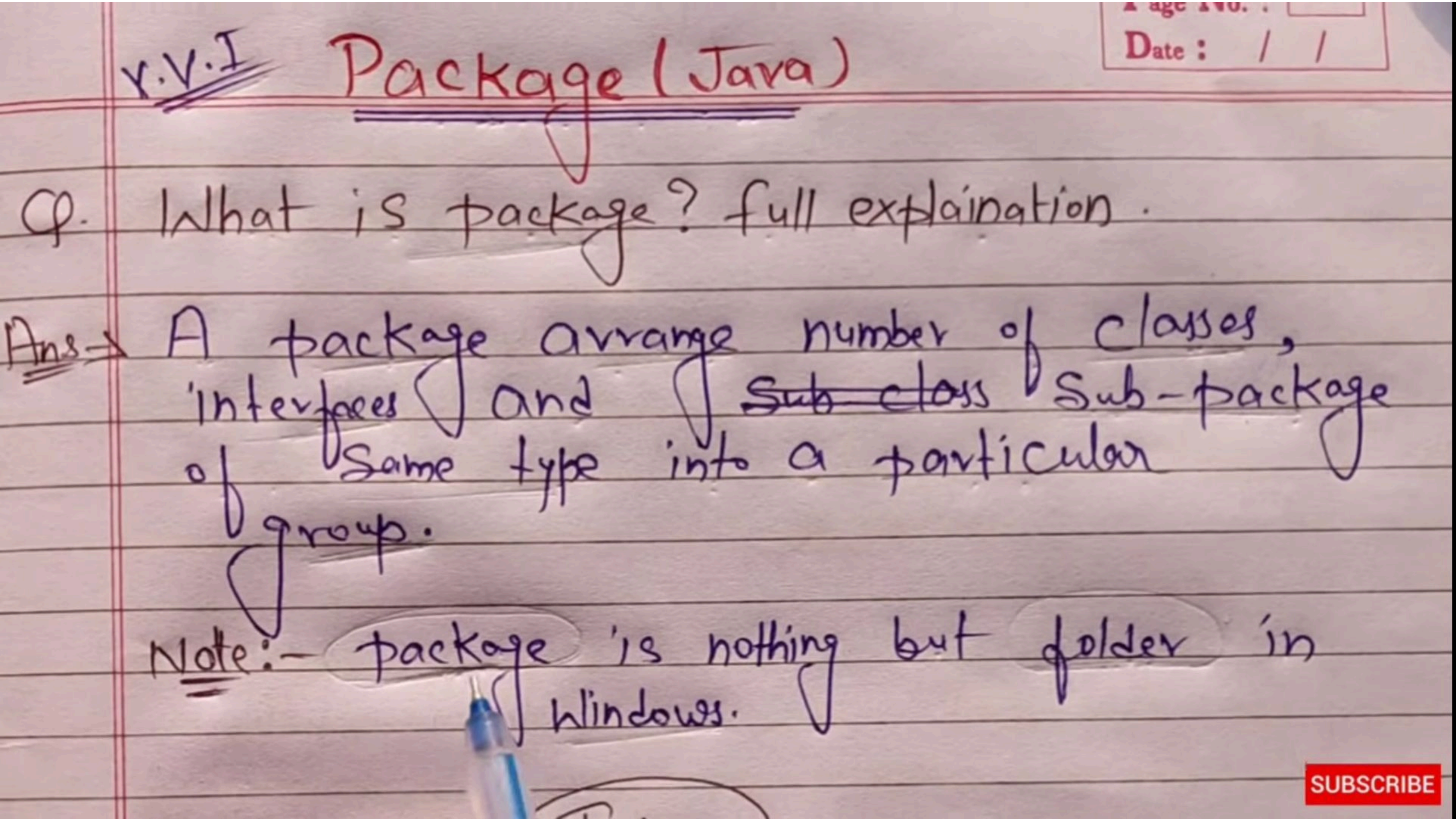


V.V.I

File Handling

File handling classes :-

(i) File
(ii) FileReader
(iii) FileWriter
(iv) FileInputStream
(v) FileOutputStream
(vi) BufferedInputStream
(vii) BufferedOutputStream



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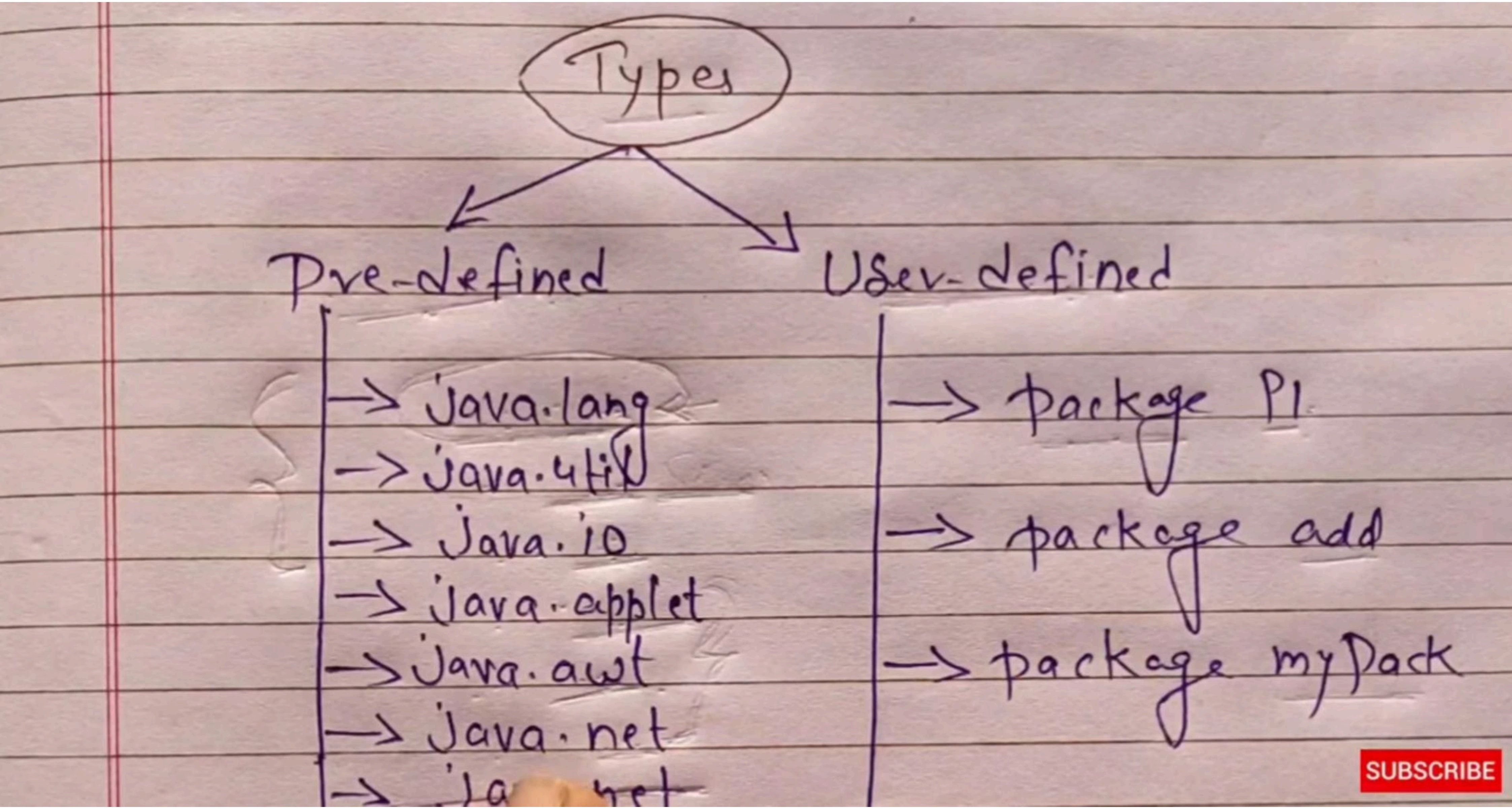
V.V.I

Package (Java)

Q. What is package? full explaination.

Ans→ A package arrange number of classes, interfaces and ~~Sub class~~ Sub-package of same type into a particular group.

Note:- package is nothing but folder in Windows.



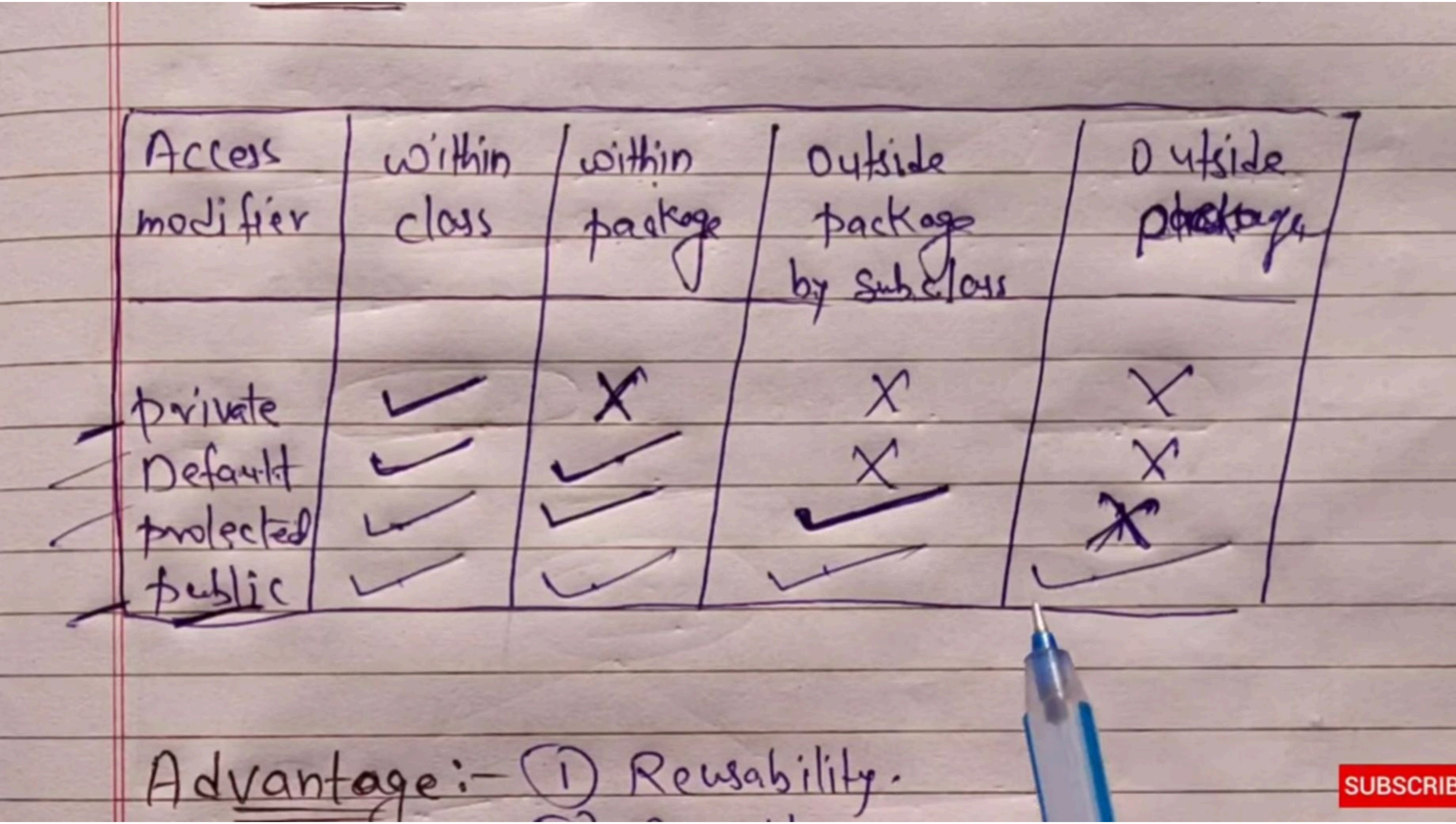
Types

Pre-defined

- → java.lang
- → java.util
- → java.io
- → java.applet
- → java.awt
- → java.net
- → ja [illegible] net

User-defined

- → package P1
- → package add
- → package myPack



Access modifier	within class	within package	Outside package by subclass	Outside package
private	✓	✗	✗	✗
Default	✓	✓	✗	✗
protected	✓	✓	✓	✗
public	✓	✓	✓	✓

Advantage:- (1) Reusability.

Advantage:- (I) Reusability.

(II) Security.

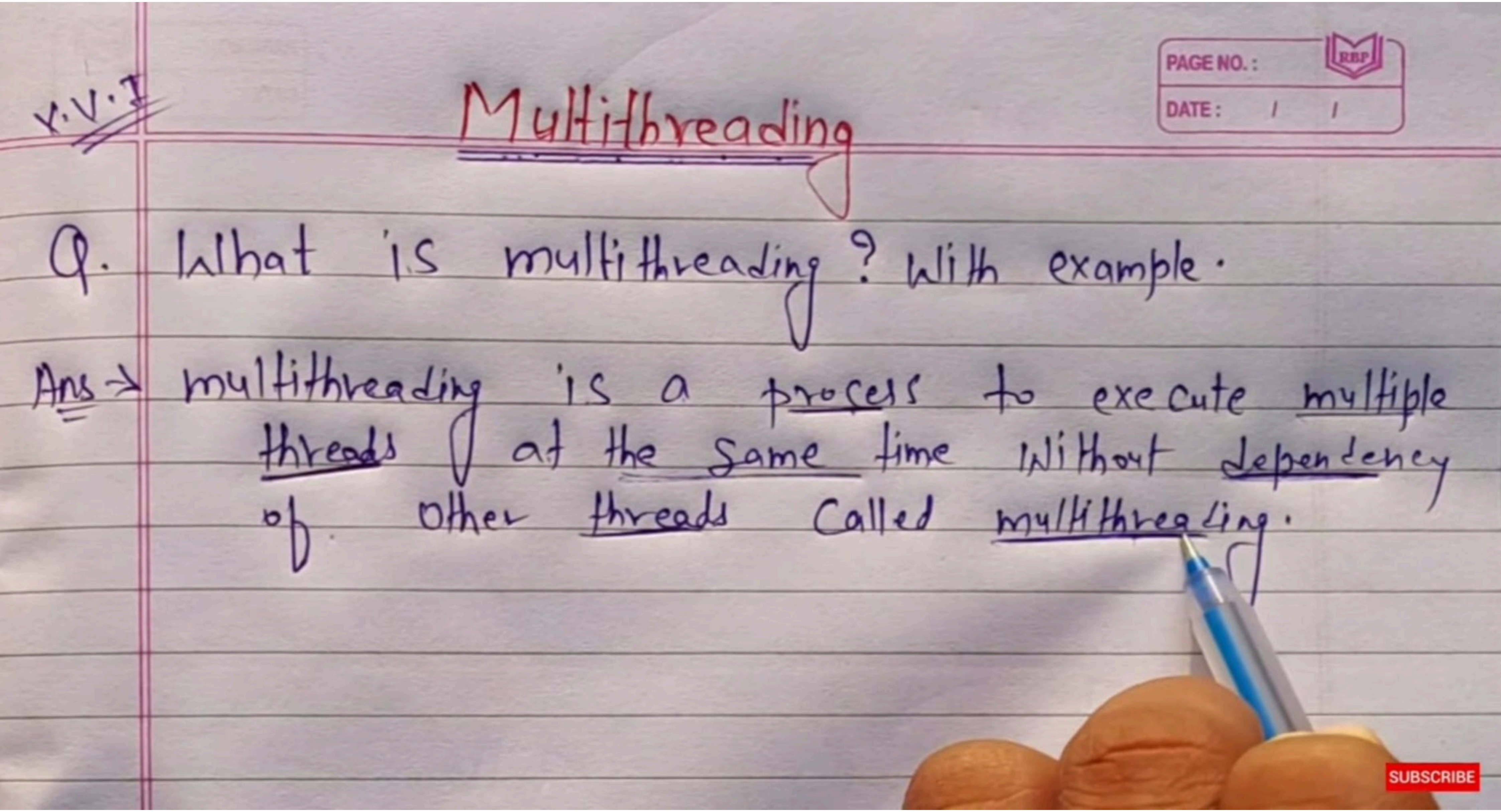
(III) Fast Searching. (io)

(IV) naming Conflecting. P1 P2
A A

(V) Hiding

Dis-advantage:-

We can't pass parameter to package.



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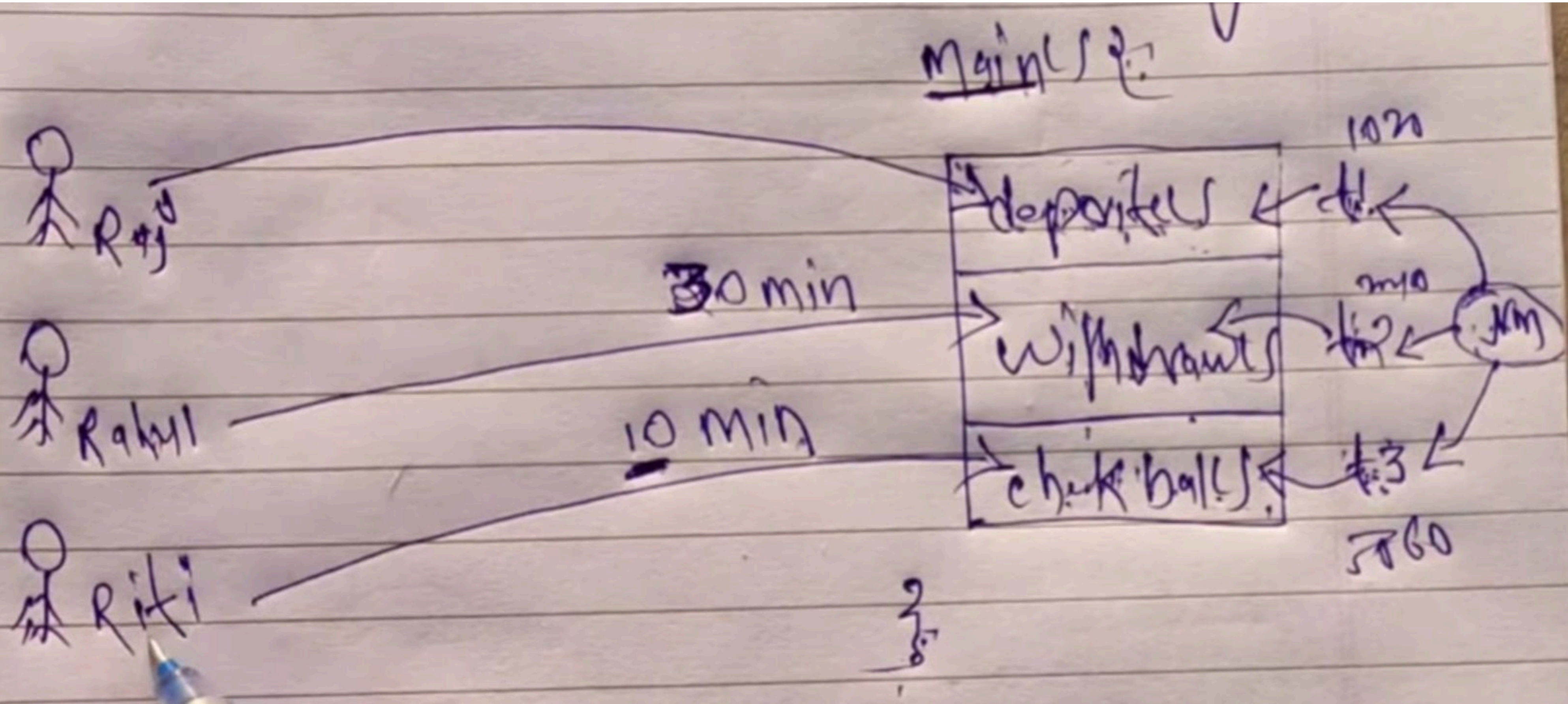
V.V.I

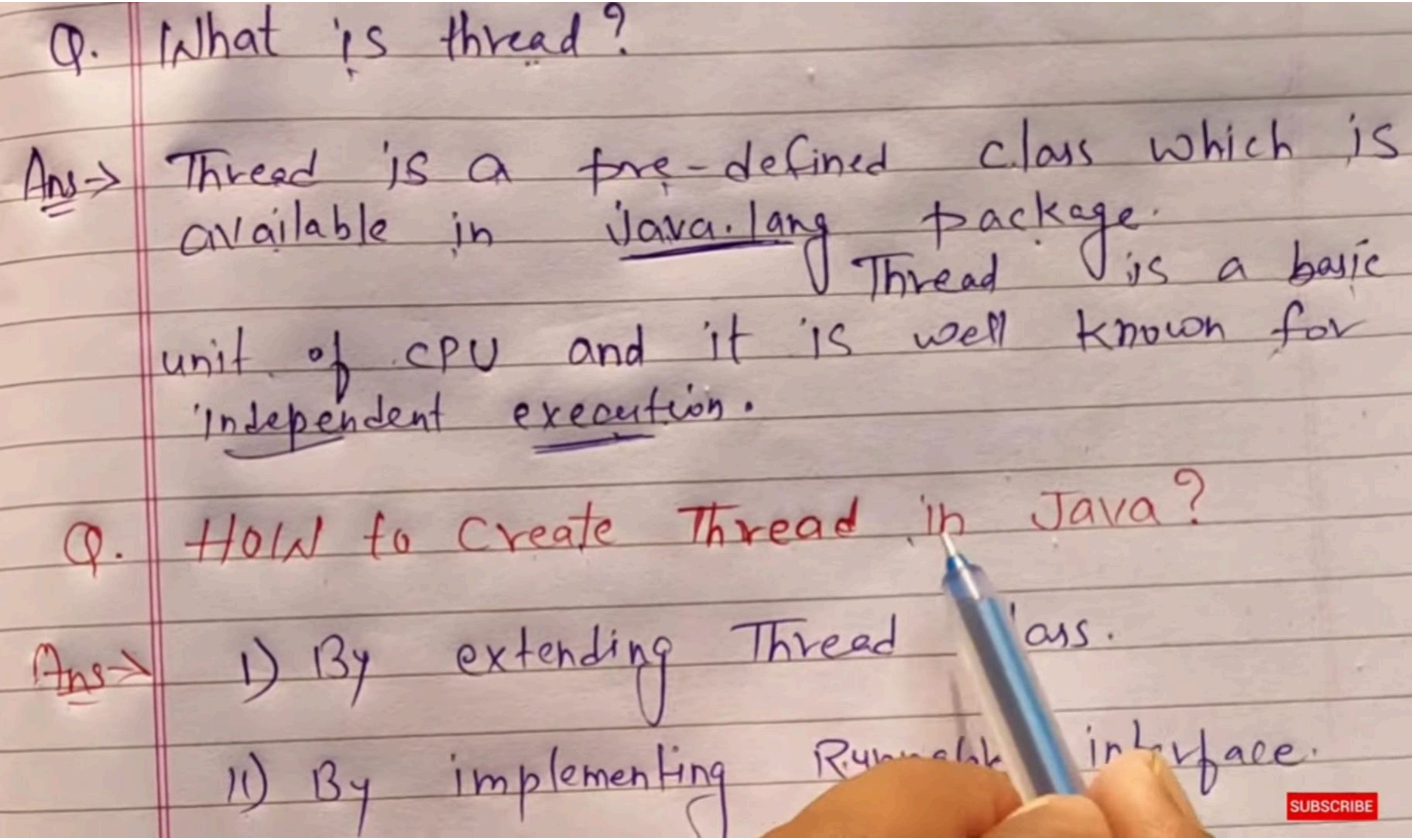
Multithreading

Q. What is multithreading? With example.

Ans → multithreading is a process to execute multiple threads at the same time without dependency of other threads called multithreading.



Q. What is thread?



Q. What is thread?

Ans-> Thread is a pre-defined class which is available in java.lang package. Thread is a basic unit of CPU and it is well known for independent execution.

Q. How to Create Thread in Java?

Ans-> 1) By extending Thread class.

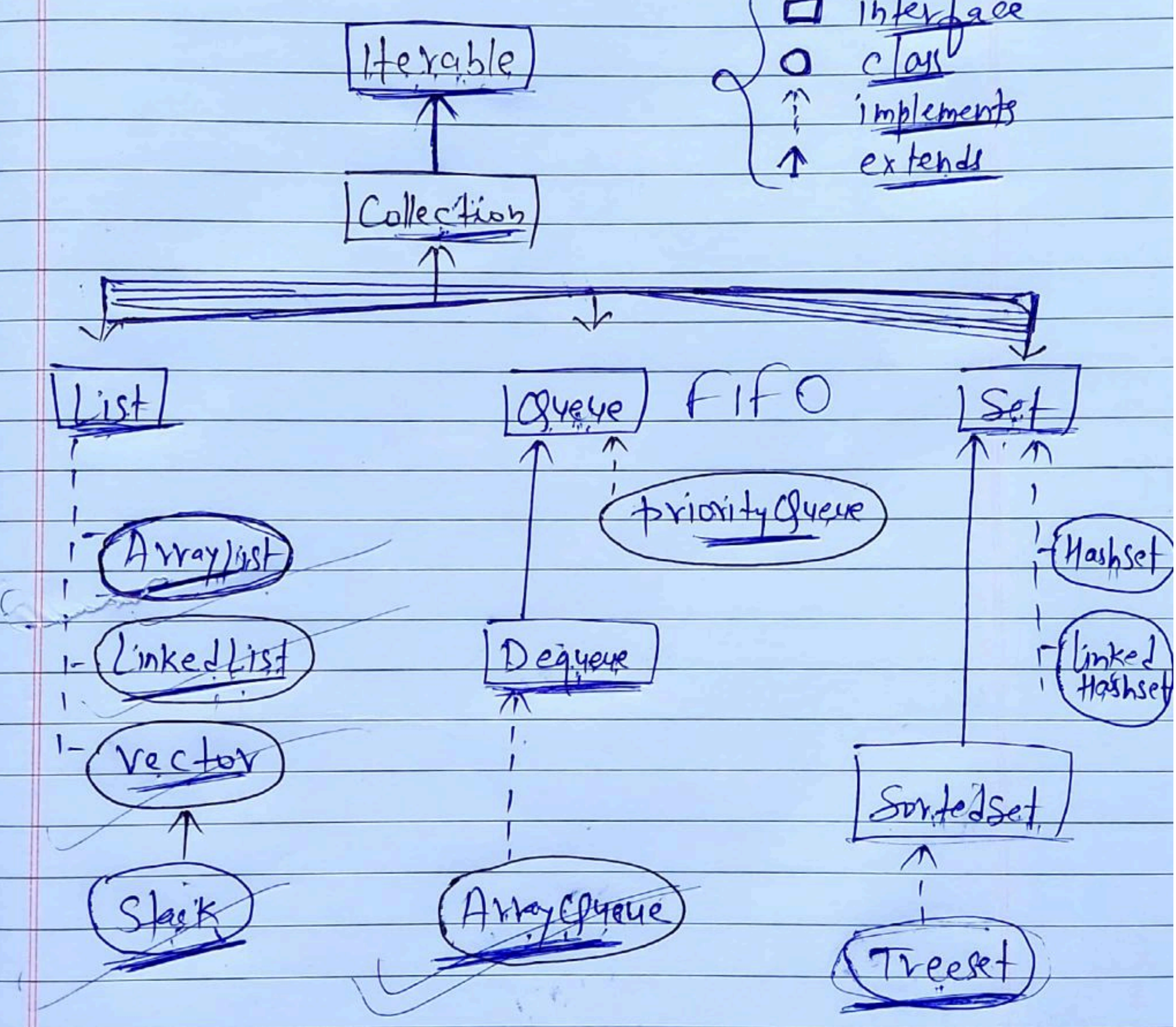
11) By implementing Runnable interface.

Java Full Course

Q. What is Collections? full explaination.

Ans-> Java Collections are the set of pre-defined classes and interfaces that helps programmer to perform different kinds of data structure operation like - " Sorting, Searching, Traversing, Storing and processing data efficentely.

LIFO


□ interface
○ class
⇡ implements
↑ extends
Iterable
Collection
List
Queue
FIFO
Set
ArrayList
LinkedList
Vector
Stack
PriorityQueue
Dequeue
ArrayQueue
HashSet
linked HashSet
SortedSet
TreeSet