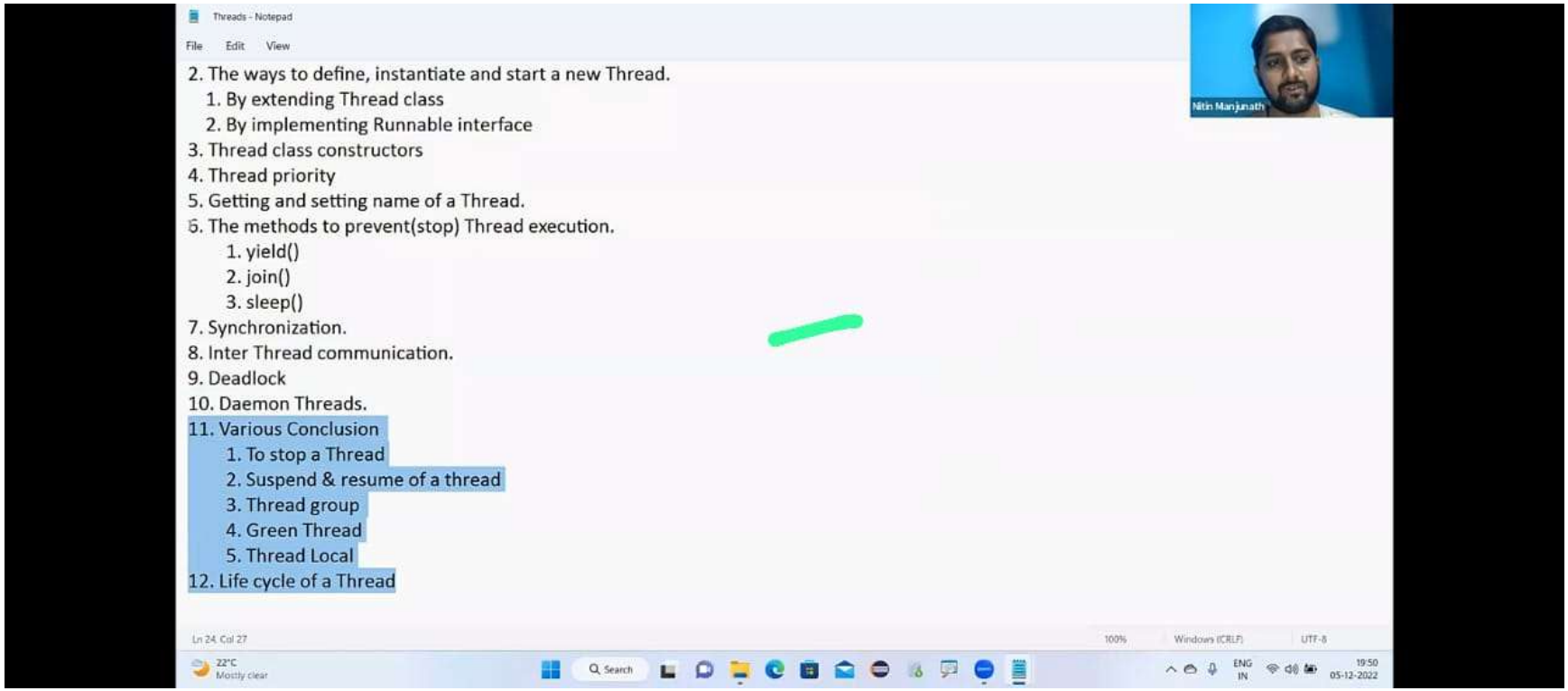
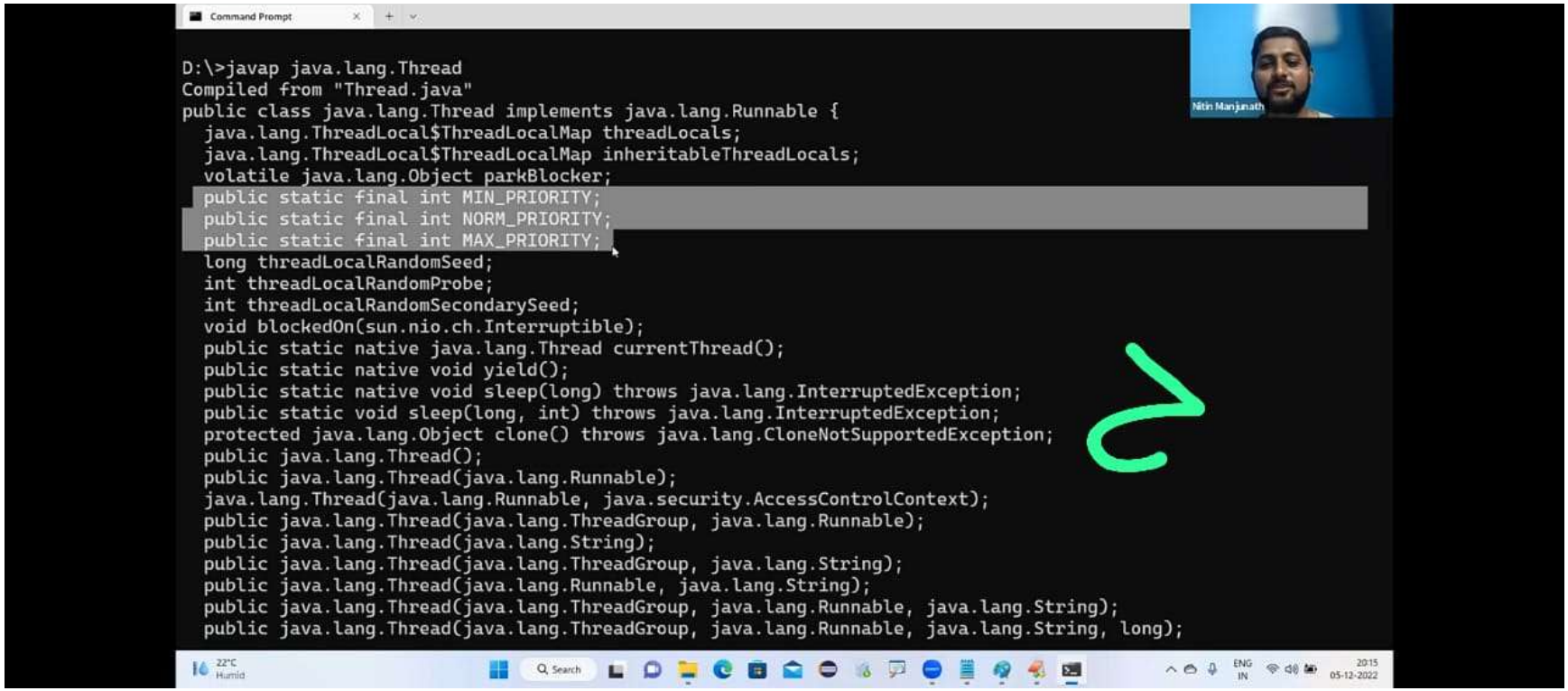
Java Multithreading Part3




Command Prompt
D:\>javap java.lang.Thread
Compiled from "Thread.java"
public class java.lang.Thread implements java.lang.Runnable {
java.lang.ThreadLocal$ThreadLocalMap threadLocals;
java.lang.ThreadLocal$ThreadLocalMap inheritableThreadLocals;
volatile java.lang.Object parkBlocker;
public static final int MIN_PRIORITY;
public static final int NORM_PRIORITY;
public static final int MAX_PRIORITY;
long threadLocalRandomSeed;
int threadLocalRandomProbe;
int threadLocalRandomSecondarySeed;
void blockedOn(sun.nio.ch.Interruptible);
public static native java.lang.Thread currentThread();
public static native void yield();
public static native void sleep(long) throws java.lang.InterruptedException;
public static void sleep(long, int) throws java.lang.InterruptedException;
protected java.lang.Object clone() throws java.lang.CloneNotSupportedException;
public java.lang.Thread();
public java.lang.Thread(java.lang.Runnable);
java.lang.Thread(java.lang.Runnable, java.security.AccessControlContext);
public java.lang.Thread(java.lang.ThreadGroup, java.lang.Runnable);
public java.lang.Thread(java.lang.String);
public java.lang.Thread(java.lang.ThreadGroup, java.lang.String);
public java.lang.Thread(java.lang.Runnable, java.lang.String);
public java.lang.Thread(java.lang.ThreadGroup, java.lang.Runnable, java.lang.String);
public java.lang.Thread(java.lang.ThreadGroup, java.lang.Runnable, java.lang.String, long);
Nitin Manjunath
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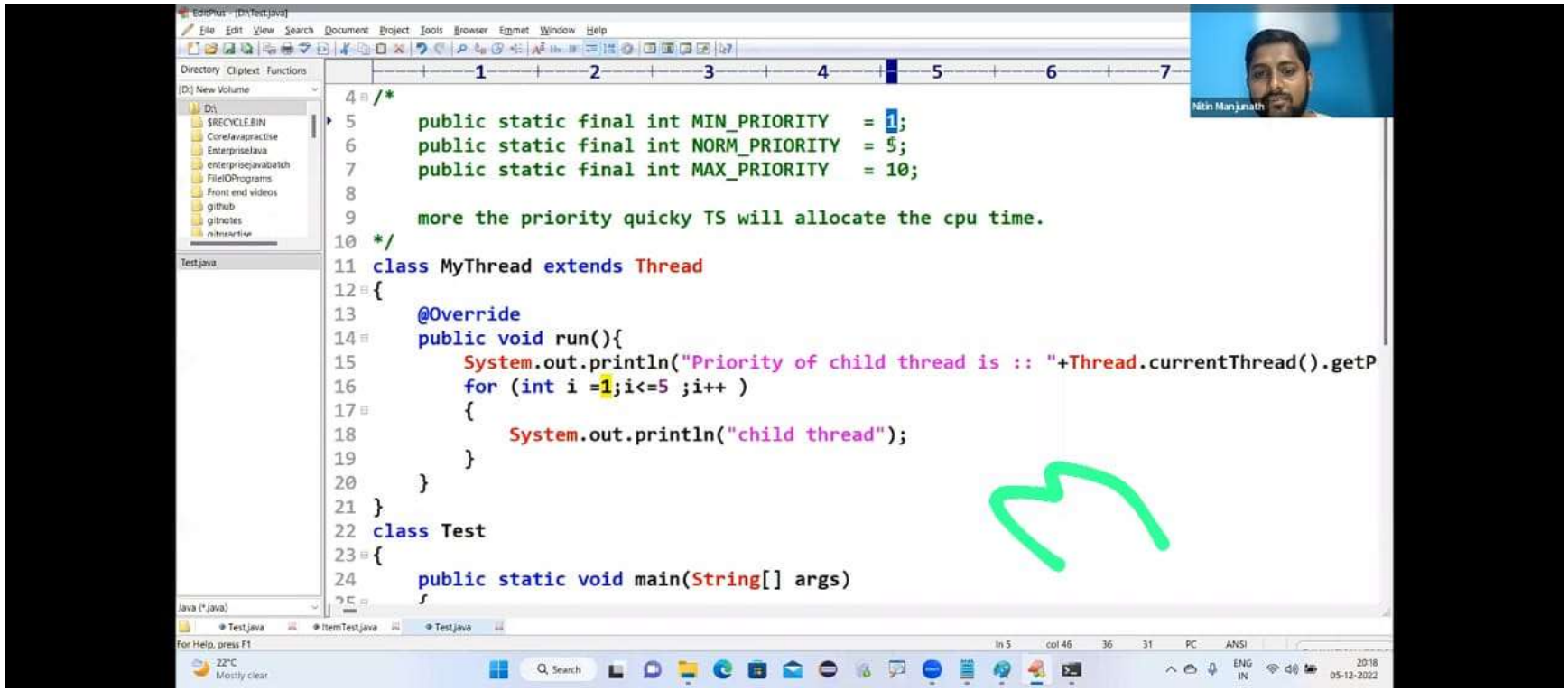
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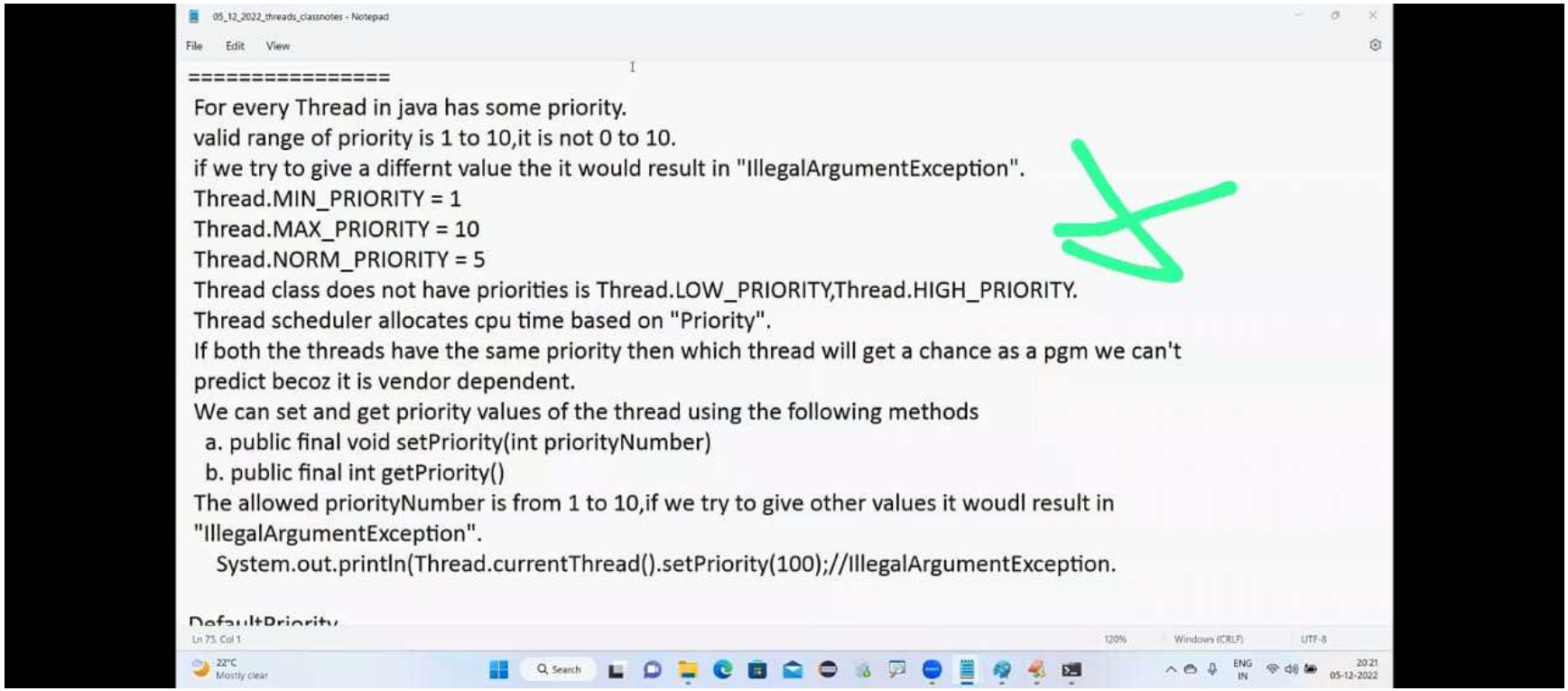
/*
public static final int MIN_PRIORITY = 1;
public static final int NORM_PRIORITY = 5;
public static final int MAX_PRIORITY = 10;
more the priority quicky TS will allocate the cpu time.
*/
class MyThread extends Thread
{
@Override
public void run(){
System.out.println("Priority of child thread is :: "+Thread.currentThread().getP
for (int i =1;i<=5 ;i++)
{
System.out.println("child thread");
}
}
}
class Test
{
public static void main(String[] args)


05_12_2022_threads_classnotes - Notepad
File Edit View
==========
For every Thread in java has some priority.
valid range of priority is 1 to 10,it is not 0 to 10.
if we try to give a differnt value the it would result in "IllegalArgumentException".
Thread.MIN_PRIORITY = 1
Thread.MAX_PRIORITY = 10
Thread.NORM_PRIORITY = 5
Thread class does not have priorities is Thread.LOW_PRIORITY,Thread.HIGH_PRIORITY.
Thread scheduler allocates cpu time based on "Priority".
If both the threads have the same priority then which thread will get a chance as a pgm we can't predict becoz it is vendor dependent.
We can set and get priority values of the thread using the following methods
a. public final void setPriority(int priorityNumber)
b. public final int getPriority()
The allowed priorityNumber is from 1 to 10,if we try to give other values it woudl result in "IllegalArgumentException".
System.out.println(Thread.currentThread().setPriority(100);//IllegalArgumentException.
DefaultPriority
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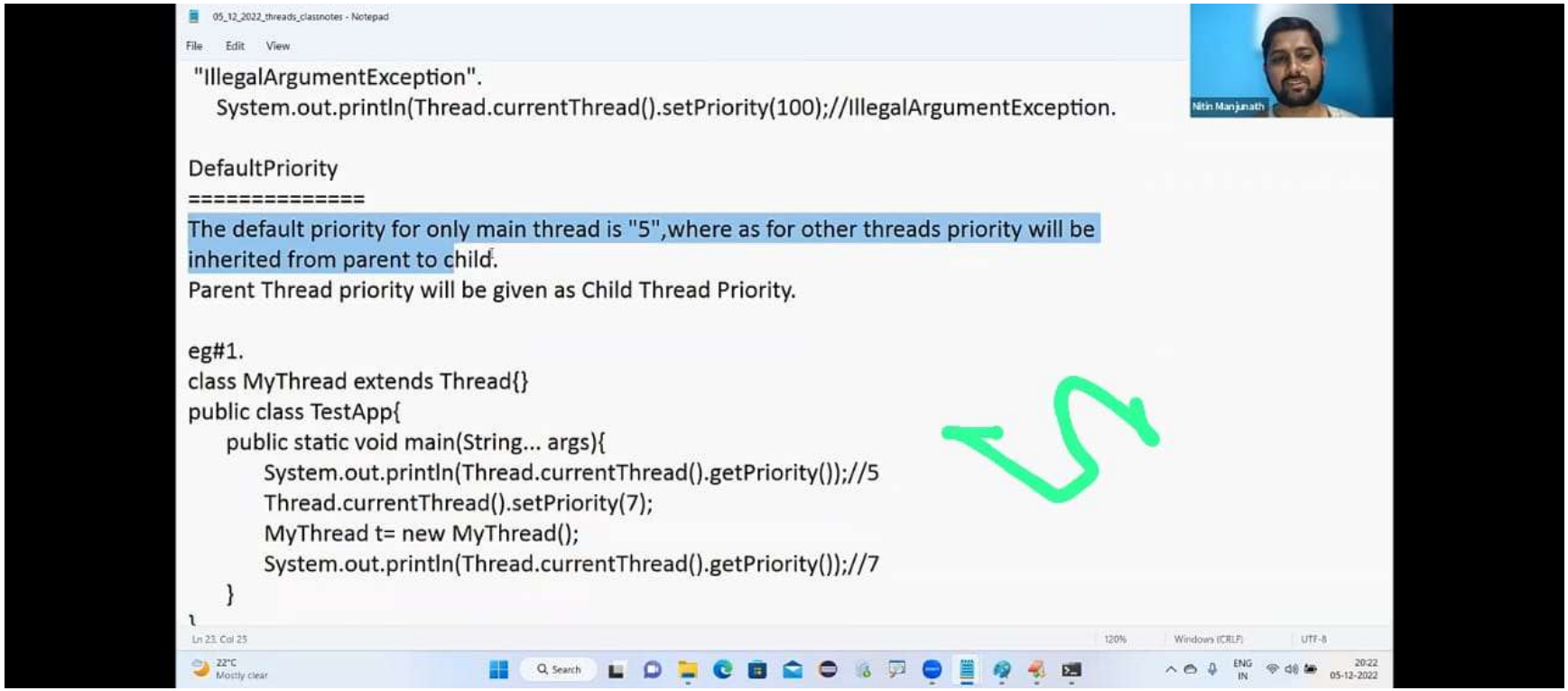
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"IllegalArgumentException".
System.out.println(Thread.currentThread().setPriority(100);//IllegalArgumentException.
DefaultPriority
==========
The default priority for only main thread is "5",where as for other threads priority will be inherited from parent to child.
Parent Thread priority will be given as Child Thread Priority.
eg#1.
class MyThread extends Thread{}
public class TestApp{
public static void main(String... args){
System.out.println(Thread.currentThread().getPriority());//5
Thread.currentThread().setPriority(7);
MyThread t= new MyThread();
System.out.println(Thread.currentThread().getPriority());//7
}
}
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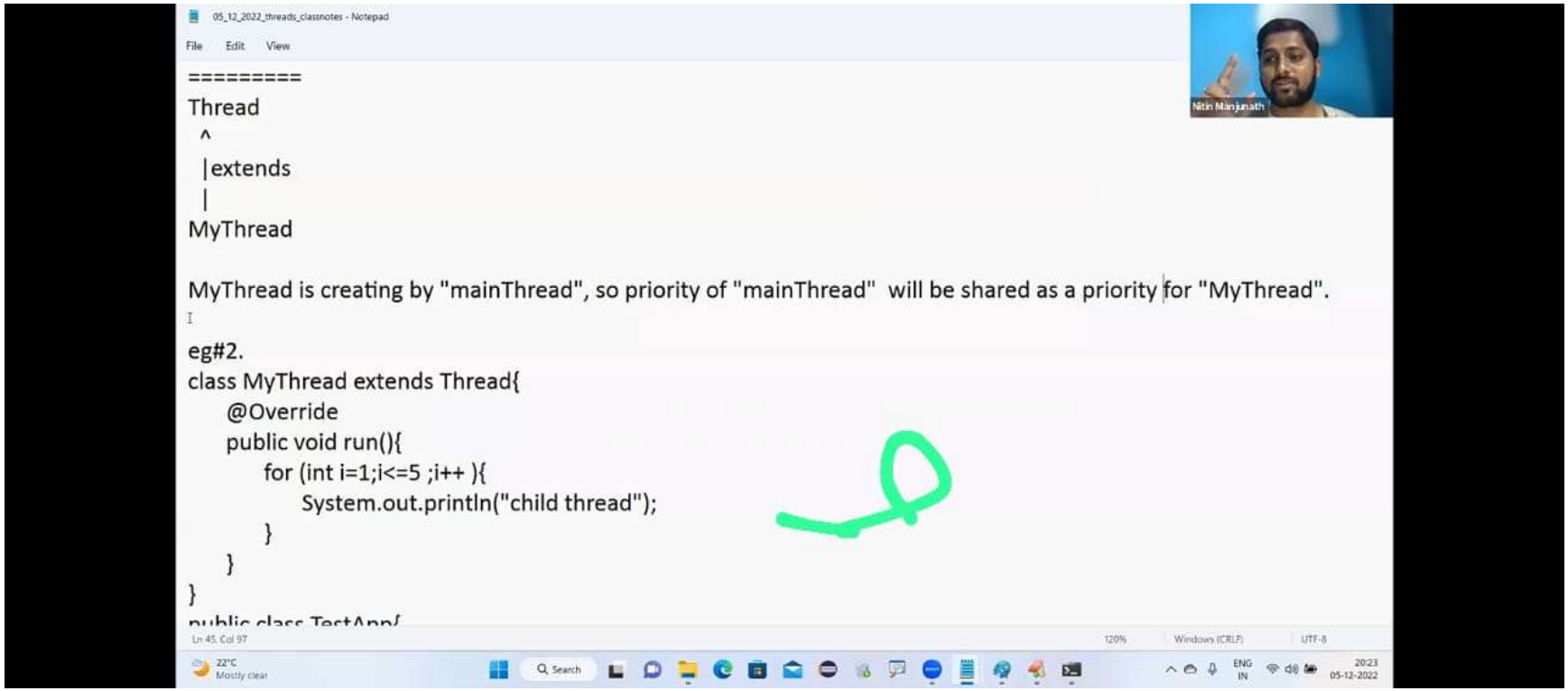
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=========
Thread
^
|extends
|
MyThread
MyThread is creating by "mainThread", so priority of "mainThread" will be shared as a priority for "MyThread".
eg#2.
class MyThread extends Thread{
@Override
public void run(){
for (int i=1;i<=5 ;i++){
System.out.println("child thread");
}
}
}
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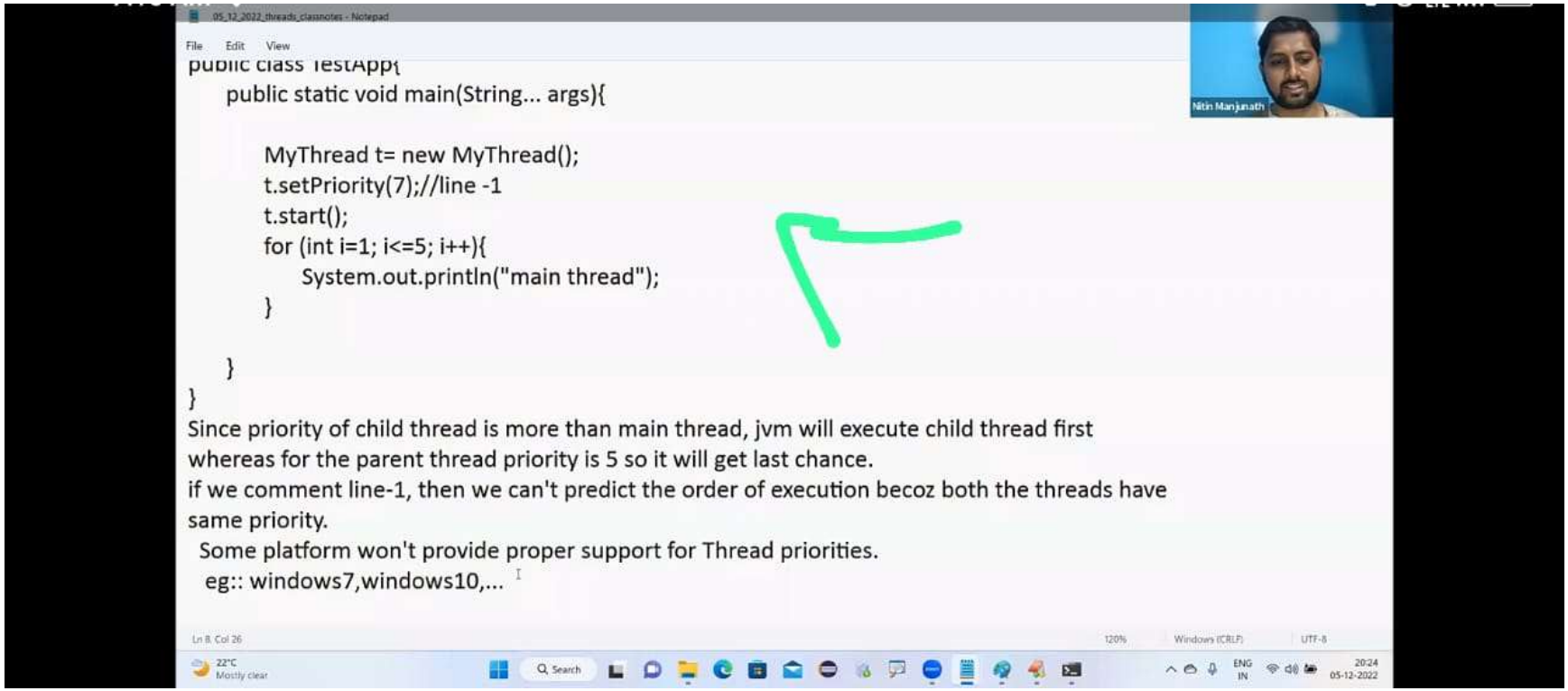
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public class TestApp{
public static void main(String... args){
MyThread t= new MyThread();
t.setPriority(7);//line -1
t.start();
for (int i=1; i<=5; i++){
System.out.println("main thread");
}
}
}
Since priority of child thread is more than main thread, jvm will execute child thread first
whereas for the parent thread priority is 5 so it will get last chance.
if we comment line-1, then we can't predict the order of execution becoz both the threads have
same priority.
Some platform won't provide proper support for Thread priorities.
eg:: windows7,windows10,...
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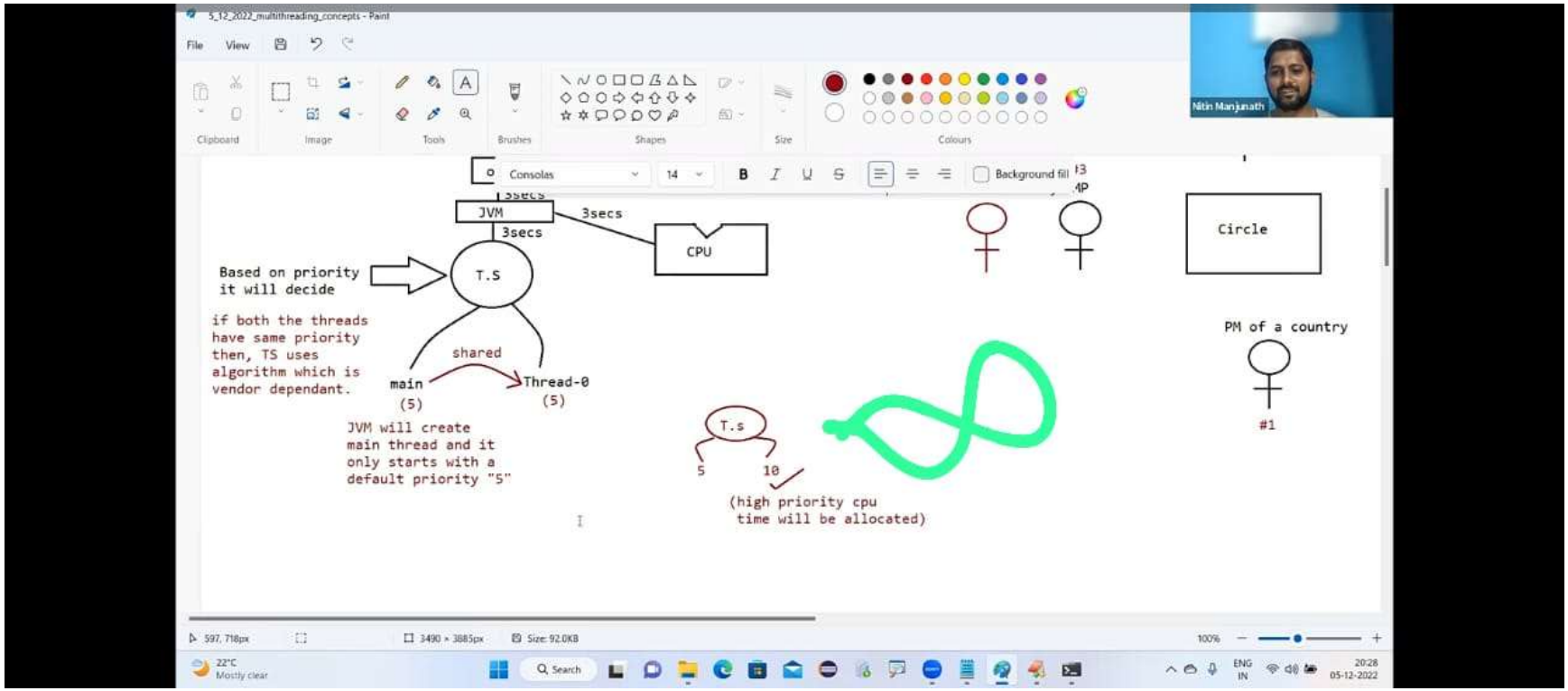
5_12_2022_multithreading_concepts - Paint
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Consolas
14
Background fill
JVM
3secs
3secs
CPU
Based on priority
it will decide
T.S
if both the threads
have same priority
then, TS uses
algorithm which is
vendor dependant.
shared
main
(5)
Thread-0
(5)
JVM will create
main thread and it
only starts with a
default priority "5"
T.s
5
10
(high priority cpu
time will be allocated)
Circle
PM of a country
#1
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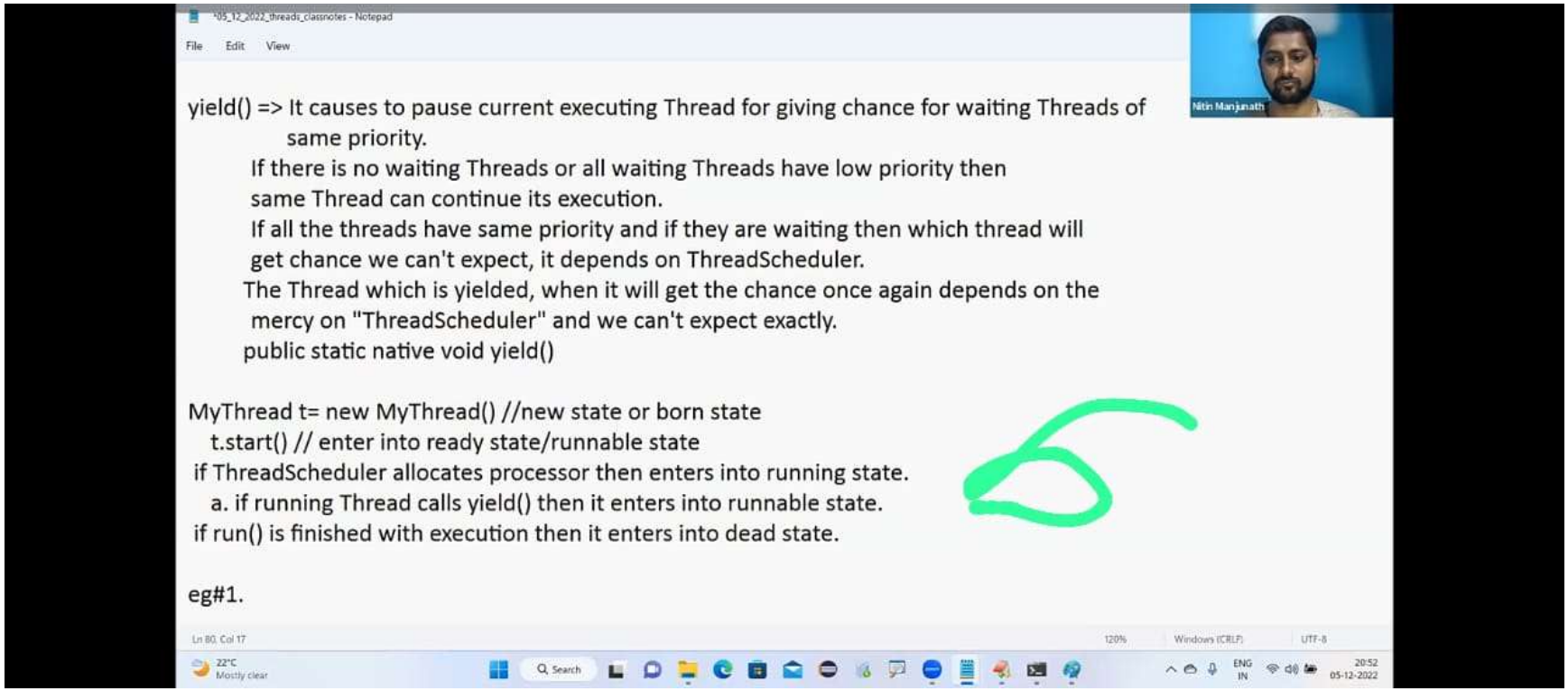
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yield() => It causes to pause current executing Thread for giving chance for waiting Threads of same priority.
If there is no waiting Threads or all waiting Threads have low priority then same Thread can continue its execution.
If all the threads have same priority and if they are waiting then which thread will get chance we can't expect, it depends on ThreadScheduler.
The Thread which is yielded, when it will get the chance once again depends on the mercy on "ThreadScheduler" and we can't expect exactly.
public static native void yield()
MyThread t= new MyThread() //new state or born state
t.start() // enter into ready state/runnable state
if ThreadScheduler allocates processor then enters into running state.
a. if running Thread calls yield() then it enters into runnable state.
if run() is finished with execution then it enters into dead state.
eg#1.
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```
        }
    }
}
```

Note::

If we comment line-1, then we can't expect the output becoz both the threads have same priority then which thread but if we don't comment line-1, then there is a possibility of main thread getting more no of times,
so main thread execution is faster then child thread will get chance.

Note: Some platforms wont provide proper support for yield(),becuase it is getting the execution code from other language prefereably from 'C'.

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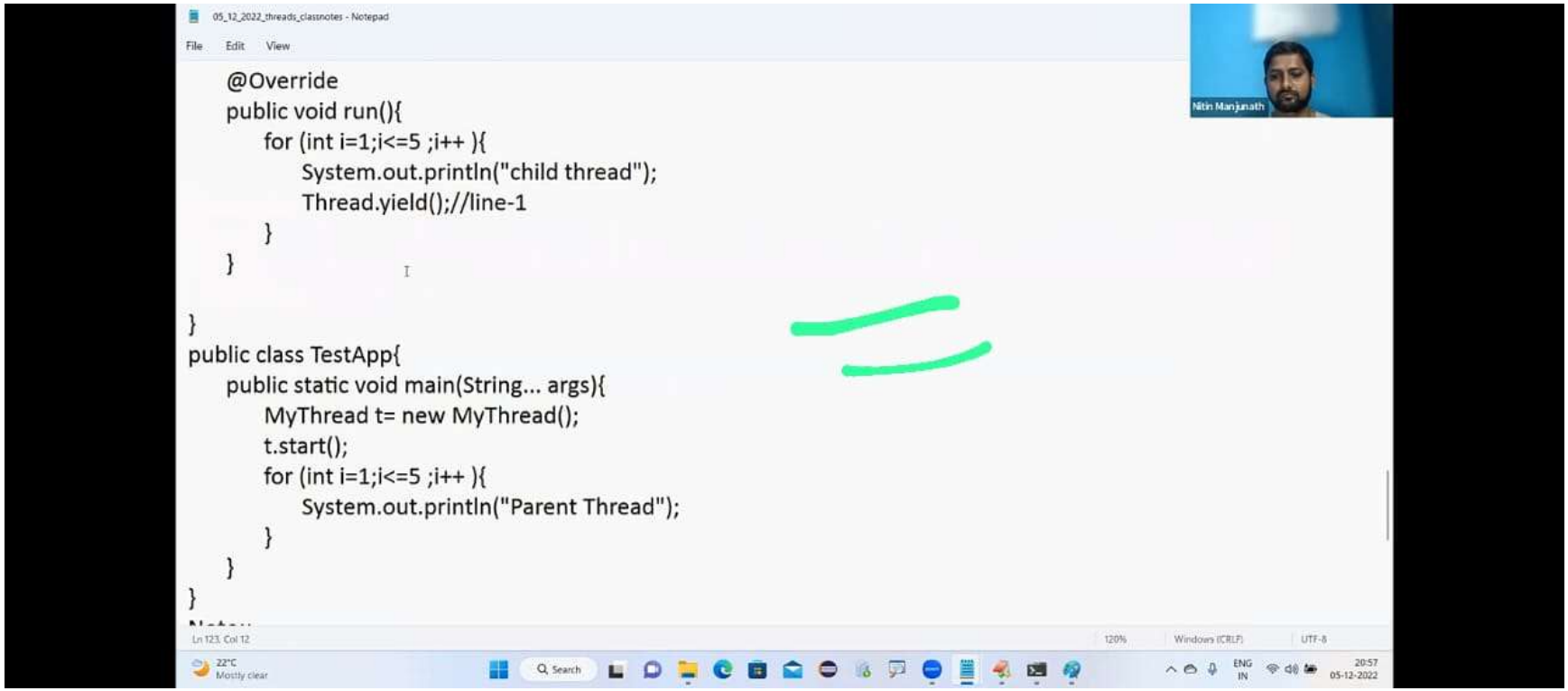
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File Edit View
@Override
public void run(){
for (int i=1;i<=5 ;i++){
System.out.println("child thread");
Thread.yield();//line-1
}
}
}
public class TestApp{
public static void main(String... args){
MyThread t= new MyThread();
t.start();
for (int i=1;i<=5 ;i++){
System.out.println("Parent Thread");
}
}
}
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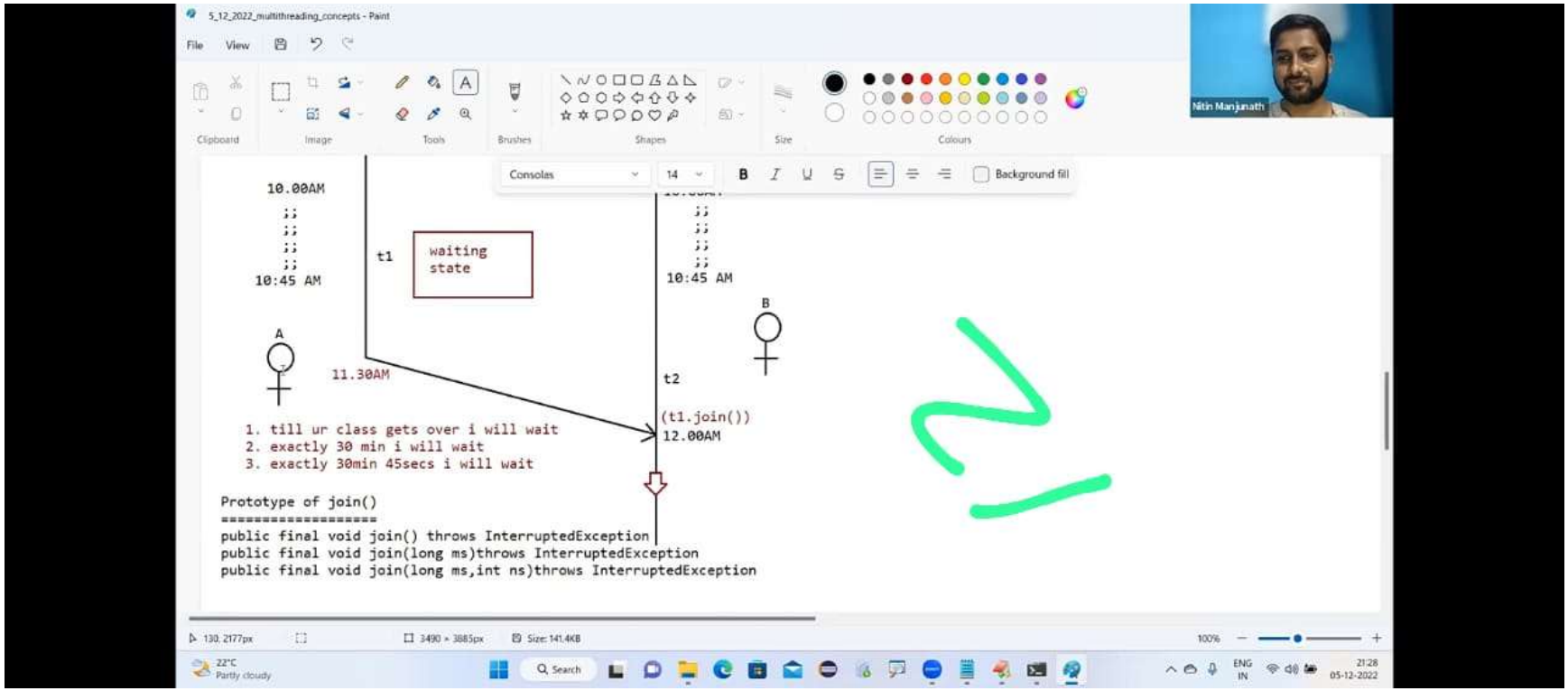
5_12_2022_multithreading_concepts - Paint
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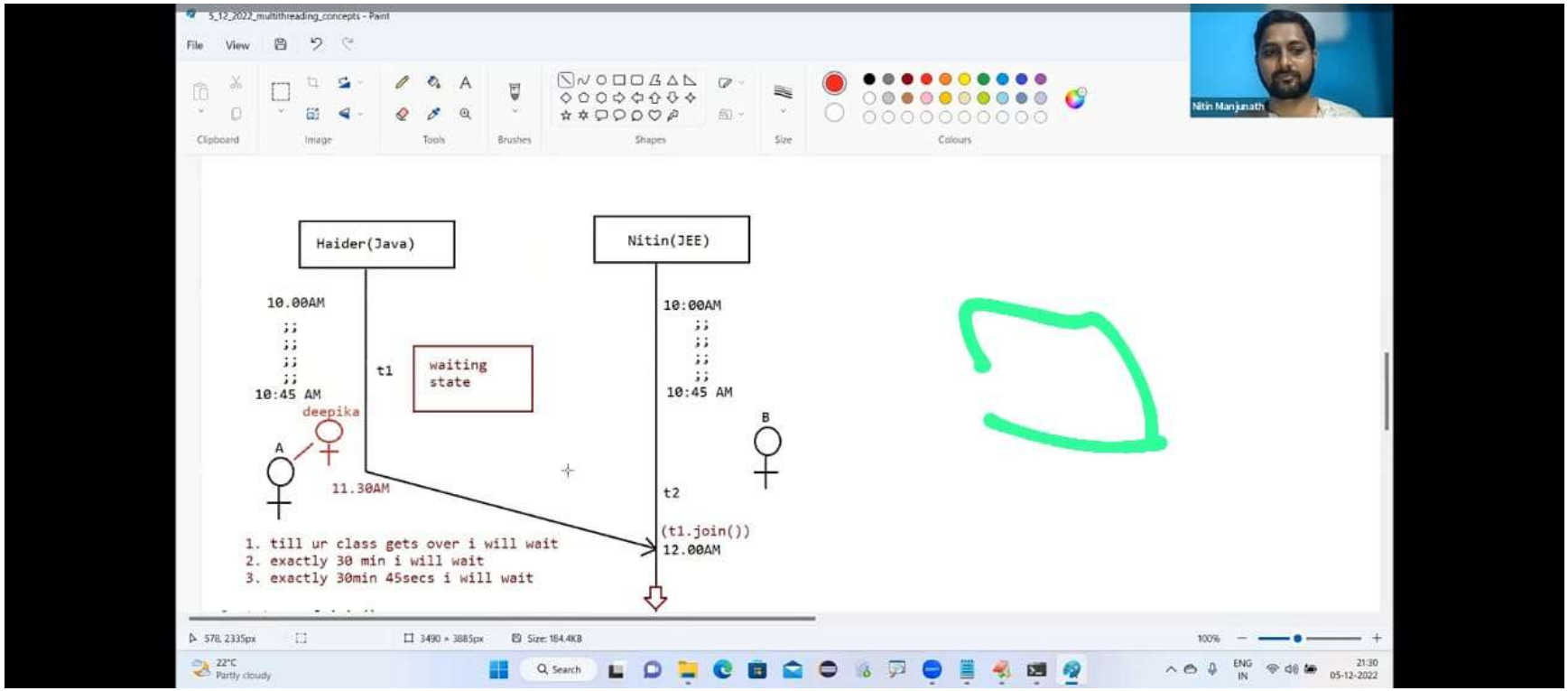
14
Background fill
10.00AM
10:45 AM
t1
waiting state
A
11.30AM
B
10:45 AM
t2
(t1.join())
12.00AM
1. till ur class gets over i will wait
2. exactly 30 min i will wait
3. exactly 30min 45secs i will wait
Prototype of join()
public final void join() throws InterruptedException
public final void join(long ms)throws InterruptedException
public final void join(long ms,int ns)throws InterruptedException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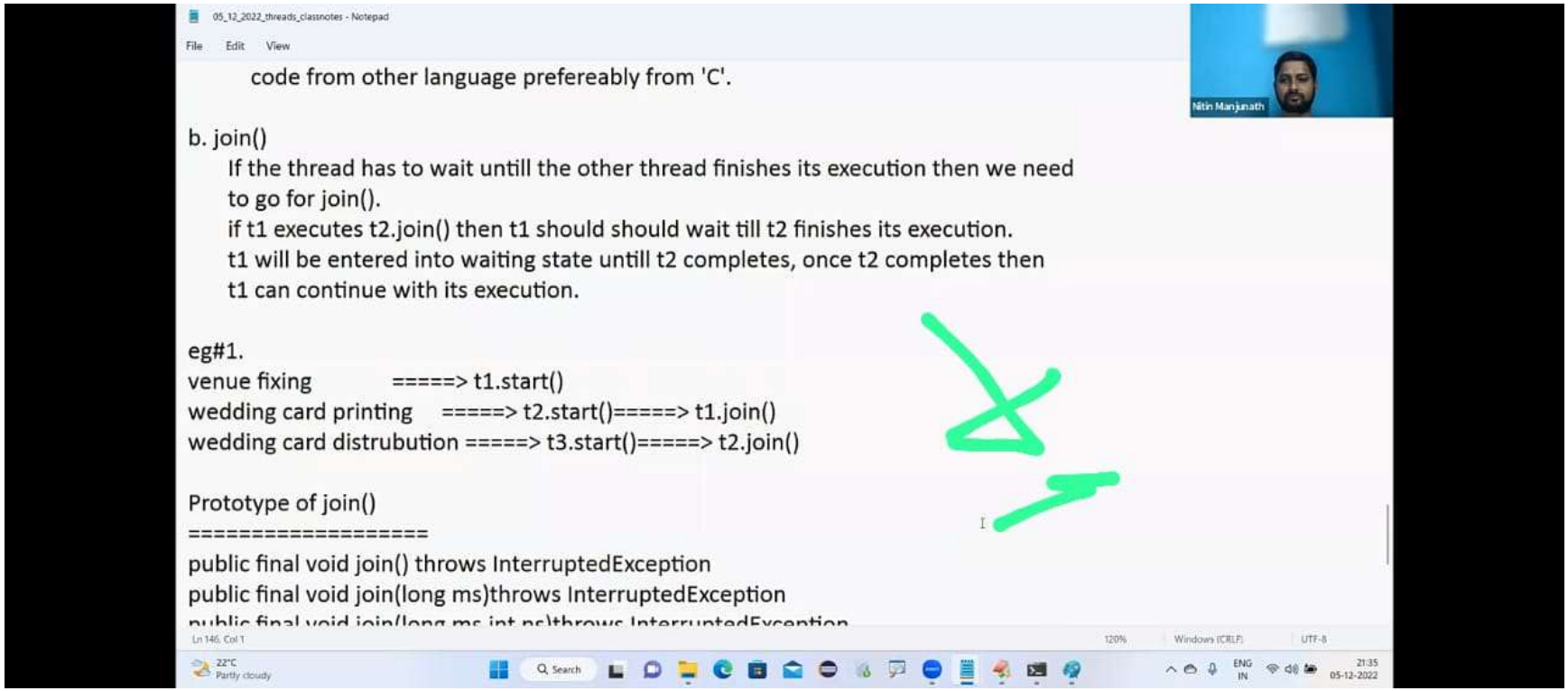
Haider(Java)
Nitin(JEE)
10.00AM
10:00AM
10:45 AM
10:45 AM
t1
waiting state
deepika
A
B
11.30AM
t2
(t1.join())
12.00AM
1. till ur class gets over i will wait
2. exactly 30 min i will wait
3. exactly 30min 45secs i will wait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code from other language prefereably from 'C'.
b. join()
If the thread has to wait untill the other thread finishes its execution then we need to go for join().
if t1 executes t2.join() then t1 should should wait till t2 finishes its execution.
t1 will be entered into waiting state untill t2 completes, once t2 completes then t1 can continue with its execution.
eg#1.
venue fixing =====> t1.start()
wedding card printing =====> t2.start()=====> t1.join()
wedding card distrubution =====> t3.start()=====> t2.join()
Prototype of join()
==========
public final void join() throws InterruptedException
public final void join(long ms)throws InterruptedException
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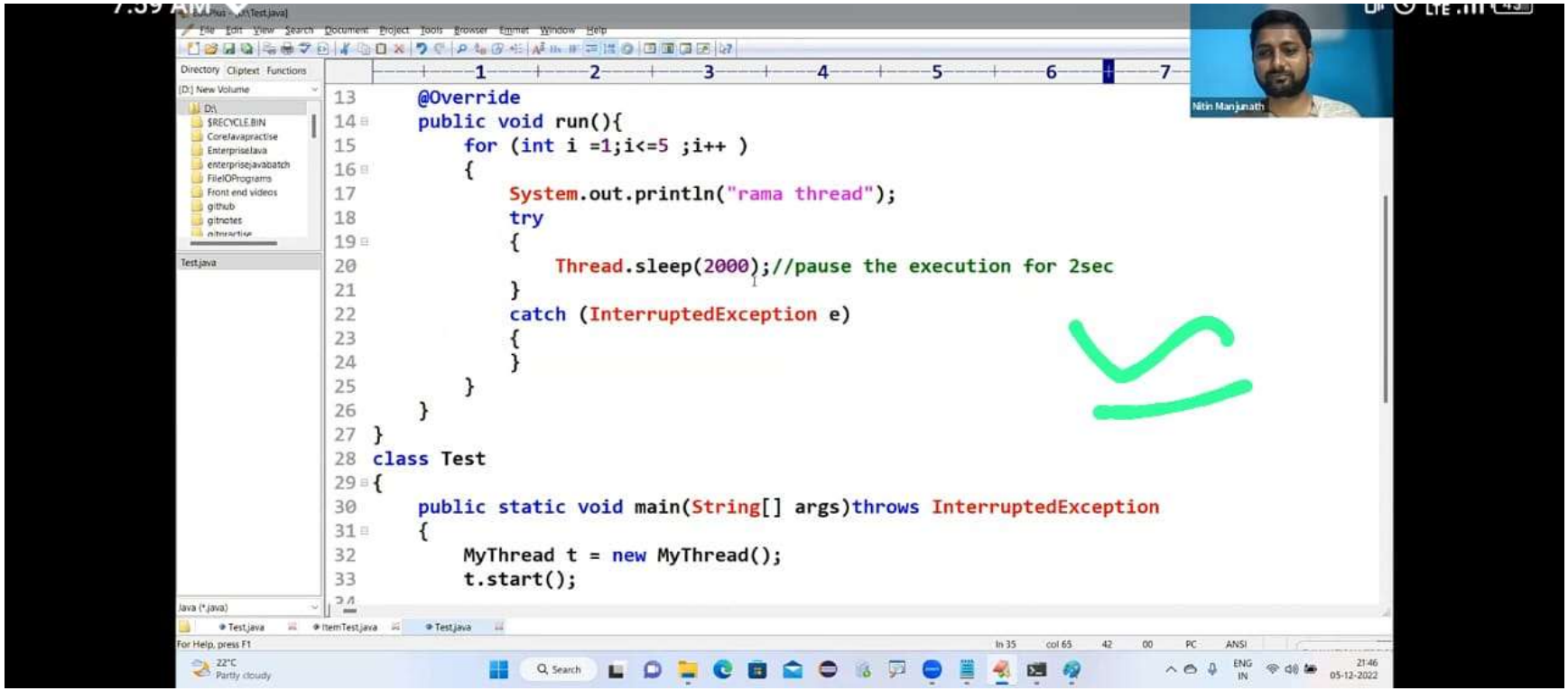
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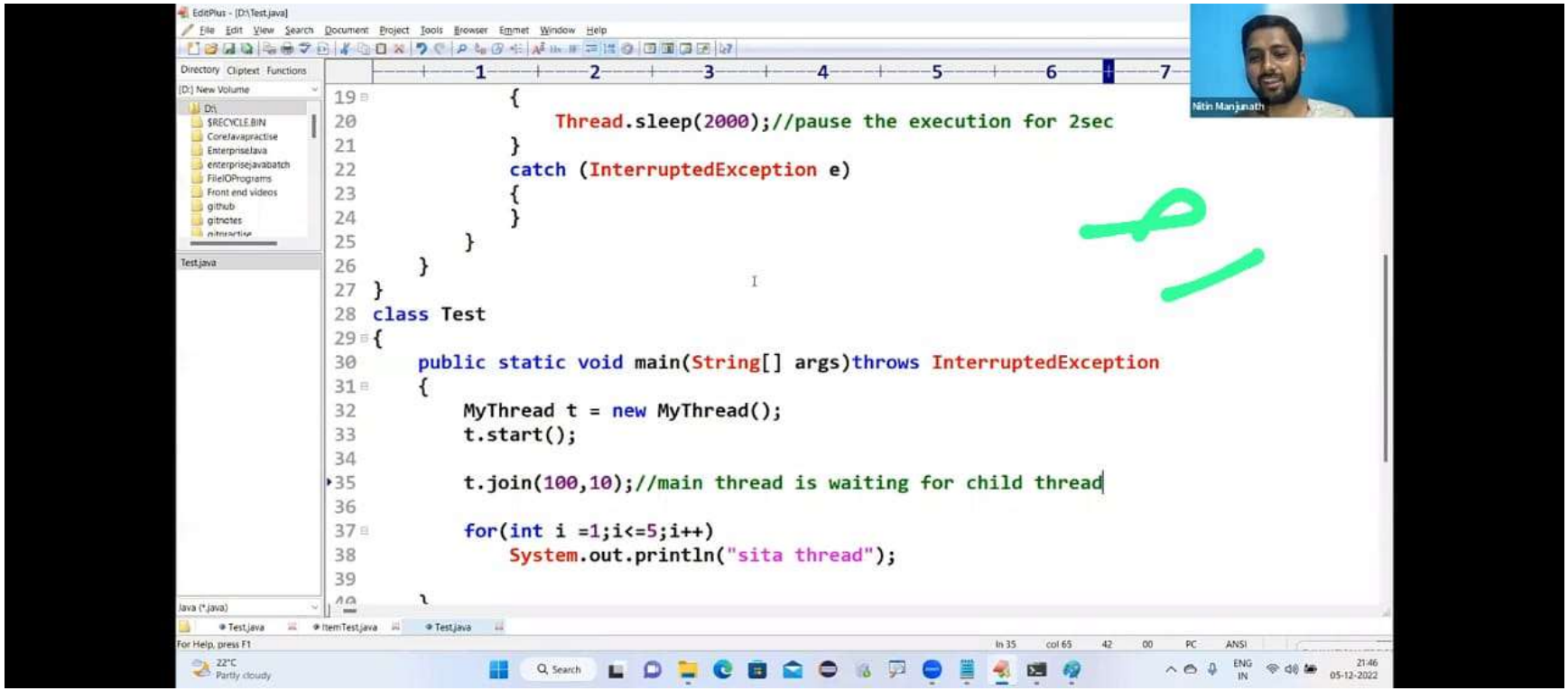
@Override
public void run(){
for (int i =1;i<=5 ;i++)
{
System.out.println("rama thread");
try
{
Thread.sleep(2000);//pause the execution for 2sec
}
catch (InterruptedException e)
{
}
}
}
class Test
{
public static void main(String[] args)throws InterruptedException
{
MyThread t = new MyThread();
t.start();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EnterpriseJava
enterprisejavabatch
FileIOPrograms
Front end videos
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Test.java
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19 {
20 Thread.sleep(2000);//pause the execution for 2sec
21 }
22 catch (InterruptedException e)
23 {
24 }
25 }
26 }
27 }
28 class Test
29 {
30 public static void main(String[] args)throws InterruptedException
31 {
32 MyThread t = new MyThread();
33 t.start();
34
35 t.join(100,10);//main thread is waiting for child thread
36
37 for(int i =1;i<=5;i++)
38 System.out.println("sita thread");
39
Test.java
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Test.java
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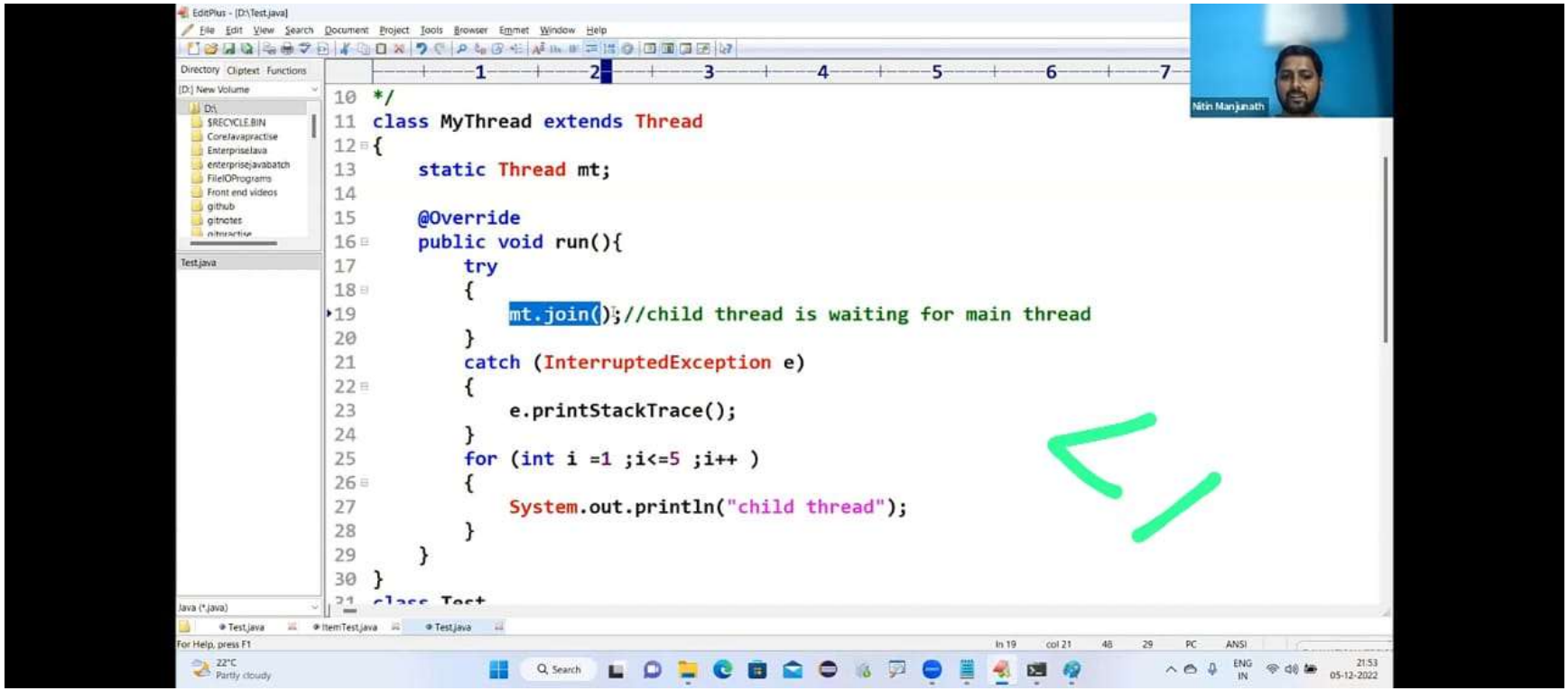
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CoreJavapractise
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enterprisejavabatch
FileIOPrograms
Front end videos
github
gitnotes
Test.java
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*/
class MyThread extends Thread
{
static Thread mt;
@Override
public void run(){
try
{
mt.join();//child thread is waiting for main thread
}
catch (InterruptedException e)
{
e.printStackTrace();
}
for (int i =1 ;i<=5 ;i++)
{
System.out.println("child thread");
}
}
}
Test.java
ItemTest.java
Test.java
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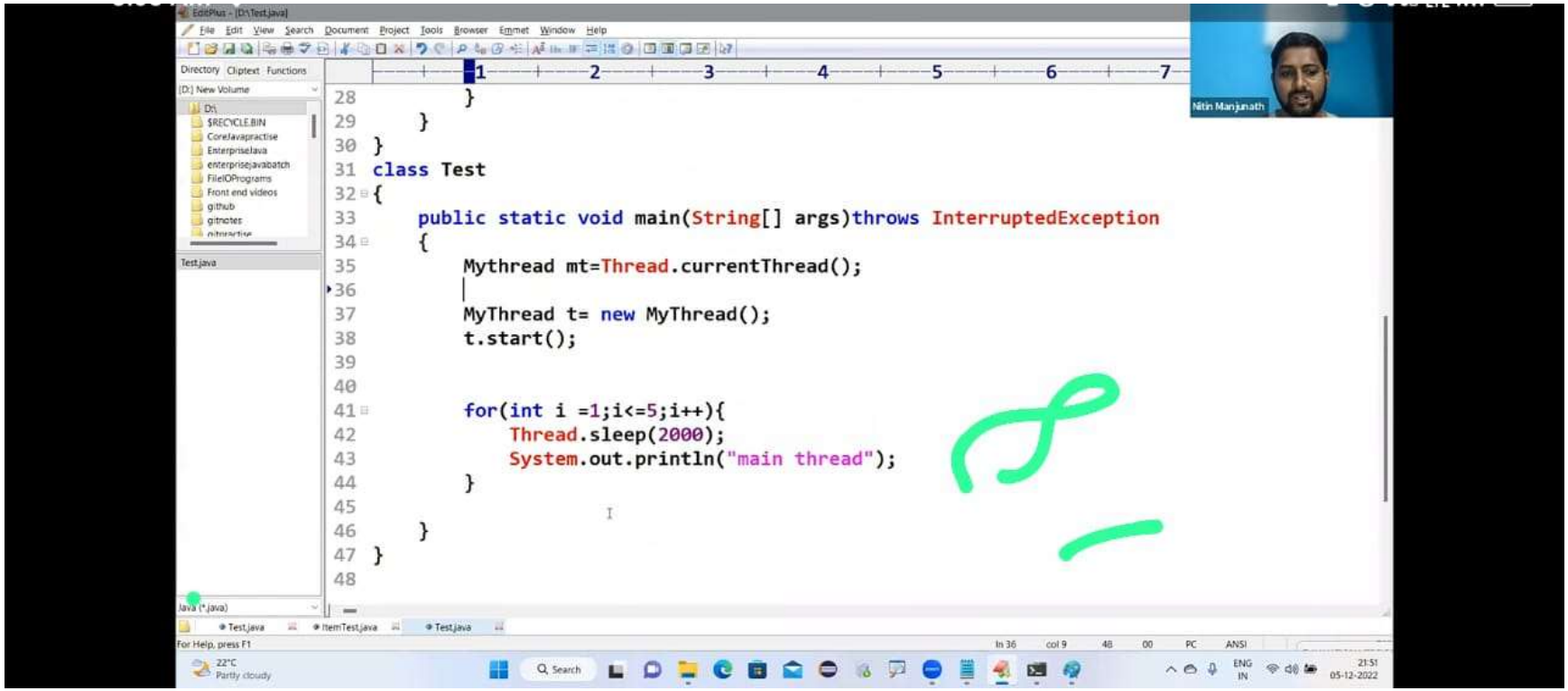
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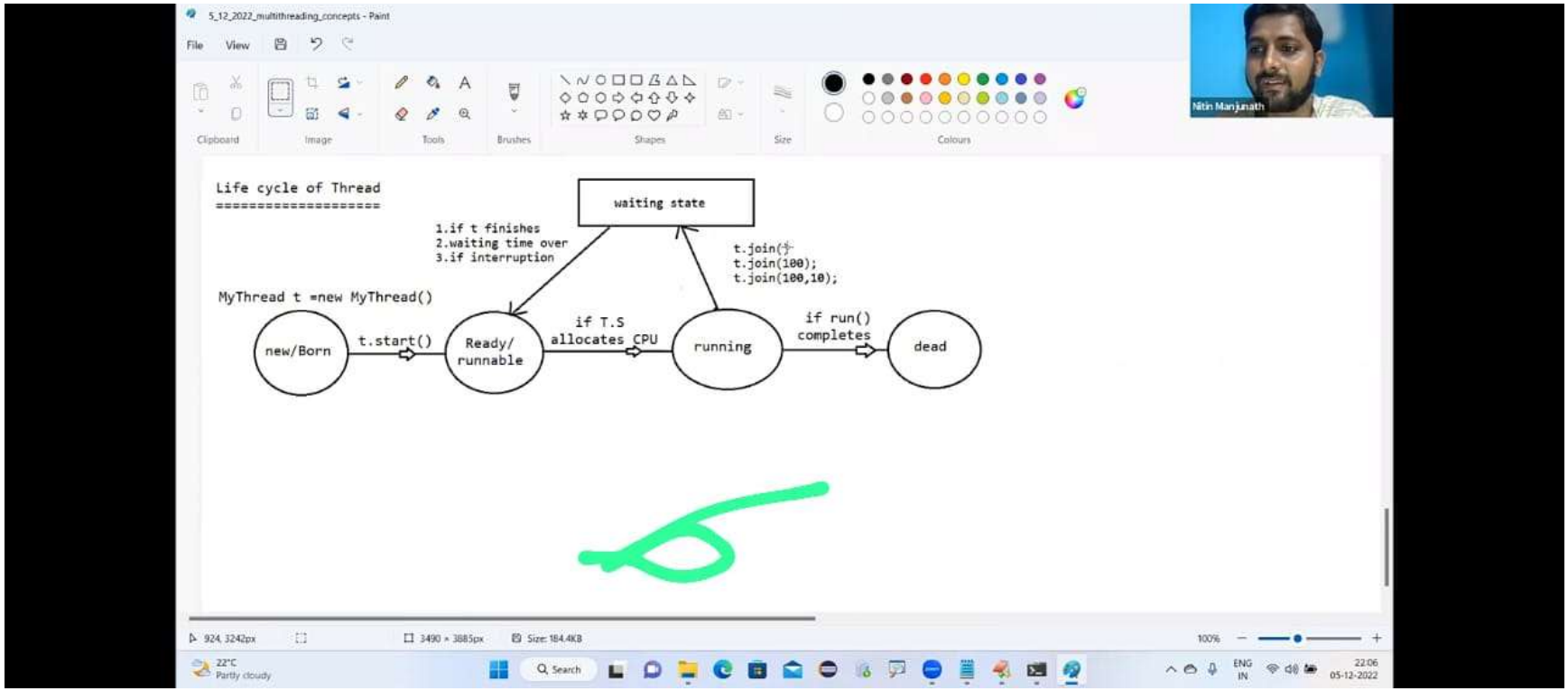
}
}
class Test
{
public static void main(String[] args)throws InterruptedException
{
Mythread mt=Thread.currentThread();
MyThread t= new MyThread();
t.start();
for(int i =1;i<=5;i++){
Thread.sleep(2000);
System.out.println("main thread");
}
}
}


5_12_2022_multithreading_concepts - Paint
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Life cycle of Thread
==========
waiting state
1.if t finishes
2.waiting time over
3.if interruption
t.join();
t.join(100);
t.join(100,10);
MyThread t =new MyThread()
new/Born
t.start()
Ready/
runnable
if T.S
allocates CPU
running
if run()
completes
dead
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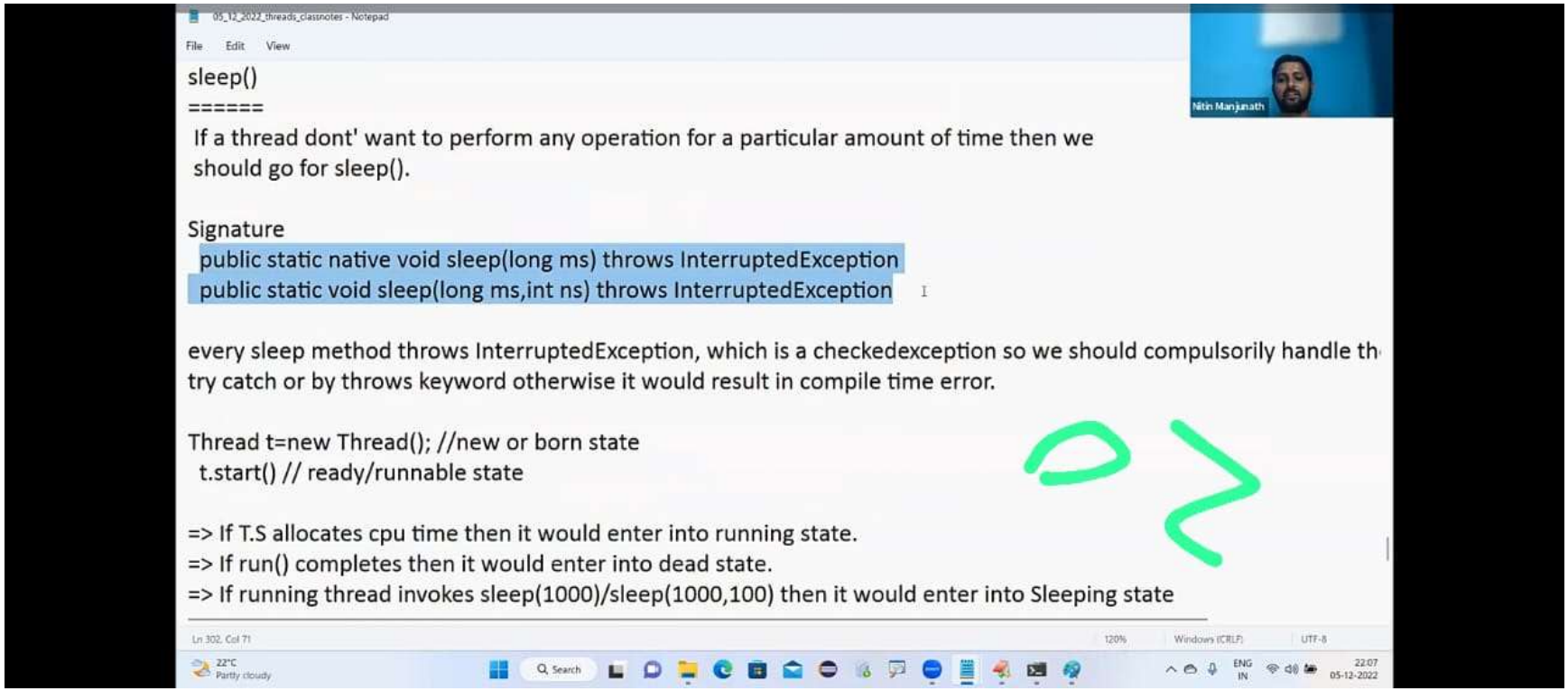
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sleep()
======
If a thread dont' want to perform any operation for a particular amount of time then we should go for sleep().
Signature
public static native void sleep(long ms) throws InterruptedException
public static void sleep(long ms,int ns) throws InterruptedException
every sleep method throws InterruptedException, which is a checkedexception so we should compulsorily handle th
try catch or by throws keyword otherwise it would result in compile time error.
Thread t=new Thread(); //new or born state
t.start() // ready/runnable state
=> If T.S allocates cpu time then it would enter into running state.
=> If run() completes then it would enter into dead state.
=> If running thread invokes sleep(1000)/sleep(1000,100) then it would enter into Sleeping state
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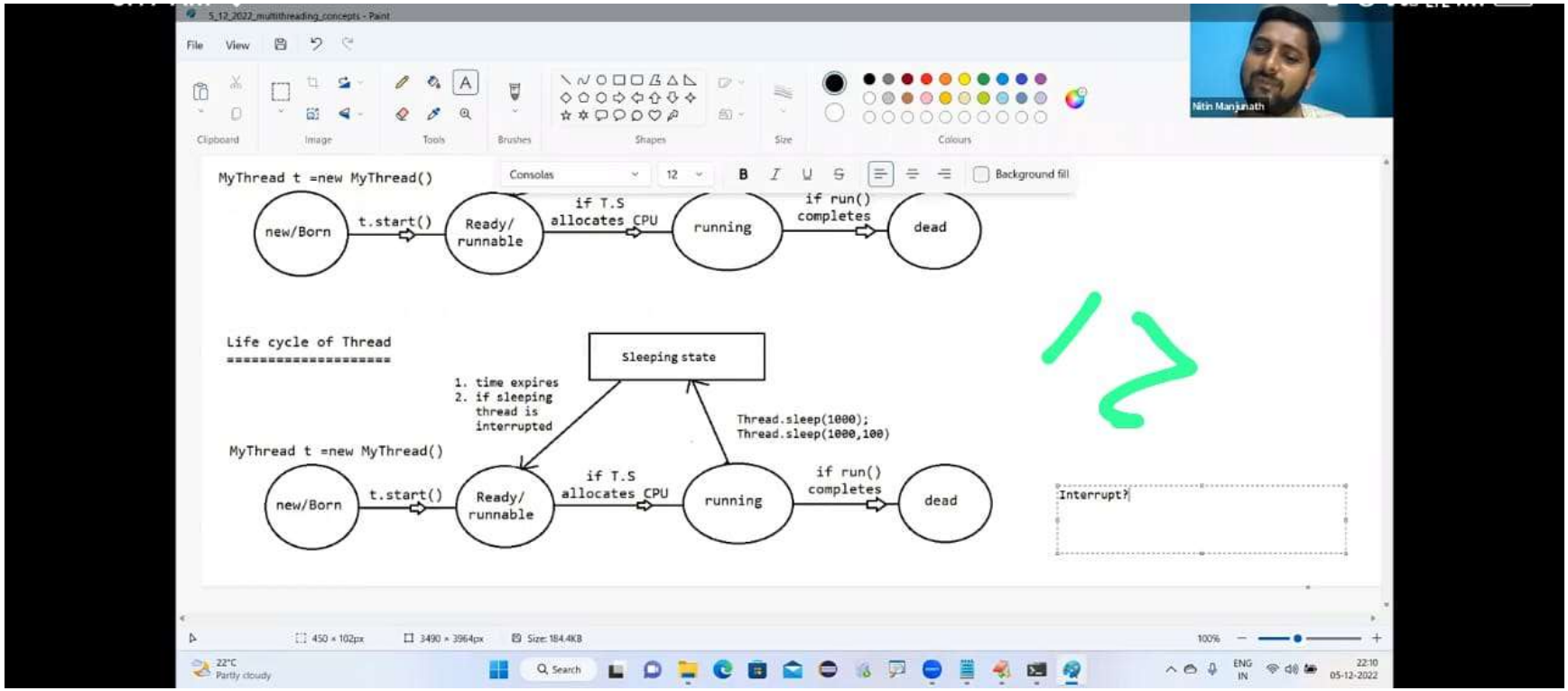
5_12_2022_multithreading_concepts - Paint
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Nitin Manjunath
MyThread t =new MyThread()
Consolas
12
Background fill
new/Born
t.start()
Ready/
runnable
if T.S
allocates CPU
running
if run()
completes
dead
Life cycle of Thread
Sleeping state
1. time expires
2. if sleeping
thread is
interrupted
Thread.sleep(1000);
Thread.sleep(1000,100)
MyThread t =new MyThread()
new/Born
t.start()
Ready/
runnable
if T.S
allocates CPU
running
if run()
completes
dead
Interrupt?
17
450 × 102px
3490 × 3964px
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100%
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Search
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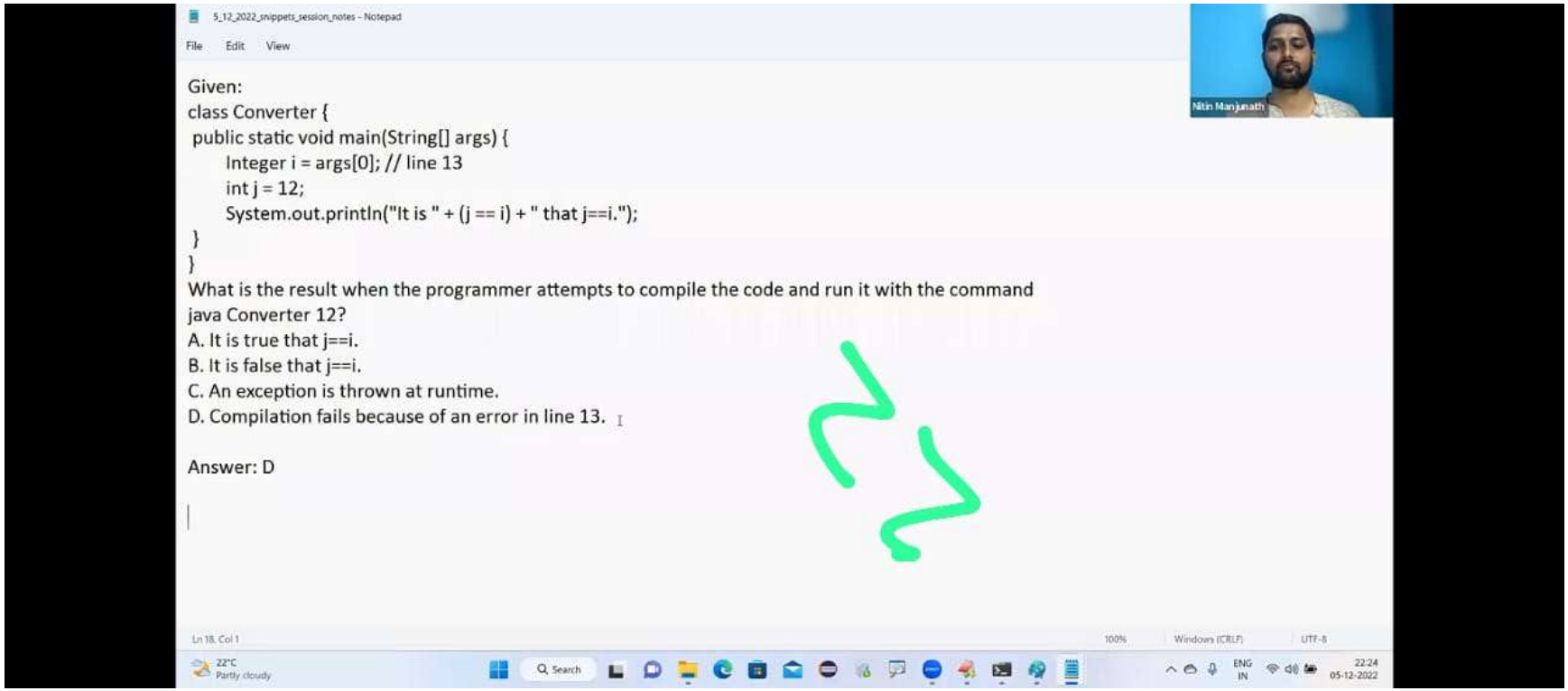
5_12_2022_snippets_session_notes - Notepad
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Given:
class Converter {
public static void main(String[] args) {
Integer i = args[0]; // line 13
int j = 12;
System.out.println("It is " + (j == i) + " that j==i.");
}
}
What is the result when the programmer attempts to compile the code and run it with the command
java Converter 12?
A. It is true that j==i.
B. It is false that j==i.
C. An exception is thrown at runtime.
D. Compilation fails because of an error in line 13.
Answer: D
Nitin Manjunath
Ln 18, Col 1
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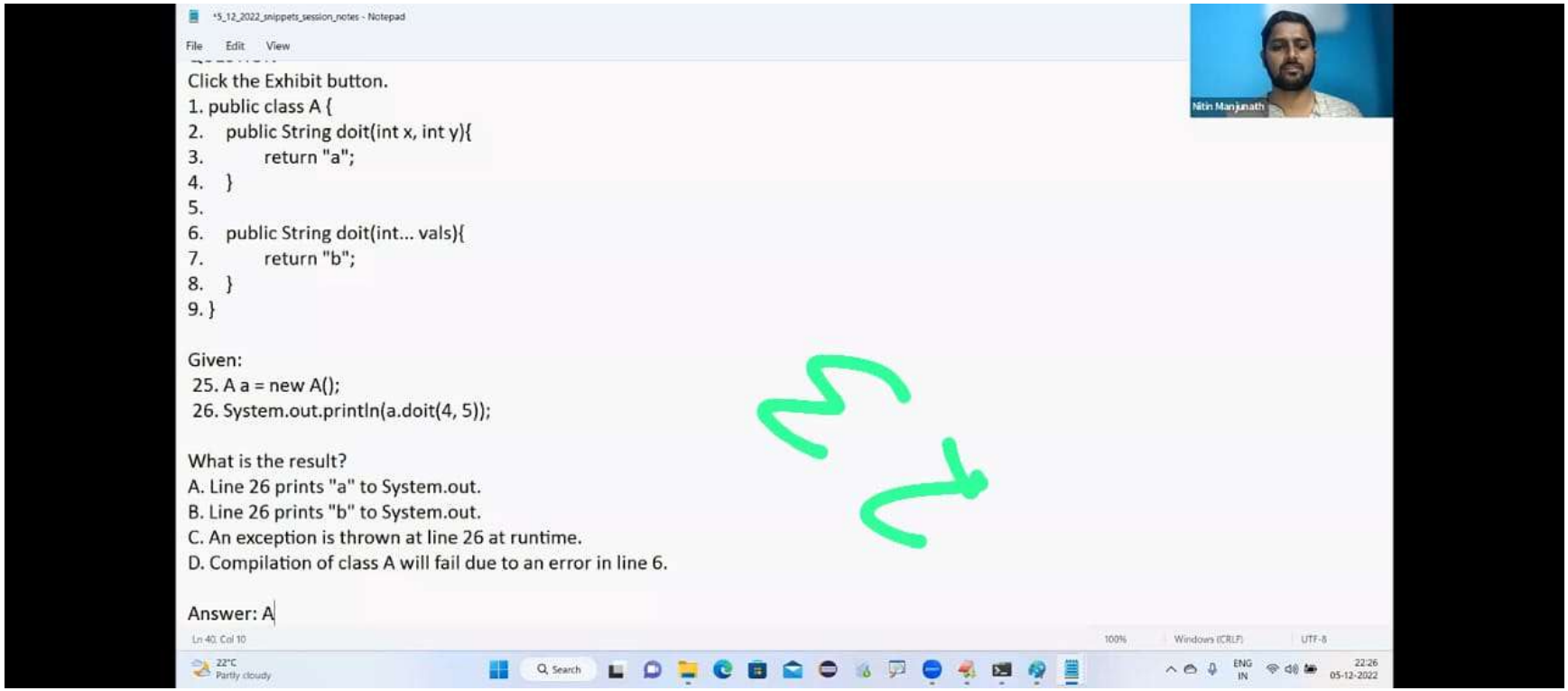
*5_12_2022_snippets_session_notes - Notepad
File Edit View
Click the Exhibit button.
1. public class A {
2. public String doit(int x, int y){
3. return "a";
4. }
5.
6. public String doit(int... vals){
7. return "b";
8. }
9. }
Given:
25. A a = new A();
26. System.out.println(a.doit(4, 5));
What is the result?
A. Line 26 prints "a" to System.out.
B. Line 26 prints "b" to System.out.
C. An exception is thrown at line 26 at runtime.
D. Compilation of class A will fail due to an error in line 6.
Answer: A
Nitin Manjunath
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UTF-8
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