

# Java Inner Classes And Interfaces

The screenshot shows a mobile browser interface with the URL `codechef.com/pr`. The top status bar indicates the time is 10:52 PM and shows connectivity and battery level. Below the address bar, there are tabs for `State...`, `Submit...`, `SOLUTION`, and `AI HELP`. The main content area displays a Java code editor with the following code:

```
4 int main() {  
5     // your code goes here  
6     int x=1;  
7     while(x<=5){  
8         cout<<x<<" - "<<x*x<<endl;  
9         x++;  
10    }  
11 }  
12 }
```

A green cursor is positioned at the end of the code. Below the code editor is a `Sample Input` field which is empty. Underneath it is a `Your Output` field containing the following text:  
1-1  
2-4  
3-9  
4-16  
5-25

At the bottom of the screen, a green notification bar displays a checkmark icon and the text "Awesome, you nailed it!" followed by a blue button labeled "AI Review?".

A screenshot of the Visual Studio Code (VS Code) interface. The main area shows a Java file named `FirstCode.java` with the following code:

```
FirstCode.java — Java
J FirstCode.java X J System.class
J FirstCode.java > ↵ FirstCode > ⚙ main(String[])
3 public class FirstCode
4 {
5     public static void main(String[] args) {
6         System.out.println("hi");
7         PrintStream out = System.out;
8         out.println("Hello");
9     }
10 }
```

The code editor has a green wavy underline under the word "hi". The status bar at the bottom shows the current file is `FirstCode.java`, line 6, column 28, with 4 spaces, using UTF-8 encoding, and Java as the language.

The left sidebar shows the Explorer, Outline, Timeline, and Java Projects sections. The Java Projects section lists three files: `FirstCode.java`, `FirstCode.class`, and `Something.class`.

The bottom right corner features a video player interface with a thumbnail of a person, indicating a video is playing.

```
J FirstCode.java 1 X
J FirstCode.java > FirstCode > show()
3
4 public class FirstCode
5 {
6     int num;
7
8     A obj = new A();
9
10
11     public void show()
12     {
13         System.out.println("in show " + num);
14         obj.config();
15     }
16
17     class A           // inner class
18     {
19         public void config()
20         {
21             System.out.println("in config");
22         }
23     }
24 }
```

Ln 14, Col 22 Spaces: 4 UTF-8 LF () Java ⌂ ⌂



```
J FirstCode.java 1 X
J FirstCode.java > ↵ FirstCode > ⊖ main(String[])
20
21     System.out.println("in config");
22 }
23
24
25 public static void main(String[] args) {
26
27     FirstCode obj = new FirstCode();
28     obj.show();
29     System.out.println(obj.num);
30
31
32 }
```

TERMINAL ...

navin@iMac Java % java FIRST Navin Reddy

hi

Hello

navin@iMac Java % java FirstCode.java

in show 0

navin@iMac Java % java FirstCode.java

in show 0

navin@iMac Java %

navin@iMac Java %

Ln 31, Col 6 (166 selected) Spaces: 4 UTF-8 LF () Java ⌂ Q



```
J FirstCode.java - Java
J FirstCode.java > FirstCode > A
1 class B{
2
3 }
4 public class FirstCode
5 {
6     private int num;
7     In config
8     A obj = new A();
9
10    public void show()
11    {
12        System.out.println("in show "
13        obj.config());
14    }
15 }
16
17 class A // inner class
18 {
19     public void config()
20     {
21         System.out.println("in c
22 }
```

TERMINAL

- navin@iMac Java % java FirstCode.java
- Hello
- navin@iMac Java % java FirstCode.java
- In show 0
- In show 0
- In config
- navin@iMac Java % java FirstCode.java
- In show 0
- In config
- navin@iMac Java % javac FirstCode.java
- navin@iMac Java %

Ln 18, Col 11 (3 selected) Spaces: 4 LF () Java ⌂ Q

6

```
J FirstCode.java X
J FirstCode.java > ↵ FirstCode > ⊖ main(String[])
1 class A
2 {
3     public void show()
4     {
5         System.out.println("In show");
6     }
7 class B
8 {
9     public void config()
10    {
11        System.out.println("In config ");
12    }
13 }
14
15 public class FirstCode
16 {
17
18
19     public static void main(String[] args)
20     {
21         A obj = new A();
22         obj.show();
23     }
24 }
```

FirstCode.java — Java

TERMINAL ...

navin@iMac Java % java FIRST Navin Reddy

hi

Hello

navin@iMac Java % java FirstCode.java

in show 0

navin@iMac Java % java FirstCode.java

in show 0

navin@iMac Java % java FirstCode.java

in config

navin@iMac Java % java FirstCode.java

in show 0

navin@iMac Java % javac FirstCode.java

navin@iMac Java % javac FirstCode.java

navin@iMac Java % javac FirstCode.java

navin@iMac Java % java FirstCode

in show

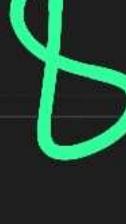
navin@iMac Java %

Ln 25, Col 27 (6 selected) Spaces: 4 UTF-8 LF () Java ⌂ ⌂

```
J FirstCode.java X
J FirstCode.java > ↵ FirstCode > ⌘ main(String[])
1.0 public class FirstCode
1.1 {
1.2     public static void main(String[] args)
1.3     {
1.4         A obj = new A();
1.5         obj.show();
1.6         A.B obj1;
1.7         obj1 = obj.new B();
1.8         obj1.config();
1.9     }
1.10 }
1.11 }
```

TERMINAL ...

```
having@Mac Java % java FirstCode
Hello
World
having@Mac Java % java FirstCode.java
in show @
having@Mac Java % java FirstCode.java
in show @
in config
having@Mac Java % java FirstCode.java
in show @
in config
having@Mac Java % javac FirstCode.java
having@Mac Java % javac FirstCode.java
having@Mac Java % java FirstCode
in show @
having@Mac Java %
having@Mac Java %
```



```
J FirstCode.java 4 ●
J FirstCode.java > A > show()
2
3
4 class A {
5     public void show() {
6         System.out.println("Hello");
7     }
8     class B {
9         public void con() {
10            System.out.println("in config ");
11        }
12    }
13 }
14 }
15 }
16 }
17 }
18 }
19 public class FirstCode {
20 }
21
22 public static void main(String[] args) {
23 }
```

TERMINAL ...

zsl

having@iMac: ~ % java FirstCode.java

Hello

having@iMac: ~ % java FirstCode.java

having@iMac: ~ %

The screenshot shows a Java development environment with the following components:

- Code Editor:** Displays the `FirstCode.java` file. The code defines a `Main` class with a `main` method that creates an instance of `FirstCode` and calls its `show` method. The `FirstCode` class contains two nested classes, `A` and `B`, each with a `show` method that prints a message to the console.
- Terminal:** Shows the output of running the `javadoctor` command on the `FirstCode.java` file. It includes the javadoc command, the loading of the source file, construction of the Javadoc information, building an index for all packages and classes, and the generation of the `FirstCode.html` documentation.
- File Browser:** Shows the directory structure with files like `FirstCode.java`, `FirstCode.html`, and `FirstCode.class`.

```
FirstCode.java  J SecondCode.java •
SecondCode.java > 4 SecondCode > ④ main(String[])
4
5     System.out.println("In Computer Config");
6 }
7
8
9
10 public class SecondCode {
11
12     public static void main(String[] args) {
13
14         Computer obj = new Computer(); // anonymous inner
15
16         public void config() {
17             {
18                 System.out.println("something new");
19             }
20         }
21     }
22
23
24
25
26 }
```

```
SecondCode.java — Java
TERMINAL ... zsi
navineIMac Java % javac FirstCode.java
navineIMac Java % javac SecondCode.java
navineIMac Java % java SecondCode
navineIMac Java % java SecondCode.java
error: can't find main(String[]) method in class: C
in Computer Config
navineIMac Java % java SecondCode
error: can't find main(String[]) method in class: Computer
navineIMac Java % javac SecondCode.java
navineIMac Java % java SecondCode
navineIMac Java % javac SecondCode.java
navineIMac Java % java SecondCode
Something new
navineIMac Java %
```

Ln:15 Col:41 Spaces:4 UTF-8 LF () Java ⌂ ⌂

```
SecondCode.java - Java
J FirstCode.java J SecondCode.java X
J SecondCode.java > ↵ SecondCode > ⌂ main(String[])
1 abstract class Computer
2 {
3     public abstract void config();
4 }
5 class Laptop extends Computer
6 {
7     public void config()
8     {
9         System.out.println("its working");
10    }
11 }
12
13
14
15 public class SecondCode
16 {
17     public static void main(String[] args) {
18
19         Computer obj = new Laptop();
20         obj.config();
21
22     }
23 }
```

TERMINAL ...

navin@iMac Java % javac SecondCode.java

navin@iMac Java % java SecondCode

its working

navin@iMac Java %

Ln 20, Col 22 Spaces: 4 UTF-8 LF () Java ⌂ ⌂

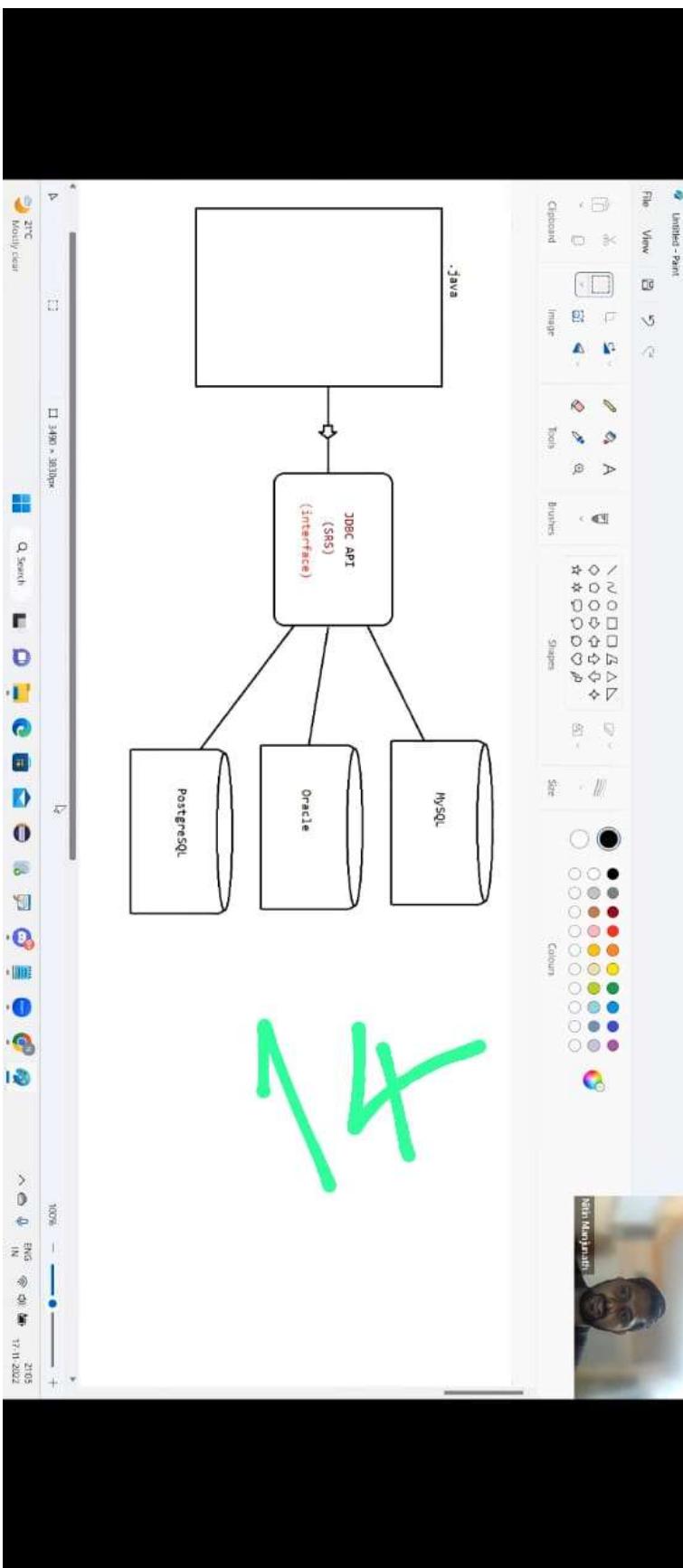
A screenshot of a terminal window titled "SecondCode.java — Java". The window shows the following Java code:

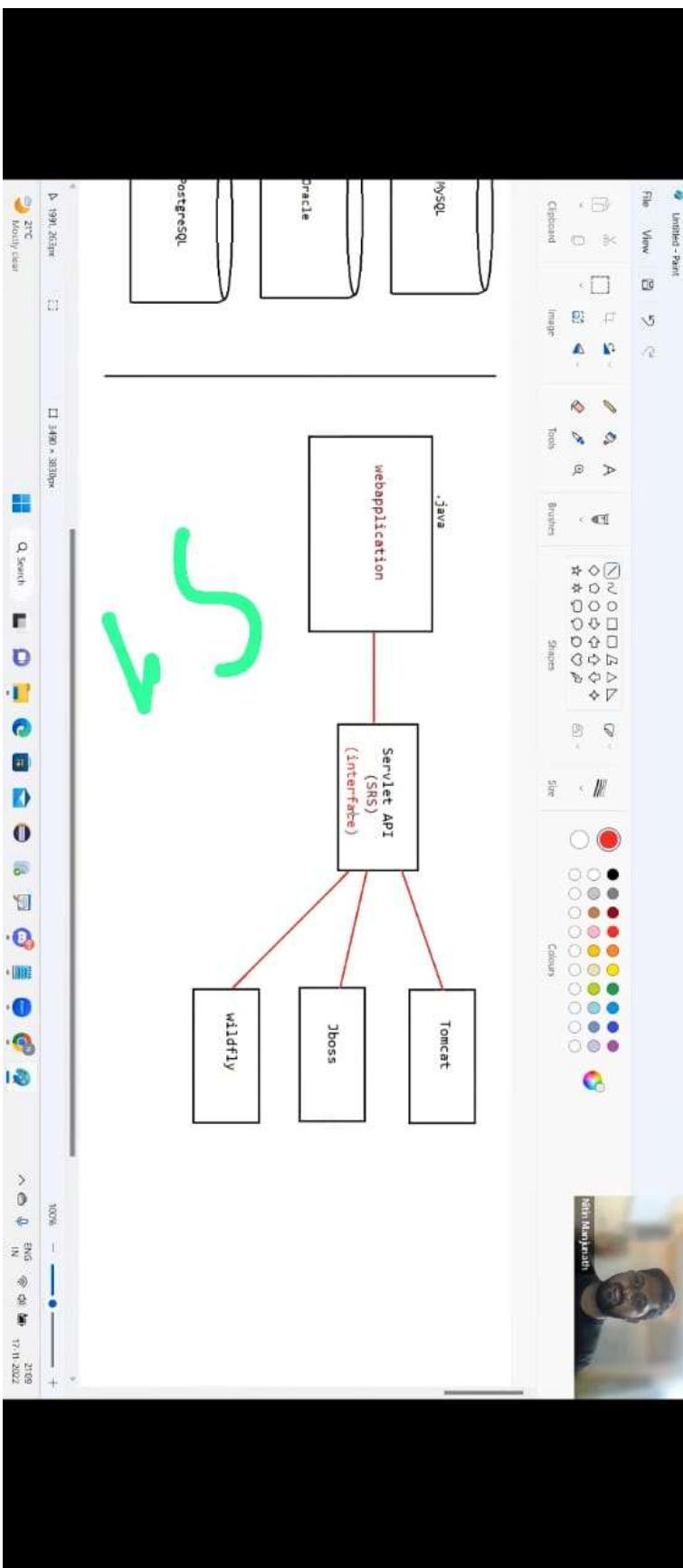
```
 1  J FirstCode.java   J SecondCode.java X
 2
 3  ra > cd SecondCode > & main(String[])
 4  new Computer() {...} > config()
 5
 6  public void config()
 7  {
 8    // ...
 9    System.out.println("its working");
10  }
11
12
13
14
15  public class SecondCode
16  {
17    public static void main(String[] args) {
18      Computer obj = new Computer();
19      obj.config();
20      System.out.println("its working very fine");
21    }
22  }
23
24
25
26
27
28 }
```

The terminal output shows the command "javac SecondCode.java" being run, followed by the output "its working" and "its working very fine". A green hand-drawn arrow points from the terminal output area towards the bottom left of the screen.

Bottom status bar: Ln 22, Col 58 Spaces: 4 UTF-8 LF () Java







17.11.2022\_Interface Questions - Notepad

**Defining service requirement specification(3rd)** is called interface.

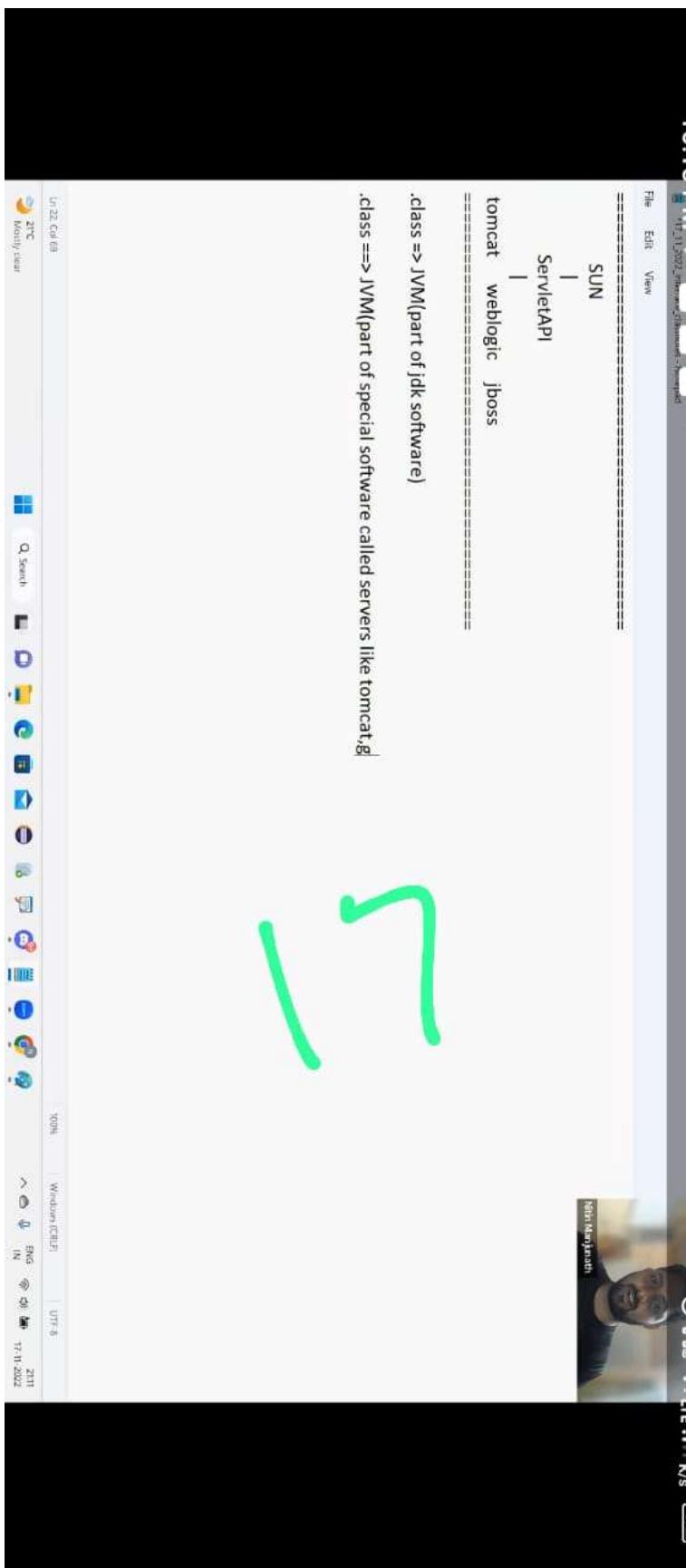
```

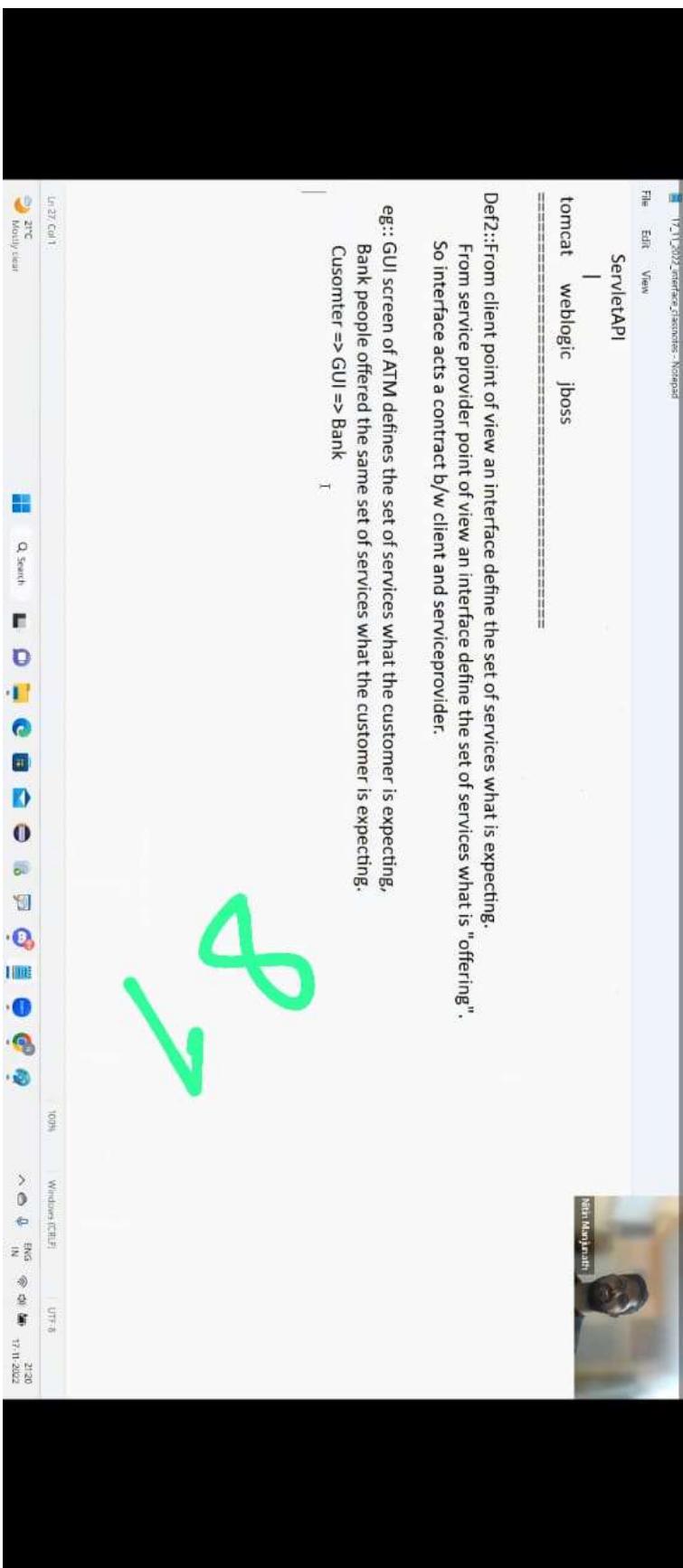
graph TD
    Oracle[Oracle JDBC API] --> SUN[SUN]
    Oracle --> MySQL[MySQL]
    SUN --> PostgreSQL[PostgreSQL]
    MySQL --> tomcat[tomcat]
    MySQL --> weblogic[weblogic]
    MySQL --> jboss[jboss]
    MySQL --> ServletAPI[Servlet API]

```

16







```
2 {  
3 //It is 100% abstract class  
4  
5 //abstract method  
6 public abstract void withdraw();  
7 public abstract void deposit();  
8 public abstract void checkBalance();  
9 }  
10 }  
11 }  
12 public class TestApp {  
13     public static void main(String[] args){  
14         }  
15     }  
16 }  
17 }
```

19

```
3
4 //It is 100% abstract class
5
6 public void withdraw();
7 public void deposit();
8 public void checkBalance();
9 }
10
11
12 public class TestApp {
13     public static void main(String[] args){
14
15     }
16 }
17 }
```

20

File Edit View Search Document Project Icons Browser Export Window Help

Directory Object Functions

D:\ New Volume

1. RECENTS

2. Core Java

3. Examples

4. enterprise

5. Field Programs

6. Front end codes

7. gitHub

8. Interview

9. TestApp.java

10. TestApp.java

11.

12. public class TestApp {

13. public static void main(String[] args){

14. }

15. }

16. }

17. }

Java (TestApp)

For Help press F1

20°C  
mostly clear

Q. Search

In 5 col 8 17 68 PC ANSI

^ & 4 Eng IN

17.11.2022 21:28



With Narendra

17\_11\_2022\_interactive\_classnotes - Notepad

So Interface acts as a contract b/w client and service provider.

**eg::** GUI screen of ATM defines the set of services what the customer is expecting. Bank people offered the same set of services what the customer is expecting.

**Def3::** Inside interface every method is always abstract whether we are delcaring or not hence interface is considered as 100% pure abstract class.

eg:  
interface Account

```
//The methods are by default "abstract and public"  
void withdraw();  
void deposit();  
void checkBalance();
```

72

In 36, Col 52

A vertical column of small icons representing various apps and system functions, typical of a Windows taskbar or Start menu.

The screenshot shows a Java IDE interface with the following code:

```
//SRS
interface ISample{
    //100% abstract class
    //methods by default "public and abstract"
    void m1();
    void m2();
}

abstract class SampleImpl implements ISample {
    void m1(){
        System.out.println("hey implementation given");
    }
    public abstract void m2();
}

public class TestApp {
    public static void main(String[] args) {
        System.out.println("main method executed");
    }
}
```

A green hand-drawn mark is visible on the right side of the screen, pointing towards the code area.

Editor - (Untitled-1.java)

File Edit View Search Document Project Tools Browser Egret Window Help

Directory Object Functions

D: New Volume RECENT FILE

Coroutines Enums Fields Frontend services Interfaces

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

```
//100% abstract class
//methods by default "public and abstract"
void m1();
void m2();

class SampleImpl implements ISample

@Override //indication to compiler that these methods are overridden methods
void m1(){
    System.out.println("hey implementation given");
}

@Override //indication to compiler that these methods are overridden methods
void m2(){
    System.out.println("hey implementation given");
}

public class TestApp {
    public static void main(String[] args) {
        System.out.println("Hello World!");
    }
}
```

Java (java) \* TestApp.java For Help press F1 20°C, mostly clear

Q\_Switch IN 17 col 80 29 03 PC ANSI 17.11.2022



File Edit View Search Document Project Tools Browser Format Window Help

Directory Object Functions

D:\ New Volume 4 //100% abstract class  
RECYCLE.BIN 5 //methods by default "public and abstract"  
Compartments 6  
Enterprise 7  
EnterpriseBundles  
FieldPrograms  
Font and Schemas 8  
Grids 9  
Groups 10

Test.java

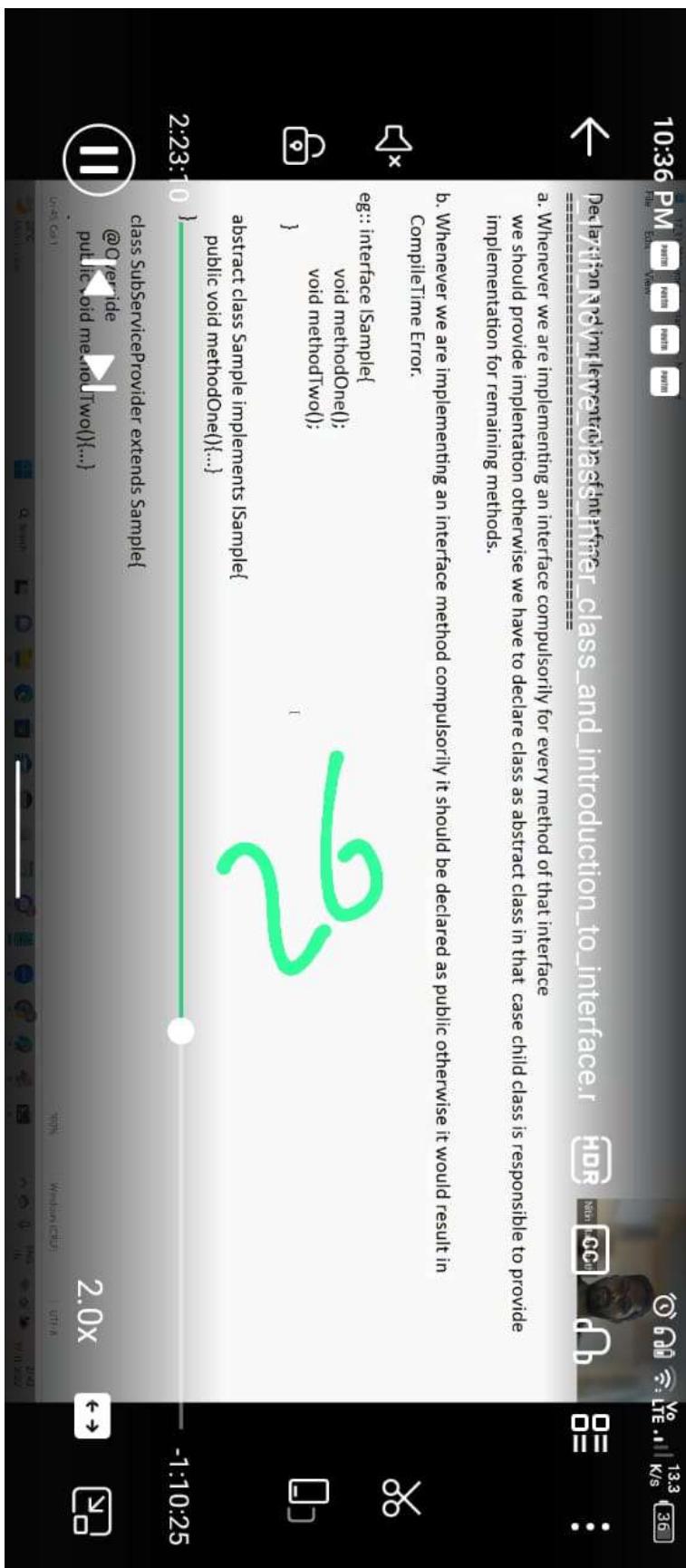
```
1 public class SampleImpl implements ISample
2
3     //100% abstract class
4     //methods by default "public and abstract"
5     void m1();
6     void m2();
7
8
9     class SampleImpl implements ISample
10
11
12     @Override //indication to compiler that these methods are overridden methods
13     public void m1(){
14         System.out.println("hey implementation given");
15     }
16
17     @Override //indication to compiler that these methods are overridden methods
18     public void m2(){
19         System.out.println("hey implementation given");
20     }
21
22
23     public class TestApp {
24         public static void main(String[] args) {
25             System.out.println("Hello World!");
26         }
27     }
28 }
```

Java (Java) TestApp.java For Help press F1 20°C 40°C

Q\_Shortcut Q\_Shortcut Q\_Shortcut Q\_Shortcut Q\_Shortcut Q\_Shortcut Q\_Shortcut Q\_Shortcut

15 col 12 76 PC ANSI 17.11.2022

ENGLISH IN ENGLISH OUT



File Edit View Search Document Project Tools Browser Export Window Help

Directory Object Functions

(D) New Volume 13 } 1 2 3 4 5 6 7

D:\ RECYCLE.BIN 14 }

CoronaProject 15 }

Enterprise 16 class SubSampleImpl extends SampleImpl{

FieldPrograms 17 @Override

FrontEndVideos 18 public void m2(){

github 19 System.out.println("hey implementation given for m2()");

gitignore 20 }

IntelliJProject 21 }

22

23

24 public class TestApp {

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

26

27 ISample sample=new SubSampleImpl(); //loose coupling

sample.m1();

sample.m2();

28

29

30

31 }

32 }

33 }

Java (Java) TestApp.java

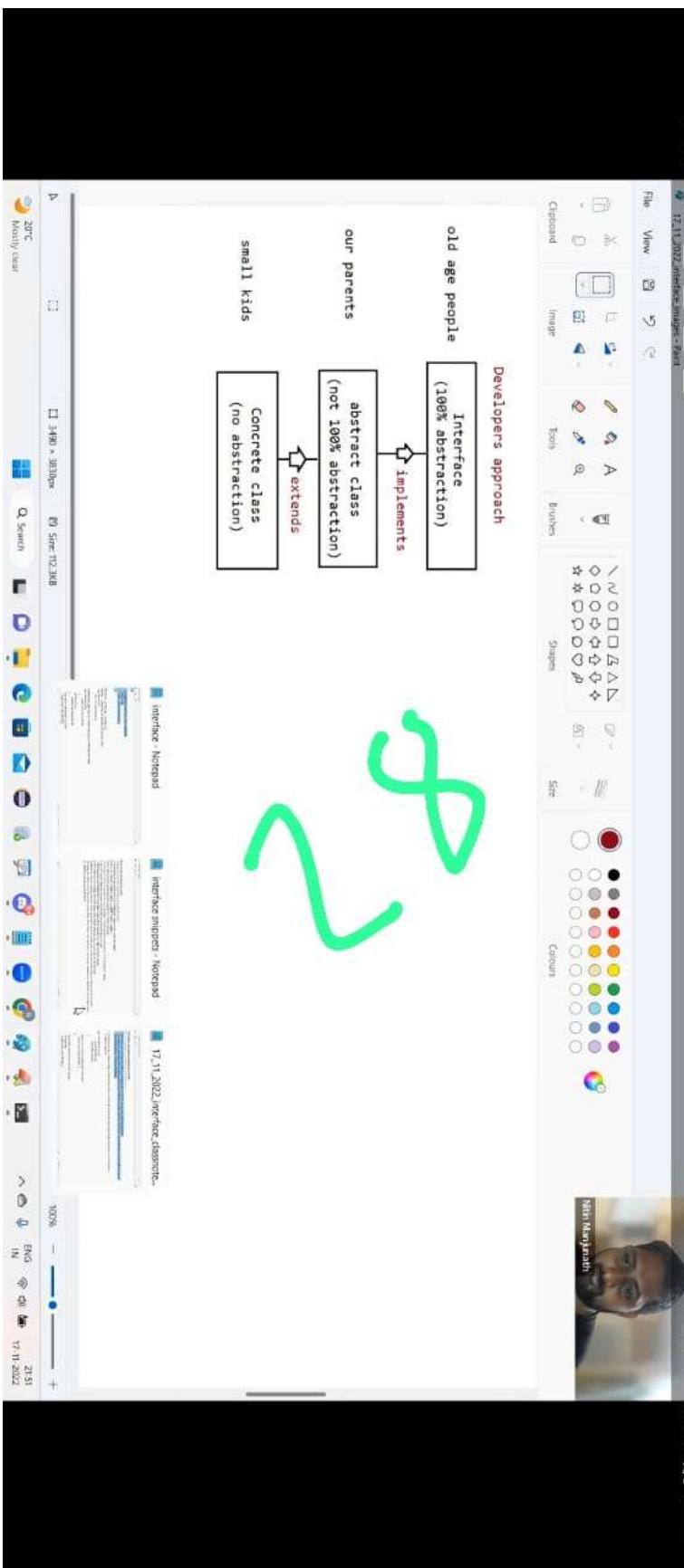
For Help press F1

20°C mostly clear

Q. Search

In 19 col 60 33 28 PC ANSI | Java (Java)

ENGLISH IN 17.11.2022



File Edit View

Declaration and Implementation of Interface

- a. Whenever we are implementing an interface compulsorily for every method of that interface we should provide implementation otherwise we have to declare class as abstract class in that case child class is responsible to provide implementation for remaining methods.

b. Whenever we are implementing an interface method compulsorily it should be declared as public otherwise it would result in **CompileTime Error**.

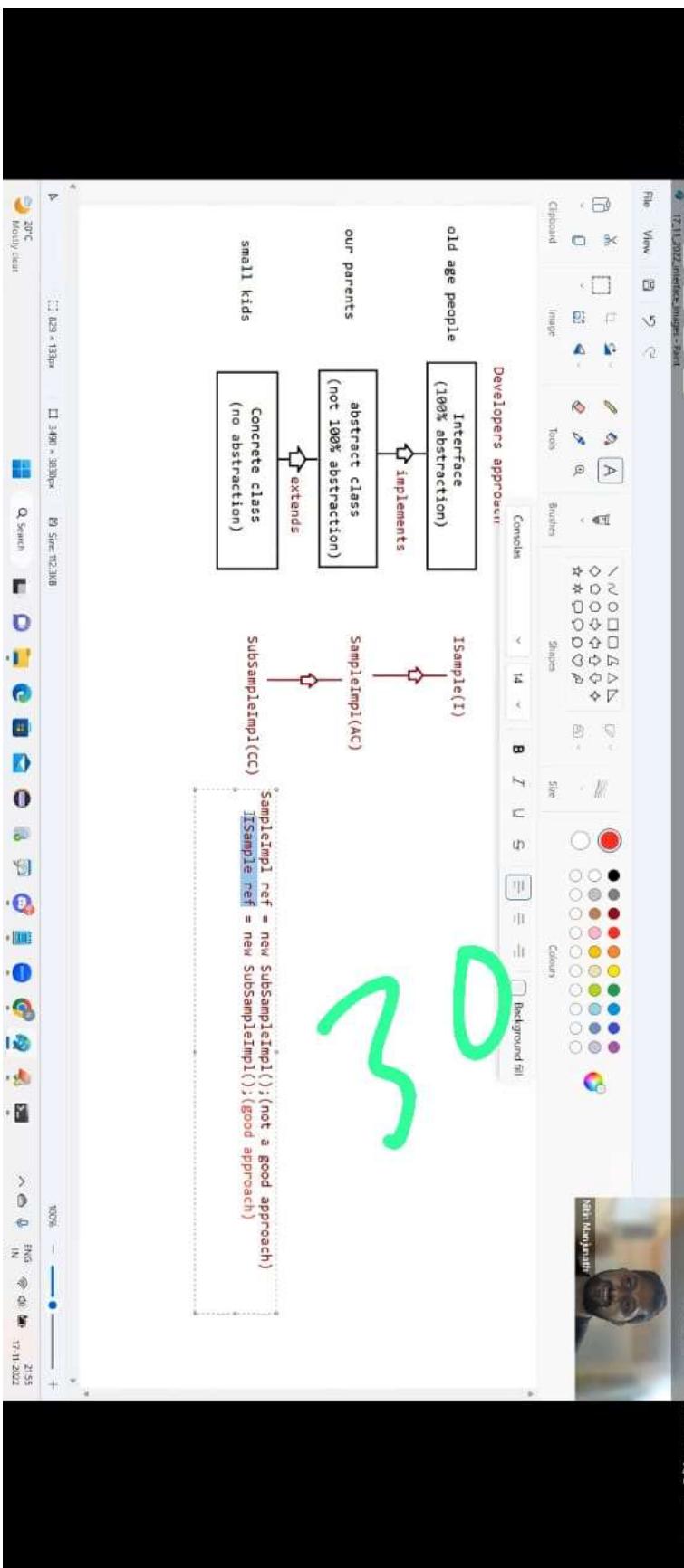
```
abstract class Sample implements ISample{
    public void methodOne(){}
}

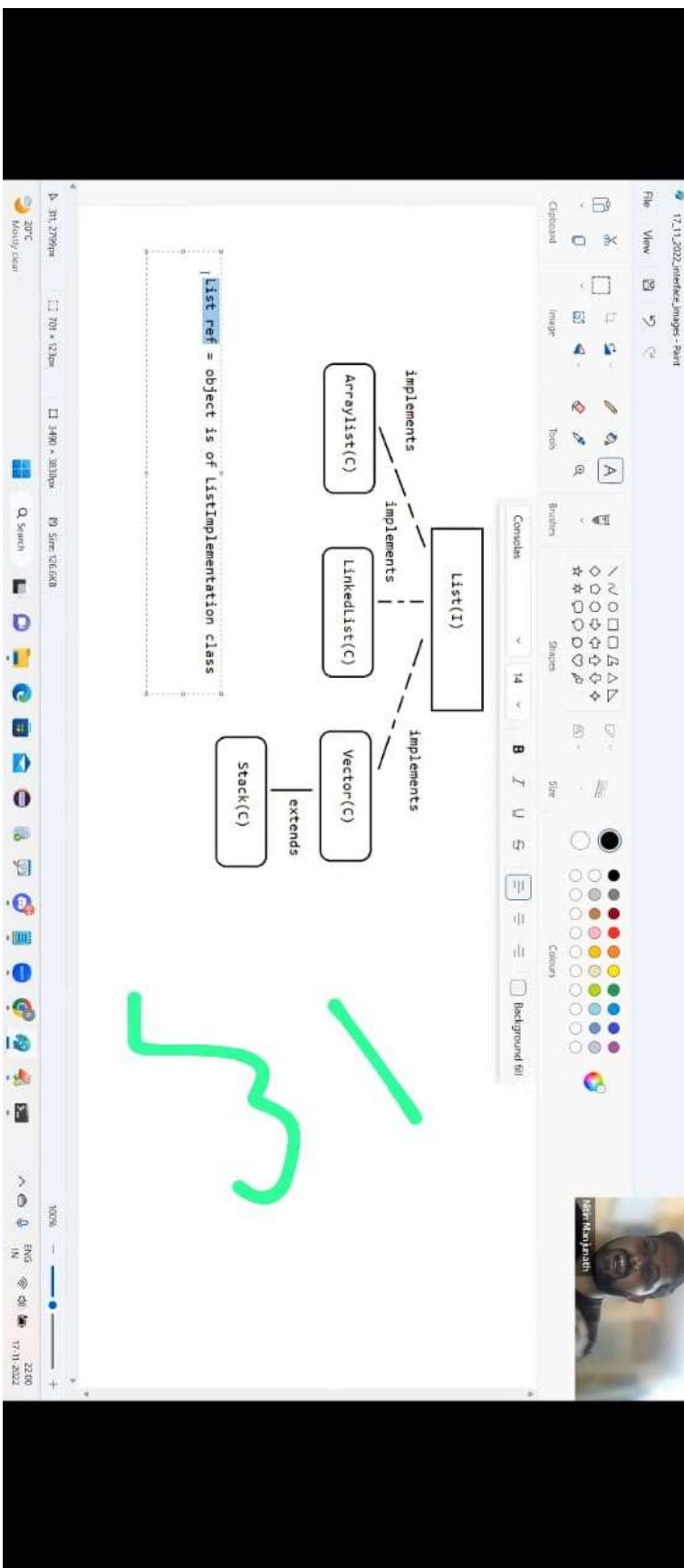
class SubServiceProvider extends Sample{
    @Override
    public void methodTwo(){...}
}
```

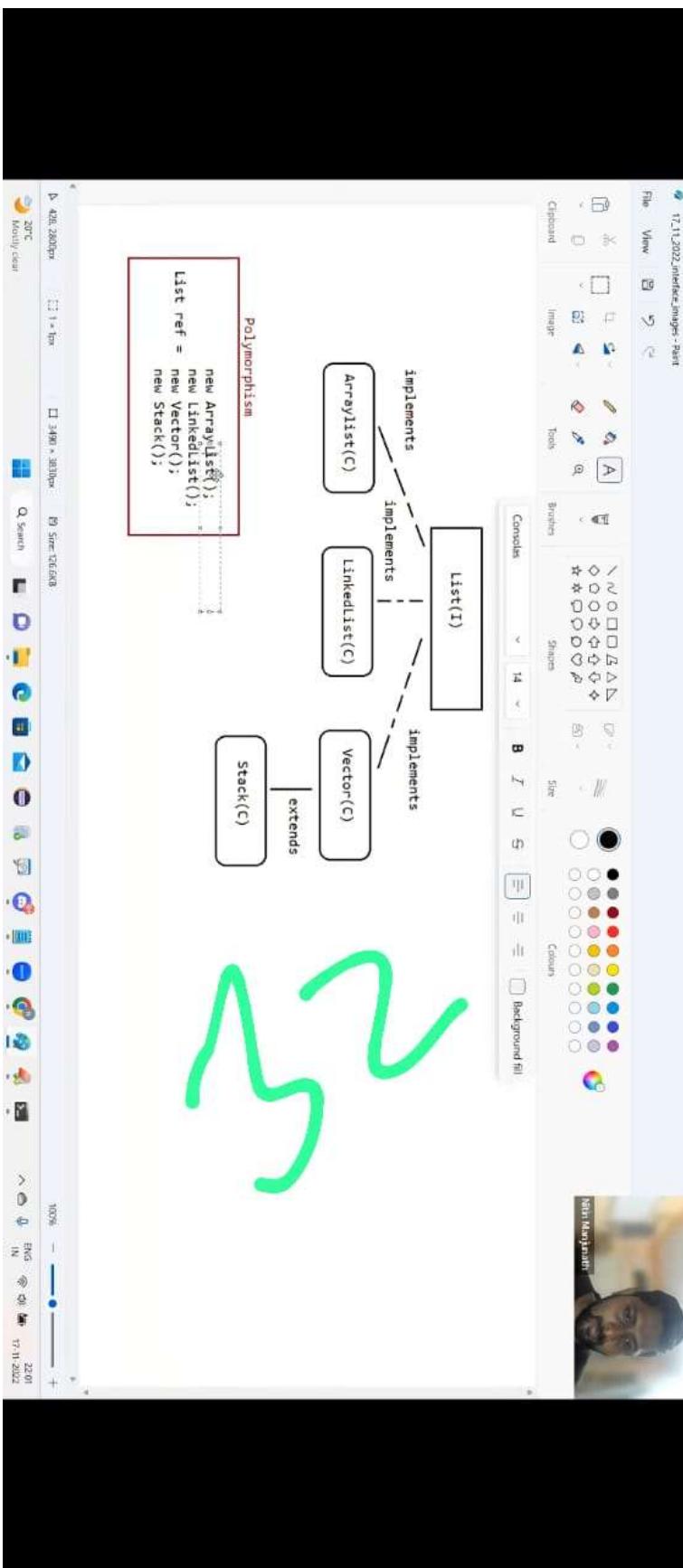
20°C  
Molly clear



20°C  
Molly clear







7.1.1.2022.3.19pre-classmate-Nano

Which of these classes have `delete()` and `reverse()` method

ans: `StringBuilder` and `StringBuffer`

```
String str = " ";
```

```
System.out.println(str.isEmpty());//false
```

ans: False(we have concat())

Q<sub>1</sub>

```
System.out.println(str.replace("a", "A").lastIndexOf("a"));
```

Answer: -1

53



17.11.2022 snippets\_classmate - Notepad

File Edit View

Answer: -1

O>

```
String s1 = "1";
System.out.println(s1.concat("2").concat("3"));
```

Answer: 123

O>

```
String s1 = "ONE";
s1.concat("TWO");
s1.concat("THREE");
System.out.println(s1);
```

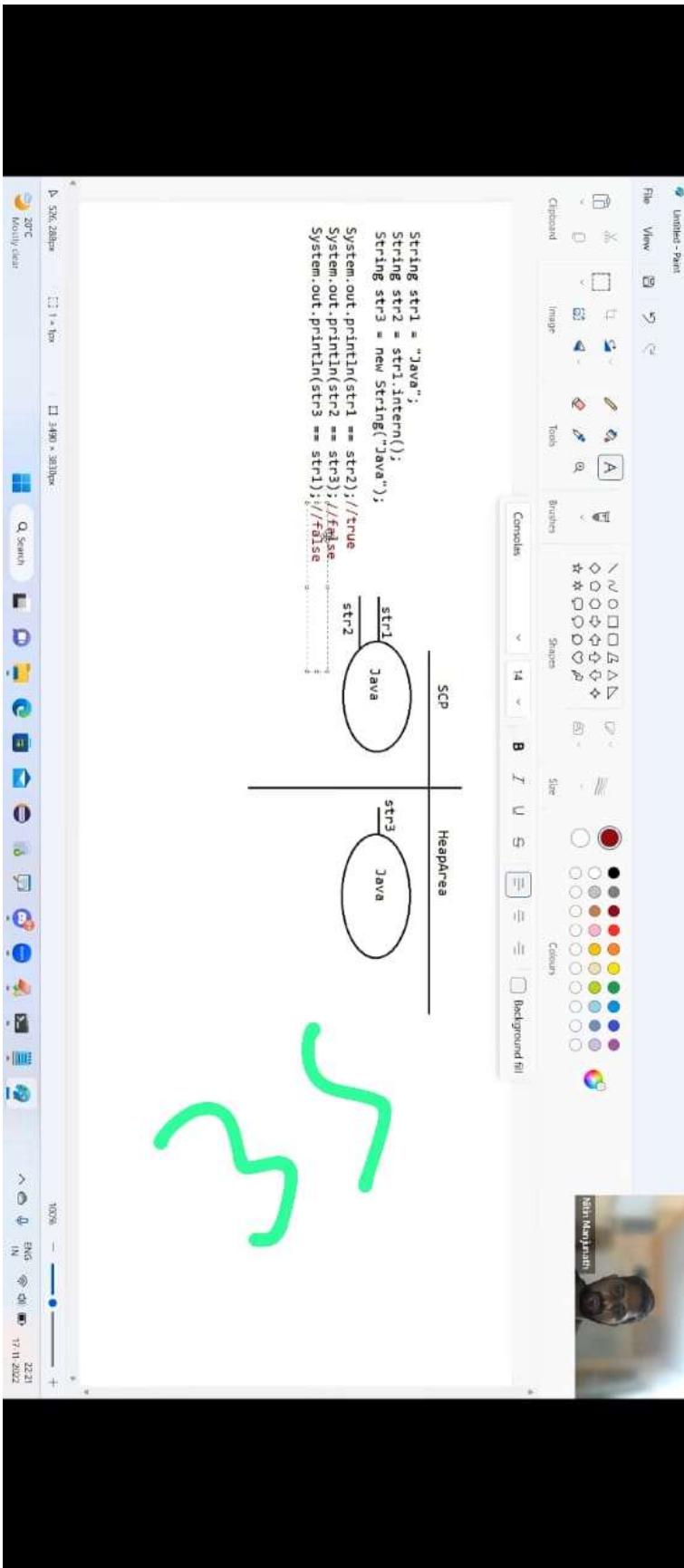
Answer: ONE

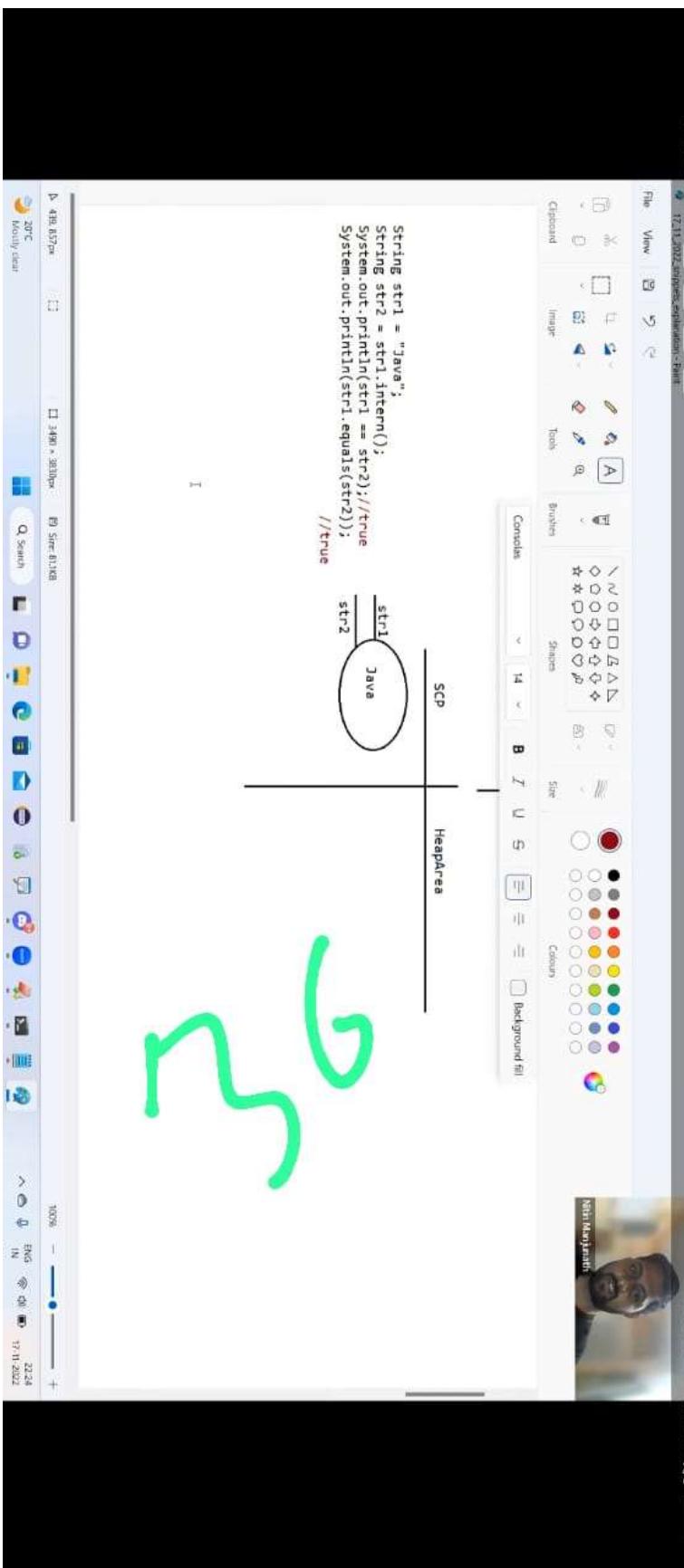
20°C mostly clear

Un 27 Caf 10

TOP Windows CE/EF | UTF-8

^ < > End Pg Up Pg Down 17.11.2022





17.11.2022\_snippets\_classnotes - Notepad

File Edit View

Nitin Maruparthi

Answer: true,true

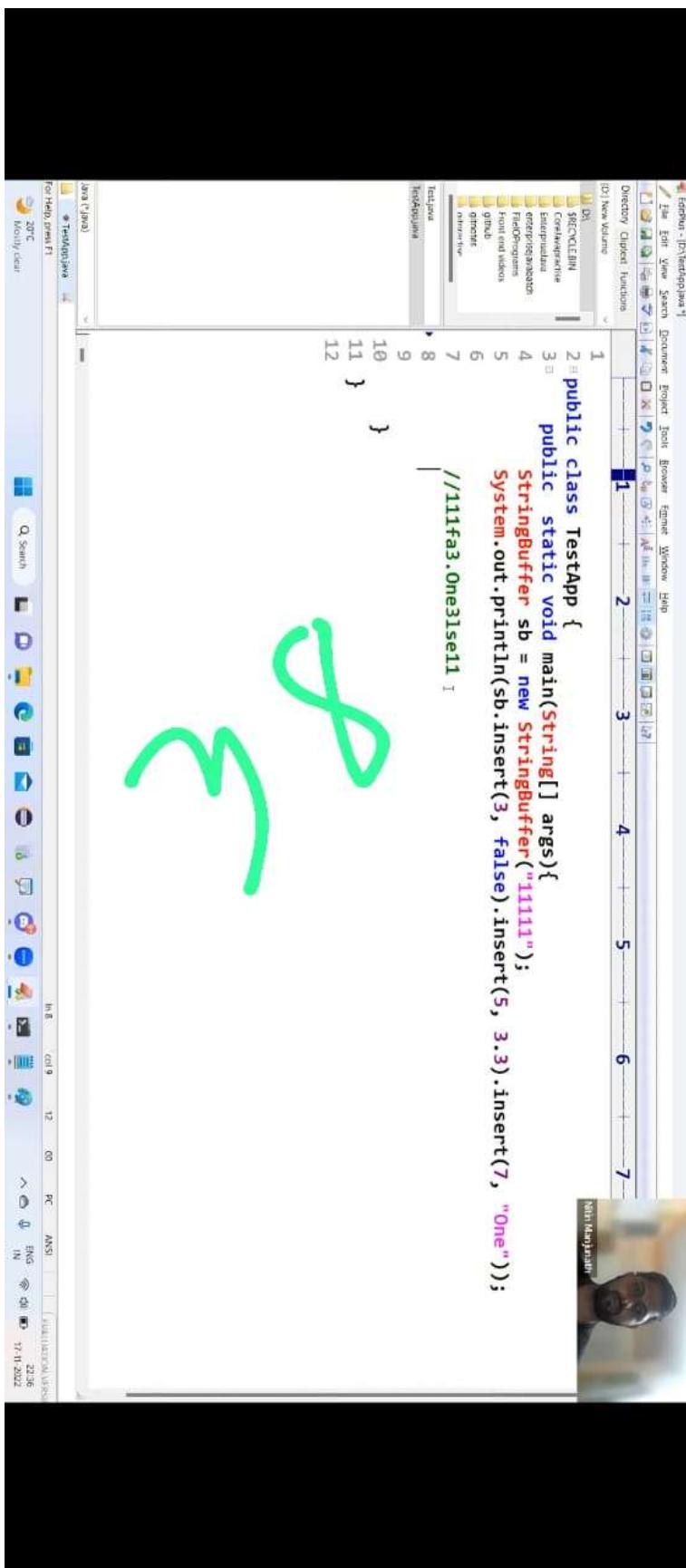
Q>  
StringBuffer sb1 = new StringBuffer("11111");  
StringBuffer sb2 = sb1.append("22222").reverse(); // sb1,sb2 = 222221111  
System.out.println(sb1 == sb2); //true

Q>  
StringBuffer and StringBuilder classes have intern() method. True or False?  
answer: False

Q>  
System.out.println(String.join("", "1", "2", "3").concat(",").repeat(3).lastIndexOf(','));  
output: 1,2,3,1,2,3,1,2,3,  
Answer: 17

Q>





File Edit View

Answer: 17

```
String str1 = "OnE tWo ThReE fOUr";
String str2 = "oNeTwOthrFeFoUr";
System.out.println(str1.trim().equalsIgnoreCase(str2)); //false
```

```
StringBuffer sb = new StringBuffer("11111");
System.out.println(sb.insert(3, false).insert(5, 3.3).insert(7, "One"));
```

Answer: 111fa3.One3|se11

```
String str1 = "Java J2EE Spring Hibernate SQL";
String str2 = "Python Java Scala C C++";
System.out.println(str1.contains("HTML") == str2.contains("HTML"));
```

```
Q>
StringBuffer sb = new StringBuffer("One Two Three Four Five");
System.out.println(sb.reverse().indexOf("Two"));
```



File Edit View

```
StringBuffer sb = new StringBuffer("1111");
```

Answer: 111fa3.One3|sell

```
Q>
String str1 = "Java J2EE Spring Hibernate SQL";
String str2 = "Python Java Scala C C++";
System.out.println(str1.contains("HTML") == str2.contains("HTML"))
false      == false
true
```

Answer: true

```
Q>
StringBuffer sb = new StringBuffer("One Two Three Four Five");
System.out.println(sb.reverse().indexOf("Two"));
```

40



Un B4, Col 13  
20°C  
Mostly clear

A vertical toolbar located on the left side of the interface, containing icons for search, copy, paste, save, and other file management functions.

100% Windows (C:\RPT) UTF-8

17.11.2022 - snippets\_classmate - Notepad

File Edit View

```
System.out.println(sb.reverse().indexOf("Two"));

Answer: -1
```

Q>

```
String str = null;
System.out.println(str.isBlank());//NullPointerException
```

Q>

```
StringBuilder sb = new StringBuilder("0123456789");
System.out.println(sb.delete(3, 6).deleteCharAt(4).deleteCharAt(5));

Answer: 01268
```

Q>

4

File Edit View

```
String s1="sachinrameshtendulkar";
System.out.println(s1.replace('a', 'A').indexOf('a'));
Answer: -1
```

v

```
String str = "ineuron Technology Private Limited";
System.out.println(str.indexOf('n', 5));
```

700

```
String str = "neurontechologyprivate limited"; //length -> no of characters
System.out.println(str.charAt(str.length())); //charAt -> from the index 0.
Answer: StringIndexOutOfBoundsException
```

Q

```
StringBuilder sb = new StringBuilder(-32);  
sb.append("ABC");
```

Answer: NegativeArraySizeException

42

