

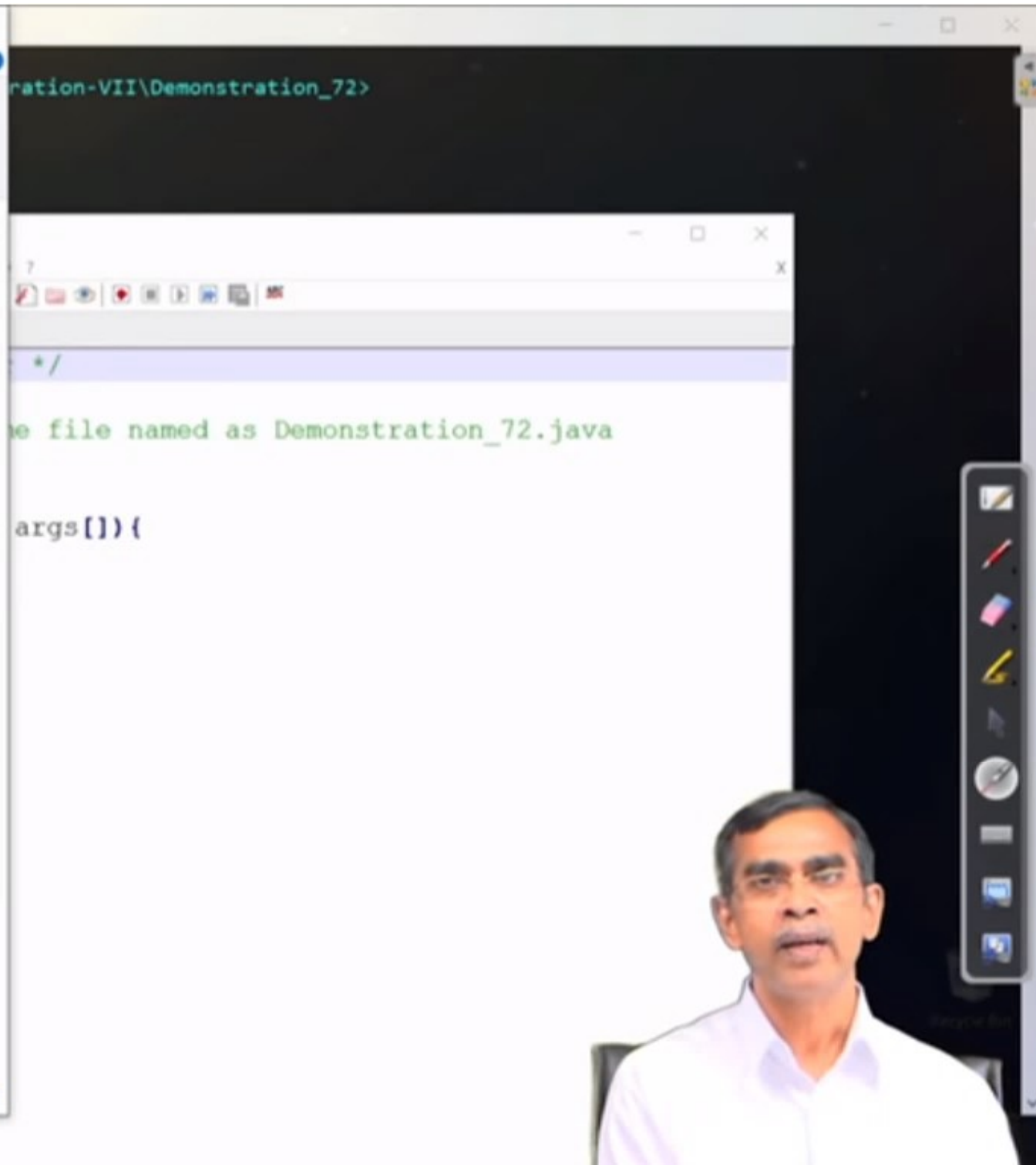
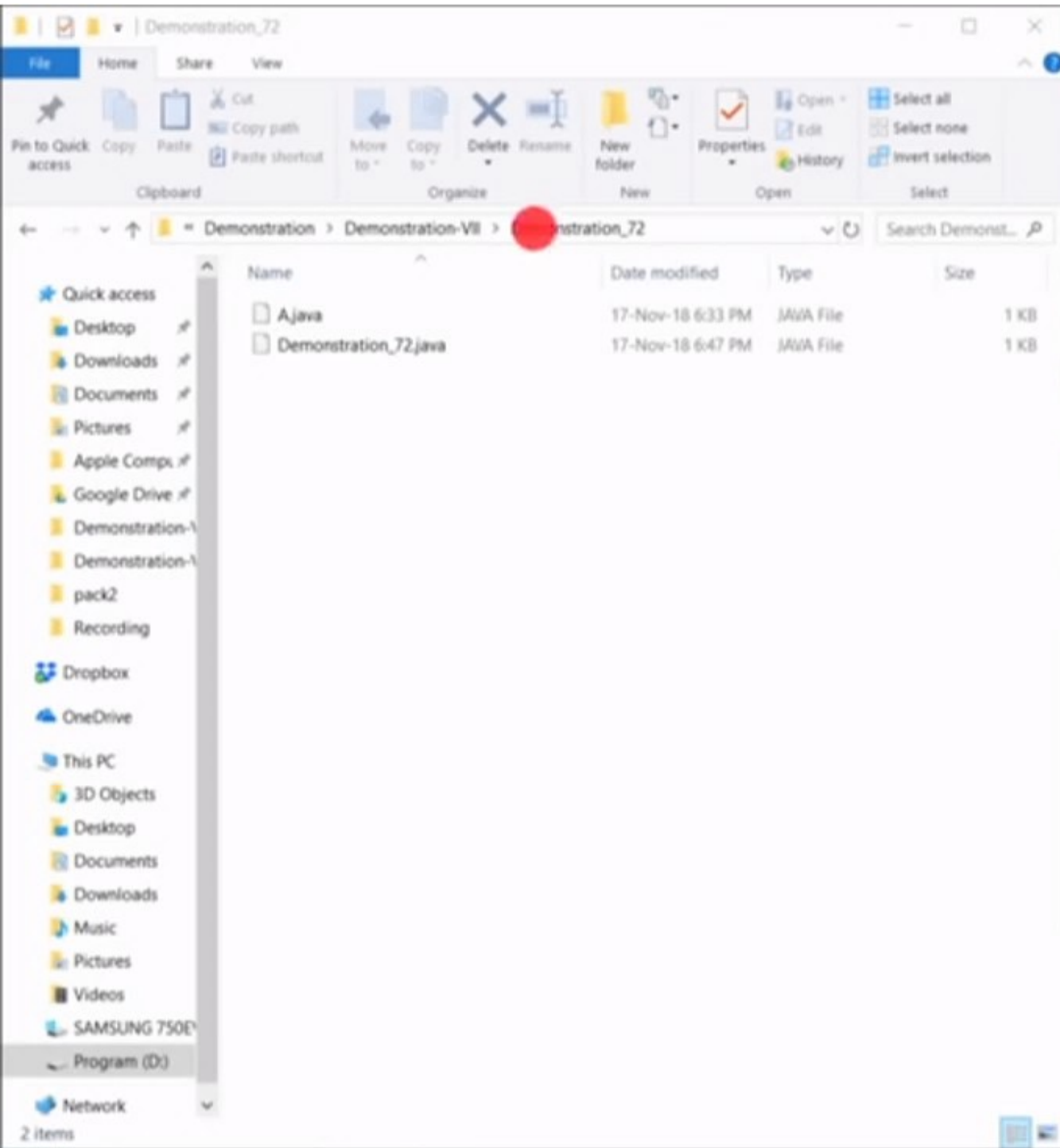


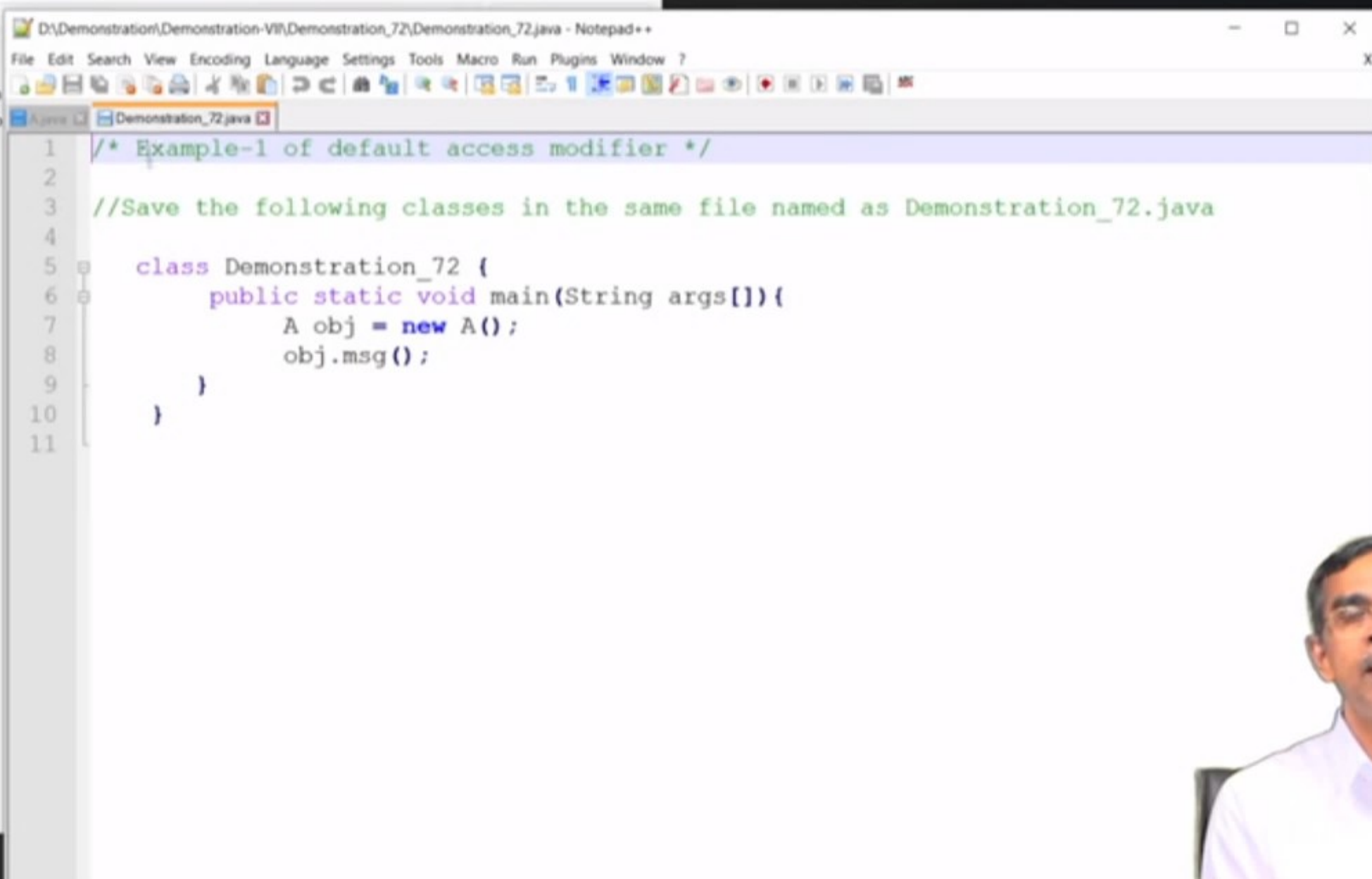
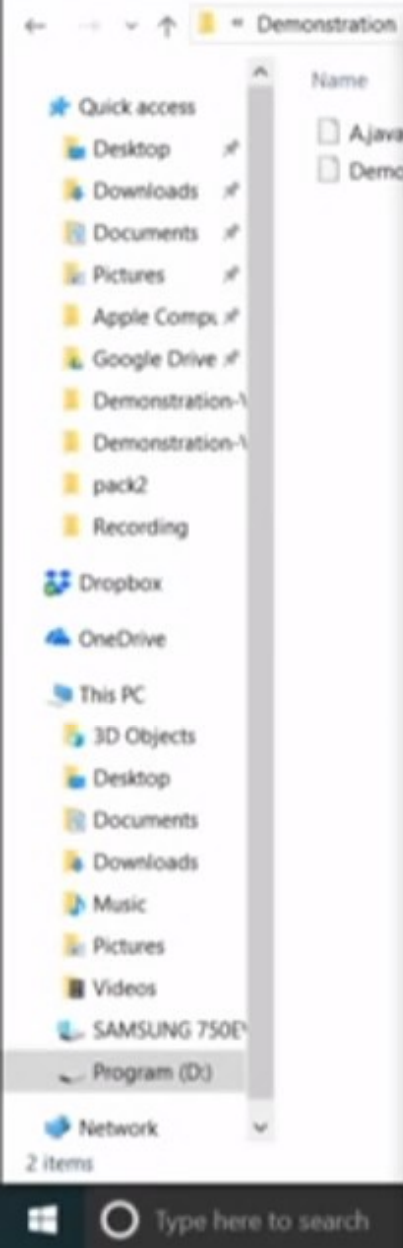
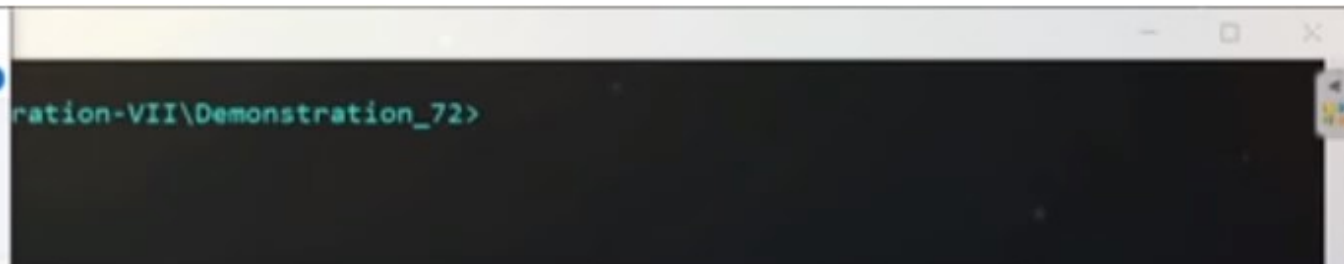
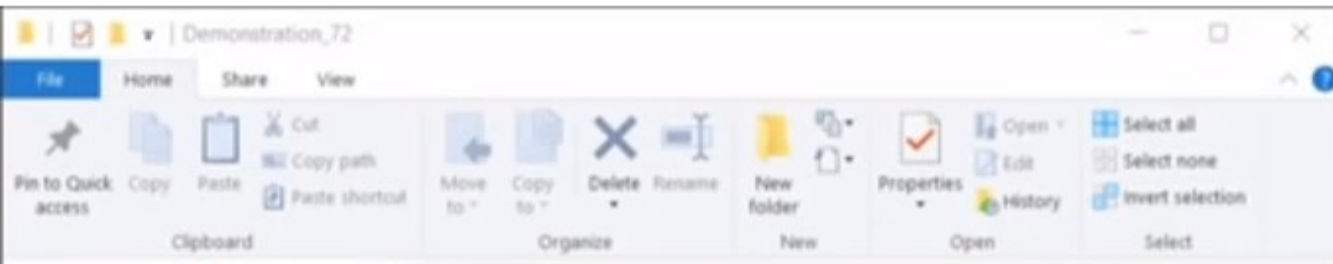
## In today's demonstration...

1. Example of *default* access modifier.
2. Example of *public* access modifier.
3. Example of *private* access modifier.
4. Example of *protected* access modifier.
5. Java access modifiers with method overloading.
6. Example of access modifiers : default, public, private and protected

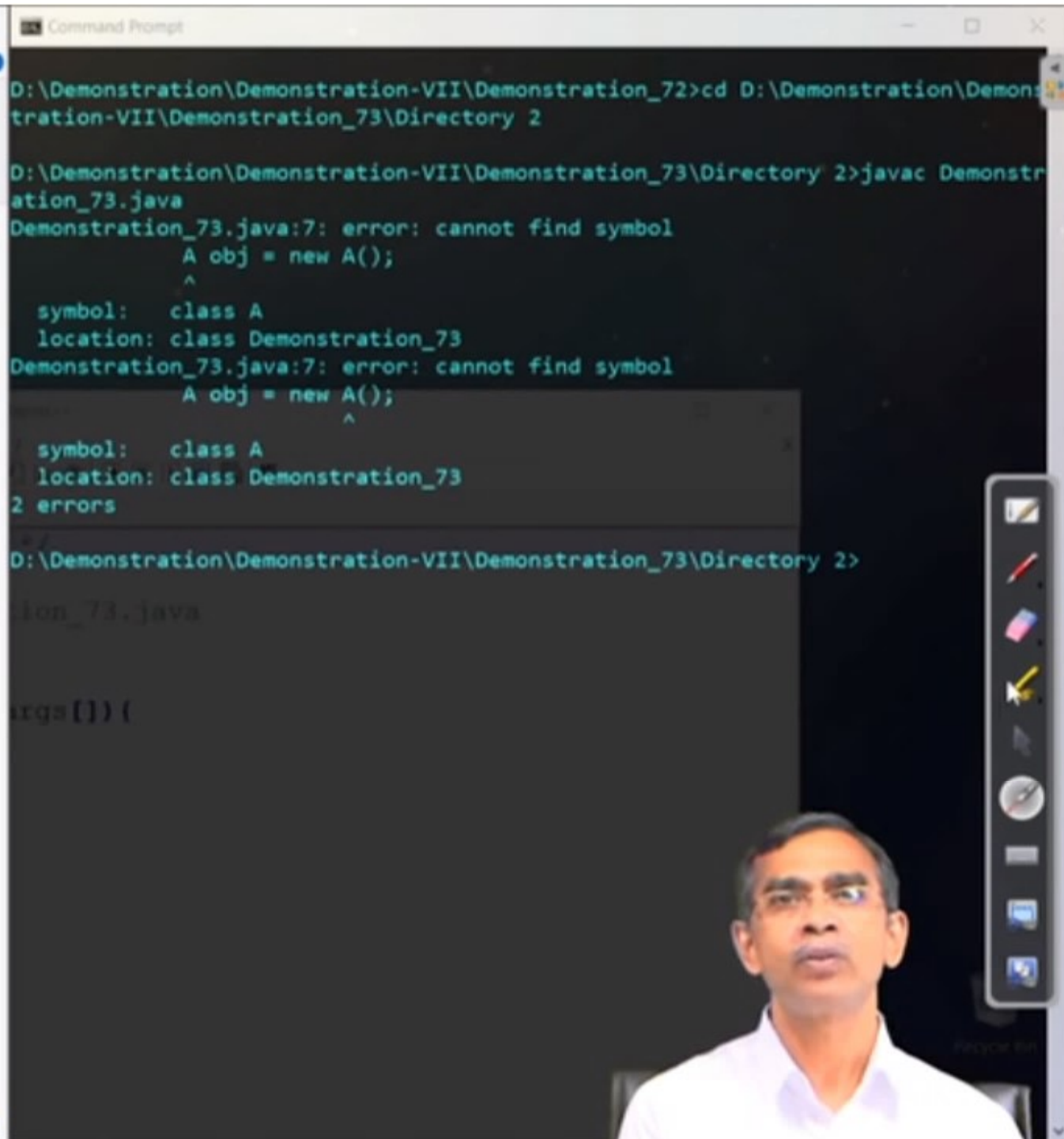
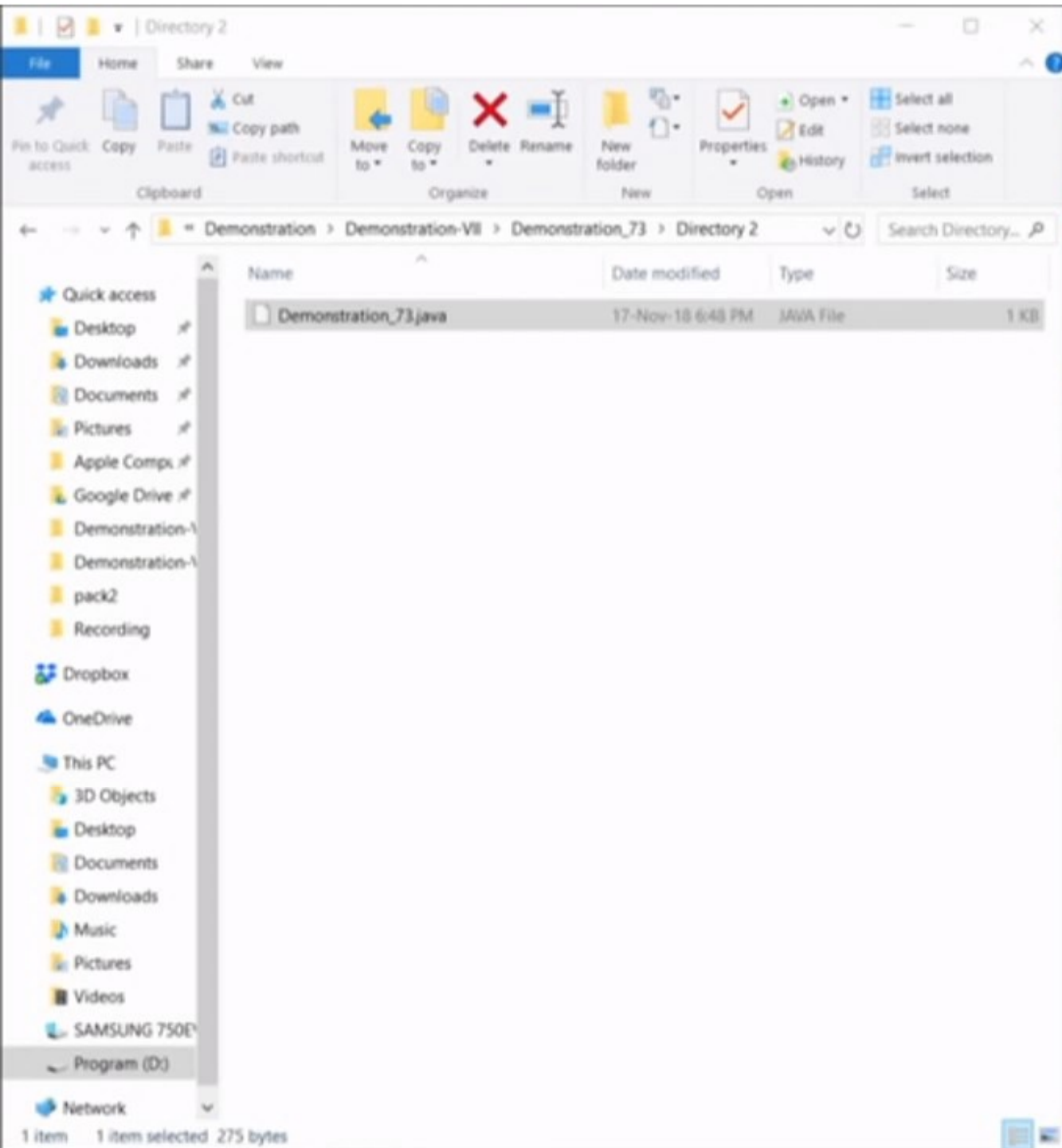


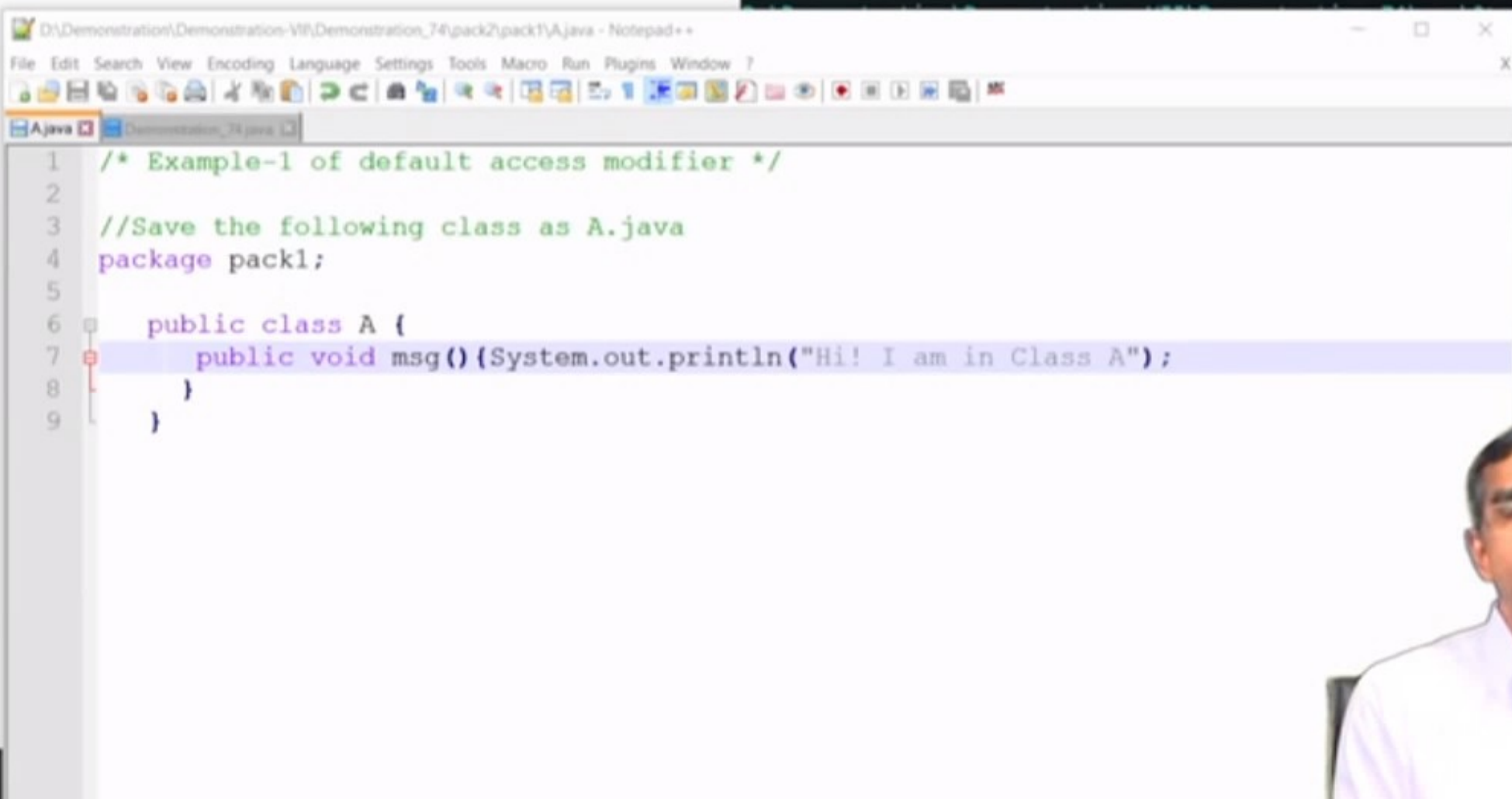
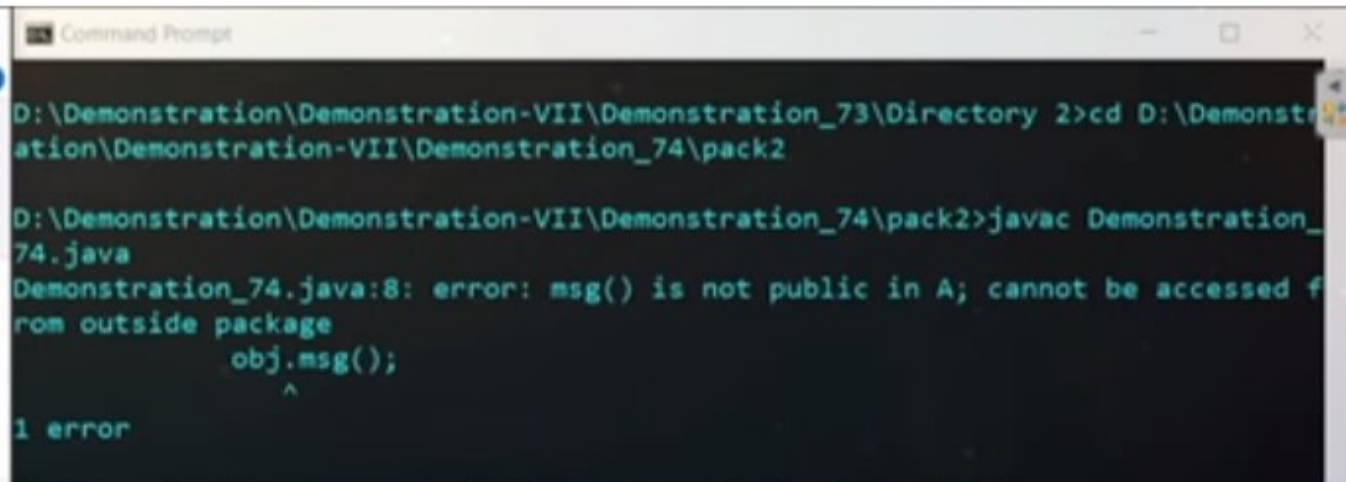
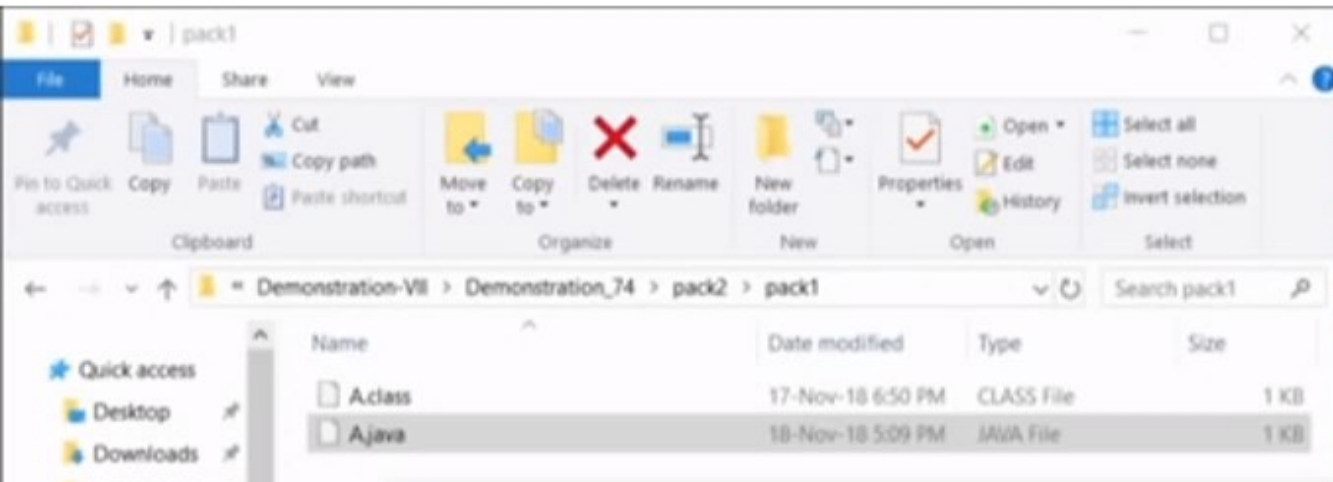
```
1  /* Example-1 of default access modifier */
2
3  //Save the following classes in the same file named as Demonstration_71.java
4
5  class A {
6      void msg() {System.out.println("Hi! I am in Class A");
7      }
8  }
9
10 class Demonstration_71 {
11     public static void main(String args[]){
12         A obj = new A();
13         obj.msg();
14     }
15 }
16
```

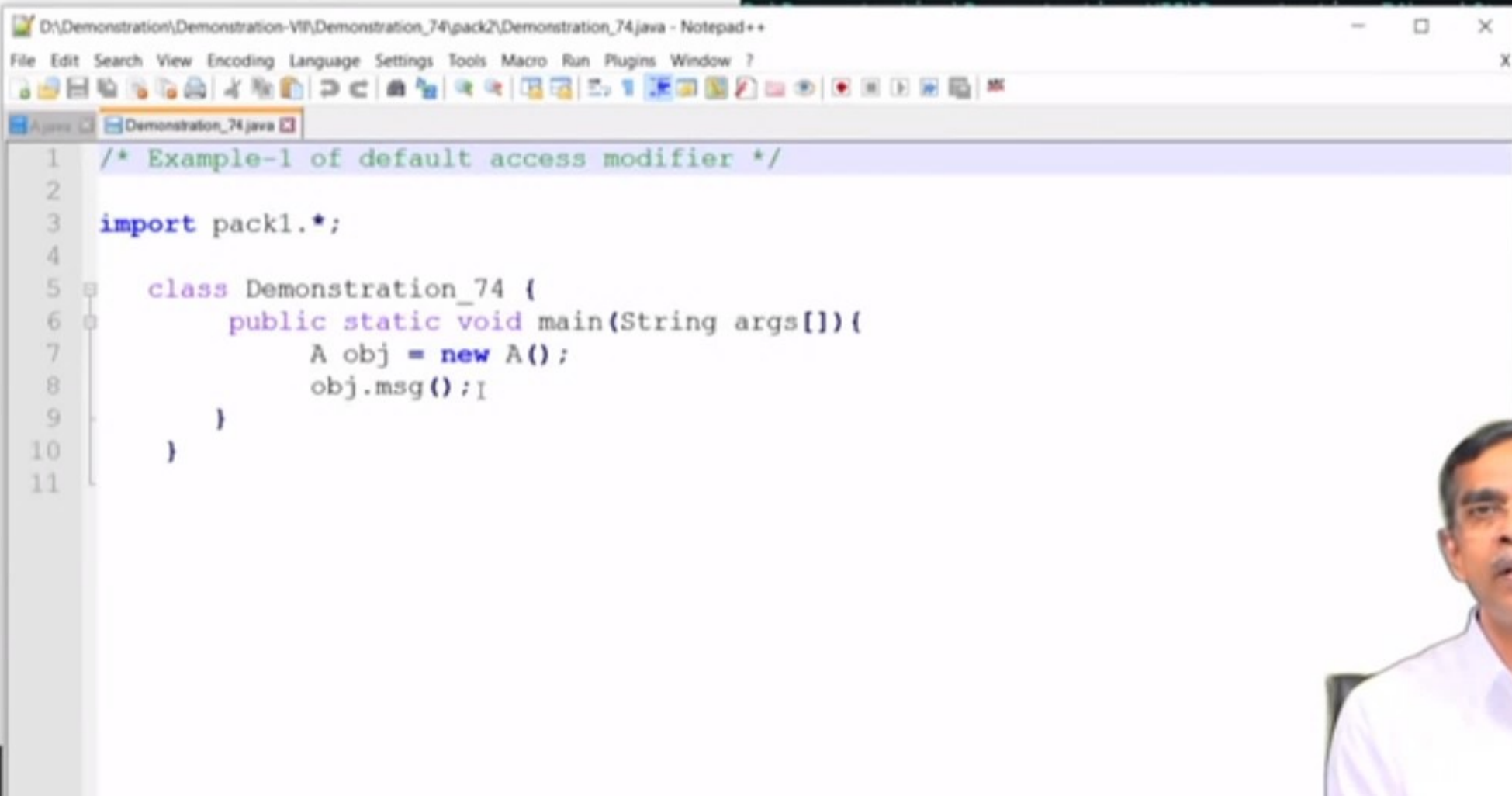
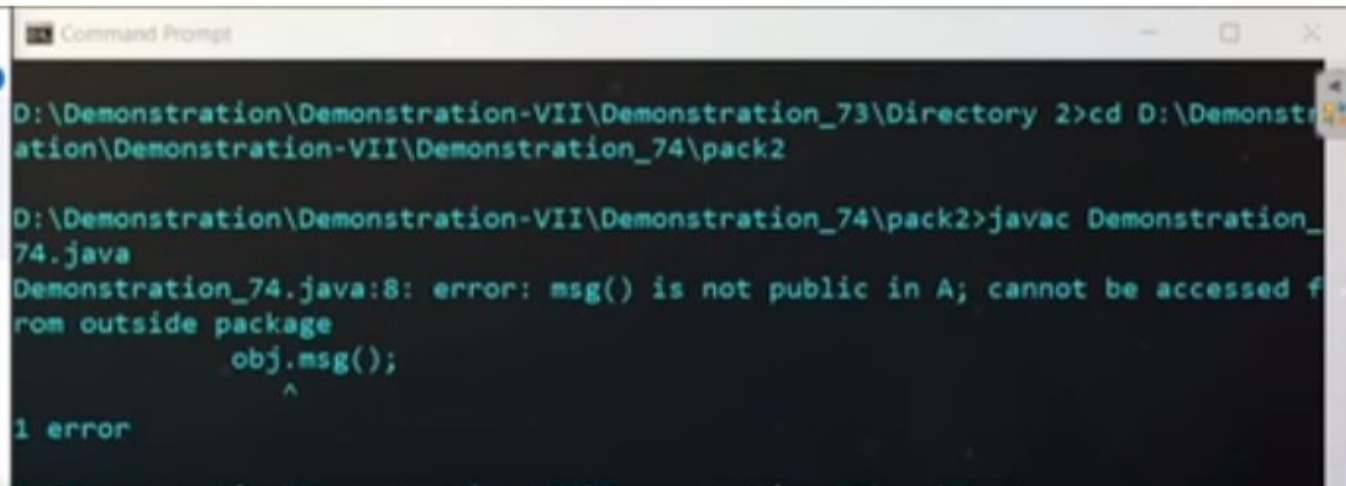
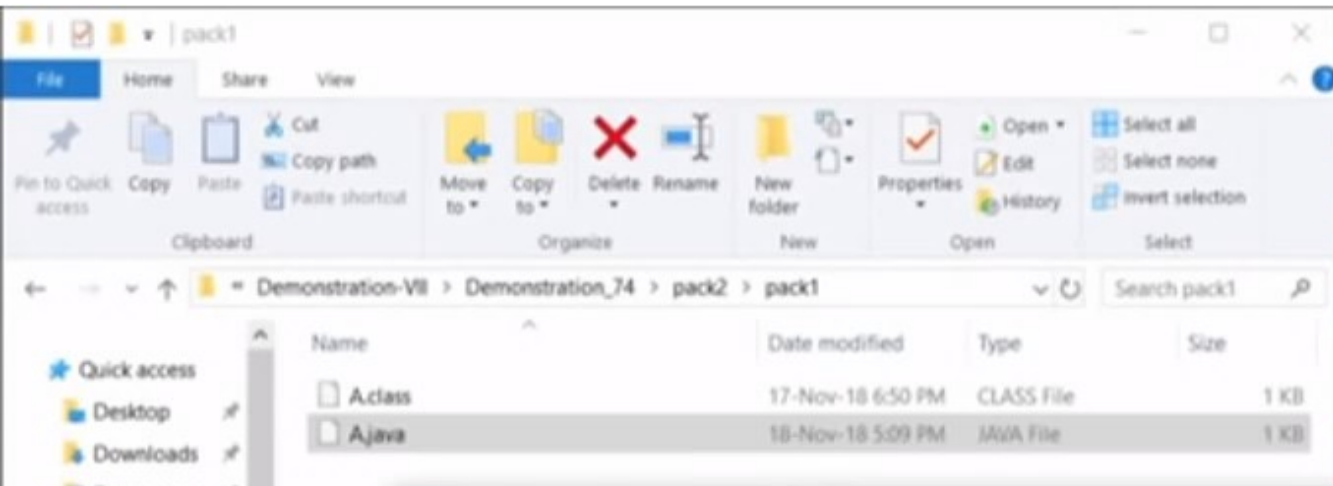




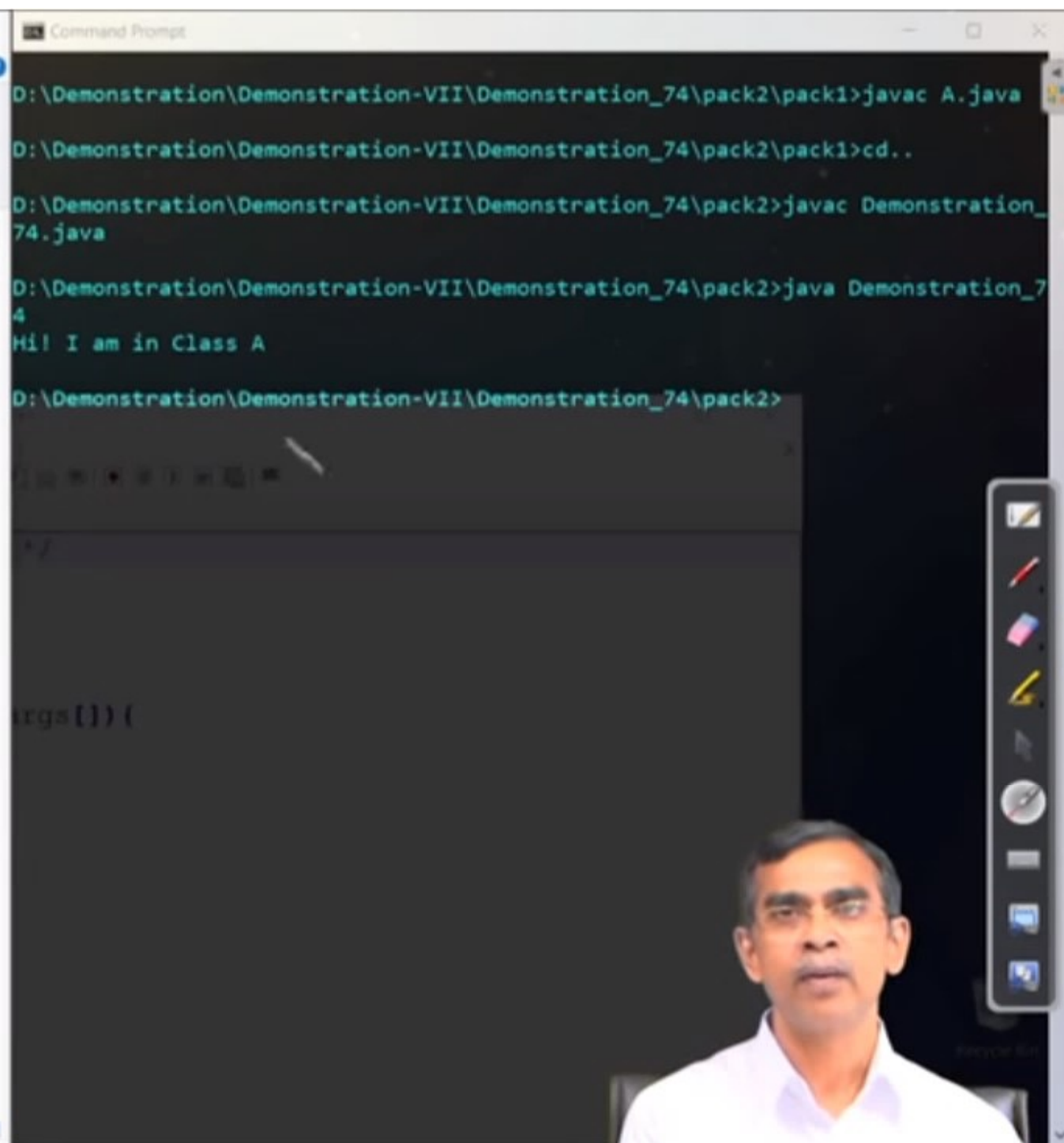
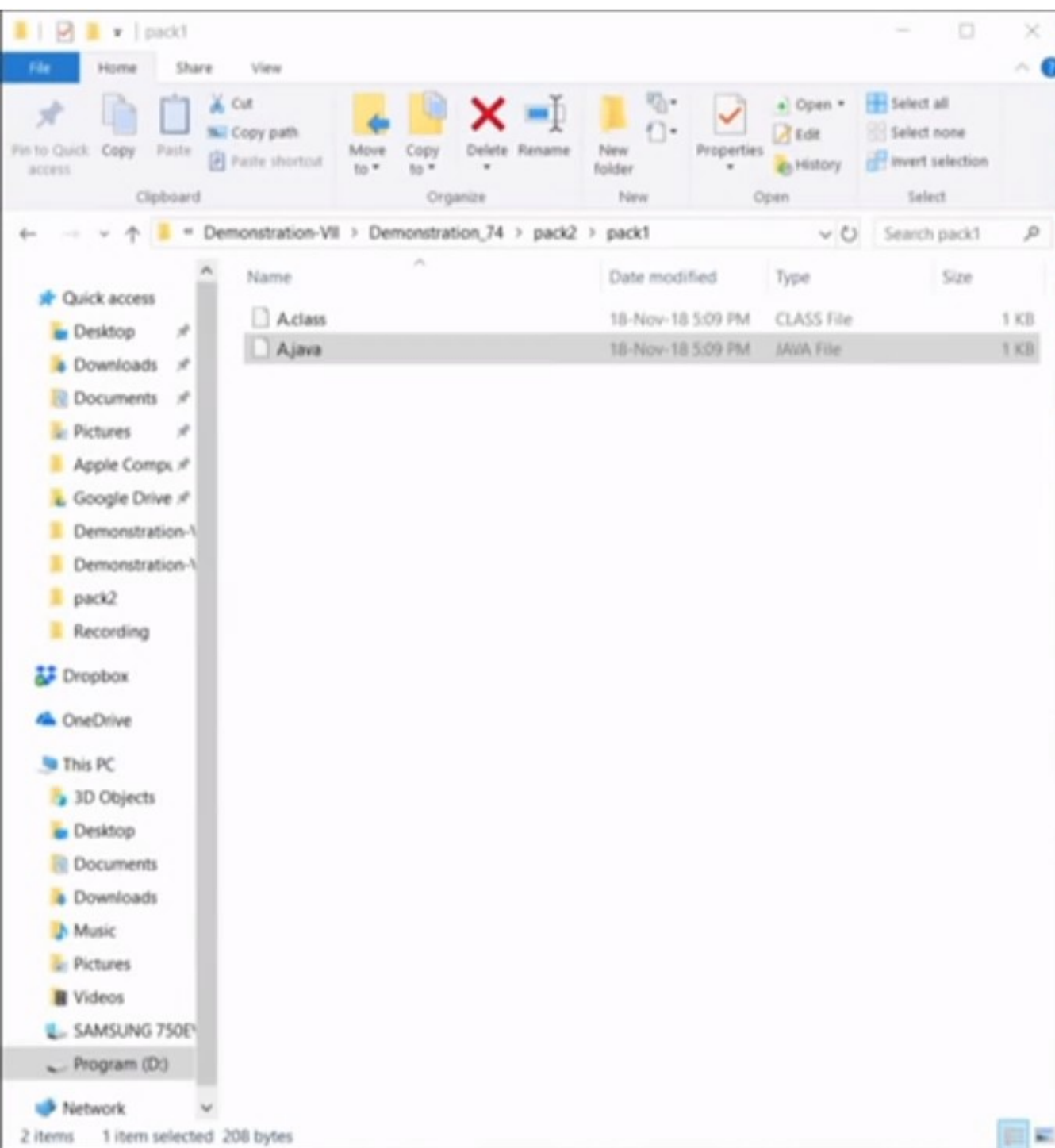
















## Lecture 16: Demonstration-VII

File Explorer window showing the directory structure:

Path: Demonstration > Demonstration-VII > Demonstration\_75

Name	Date modified	Type	Size
A.class	17-Nov-18 7:45 PM	CLASS File	1 KB
A.java	17-Nov-18 7:45 PM	JAVA File	1 KB
Demonstration_75.class	17-Nov-18 7:43 PM	CLASS File	1 KB
Demonstration_75.java	17-Nov-18 7:44 PM	JAVA File	1 KB

Command Prompt window showing the execution of Java code:

```
D:\Demonstration\Demonstration-VII\Demonstration_74\pack2\pack1>javac A.java
D:\Demonstration\Demonstration-VII\Demonstration_74\pack2\pack1>cd..
D:\Demonstration\Demonstration-VII\Demonstration_74\pack2>javac Demonstration_74.java
D:\Demonstration\Demonstration-VII\Demonstration_74\pack2>java Demonstration_74
Hi! I am in Class A
D:\Demonstration\Demonstration-VII\Demonstration_74\pack2>
```

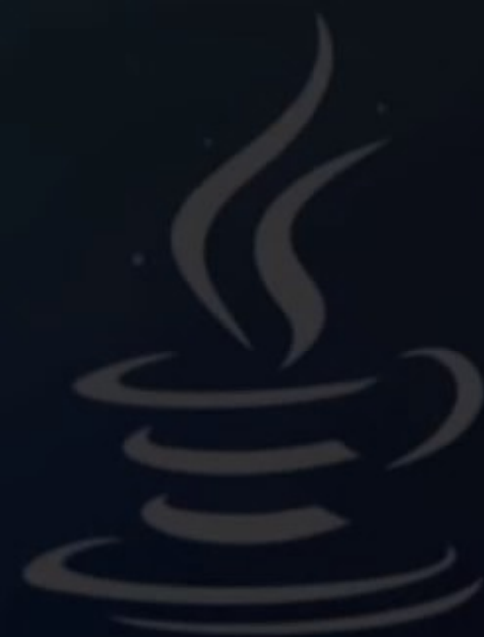
The background of the Command Prompt window features a large Java logo (a steaming cup of coffee) and a video feed of a man in a white shirt and glasses.

Watch later Share

```
D:\Demonstration\Demonstration-VII\Demonstration_75\Demonstration_75.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_75.java
1  /* Example-1 of public access modifier */
2
3  class A{
4      public int data=40;
5      public void msg(){
6          System.out.println("Class A: Hello Java!");
7      }
8  }
9
10 public class Demonstration_75 {
11     public static void main(String args[]){
12         A obj = new A(); //OK : Class A is public
13         System.out.println(obj.data); //OK : data is public
14         obj.msg(); //OK: msg is public
15     }
16 }
17

Java | length: 370 | lines: 17 | Ln: 1 | Col: 1 | Sel: 0 | 0 | Windows (CR LF) | UTF-8 | INS
```

```
Command Prompt
D:\Demonstration\Demonstration-VII\Demonstration_74\pack2>
```



File Explorer window showing the directory structure: Demonstration > Demonstration-VII > Demonstration\_75.

Name	Date modified	Type	Size
A.class	18-Nov-18 5:11 PM	CLASS File	1 KB
A.java	17-Nov-18 7:45 PM	JAVA File	1 KB
Demonstration_75.class	18-Nov-18 5:11 PM	CLASS File	1 KB
Demonstration_75.java	17-Nov-18 7:44 PM	JAVA File	1 KB

Notepad++ window showing the content of Demonstration\_75.java:

```
1  /* Example-1 of public access modifier */
2
3  class A{
4      public int data=40;
5      public void msg(){
6          System.out.println("Class A: Hello Java!");
7      }
8  }
9
10 public class Demonstration_75 {
11     public static void main(String args[]){
12         A obj = new A(); //OK : Class A is public
13         System.out.println(obj.data); //OK : data is public
14         obj.msg(); //OK: msg is public
15     }
16 }
17
```

Command Prompt window showing the execution of Java code:

```
D:\Demonstration\Demonstration-VII\Demonstration_75>javac A.java
D:\Demonstration\Demonstration-VII\Demonstration_75>javac Demonstration_75.java
D:\Demonstration\Demonstration-VII\Demonstration_75>java Demonstration_75
40
Class A: Hello Java!
D:\Demonstration\Demonstration-VII\Demonstration_75>
```





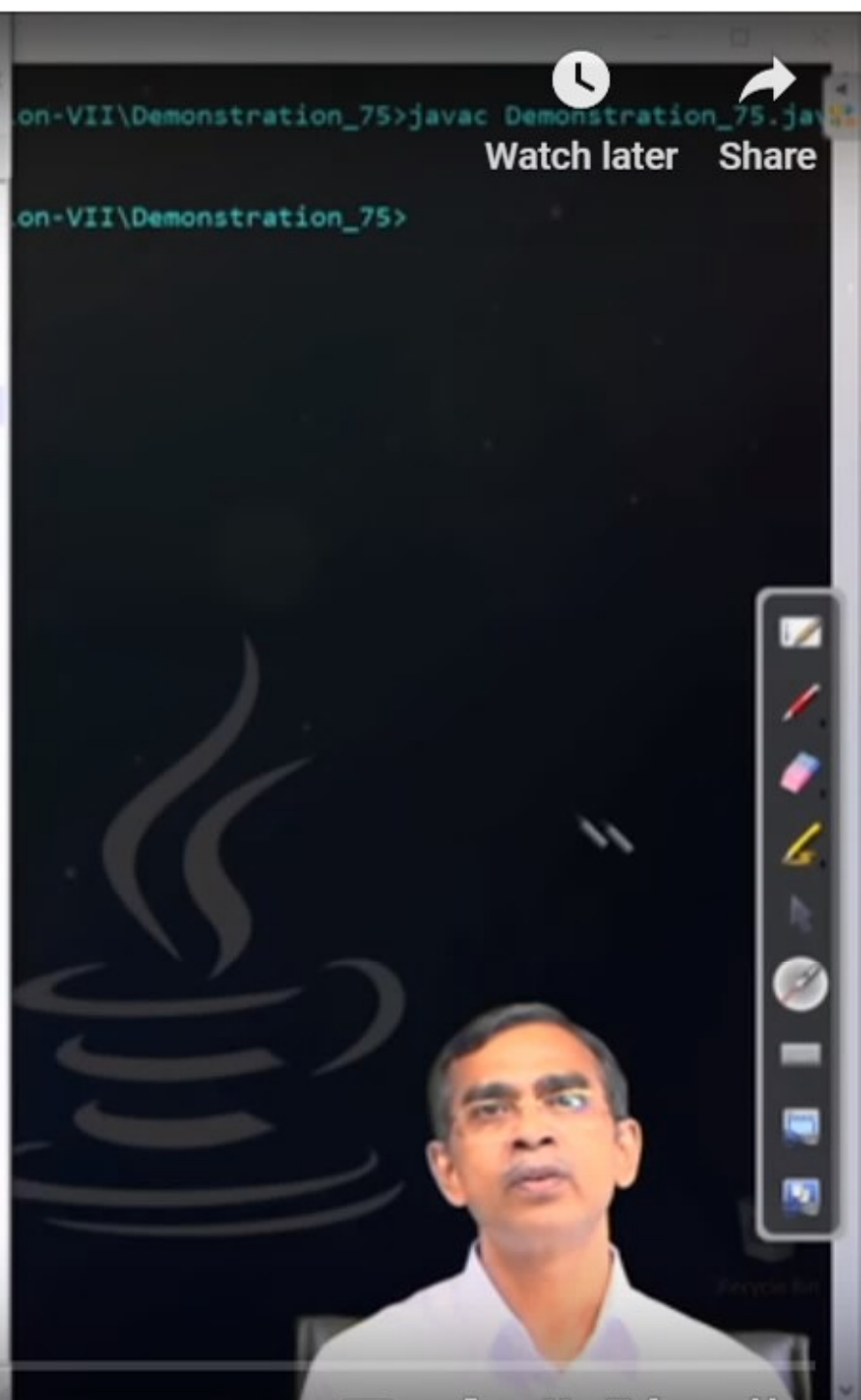
File Edit Format View Encoding Language Settings Tools Macro Run Plugins Window ?

D:\Demonstration\Demonstration-VII\Demonstration\_77\Demonstration\_77.java - Notepad++

## Lecture 16: Demonstration-VII

```
1  /* Example-1 : Private access modifier */
2
3  class A{
4      private int data = 40;
5      public void msg(){
6          System.out.println("Class A: Hello Java!");
7      }
8  }
9
10 public class Demonstration_77 {
11     public static void main(String args[]){
12         A obj = new A();           //OK : Class A is public
13         System.out.println(obj.data); //Compile Time Error : data is private
14         obj.msg();                 //OK : msg is public
15     }
16 }
17
```

Java source file      length: 423    lines: 17      Ln: 6    Col: 15    Sel: 0 | 0      Windows (CR LF)    UTF-8    INS



```
1  /* Example-2: Private access modifier */
2
3  class A{
4      private int data = 40;
5      public void msg(){
6          System.out.println("Class A: Hello Java!" + data);
7      }
8  }
9
10 public class Demonstration_78 {
11     public static void main(String args[]){
12         //private int data2 = 100;
13         //public int data2 = 100;
14         int data2 = 100;
15         A obj1= new A(); //OK : Class A is public
16         System.out.println("Class B:" + data2); //OK: private data in the same class
17         obj1.msg(); // Private data is accessible through public method
18     }
19 }
20
```



```
1  /* Example-2: Private access modifier */
2
3  class A{
4      private int data = 40;
5      public void msg(){
6          System.out.println("Class A: Hello Java!" + data);
7      }
8  }
9
10 public class Demonstration_78 {
11     public static void main(String args[]){
12         //private int data2 = 100;
13         //public int data2 = 100;
14         int data2 = 100;
15         A obj = new A(); //OK : Class A is public
16         System.out.println("Class B:" + data2); //OK: private data in the same class
17         obj.msg(); // Private data is accessible through public method
18     }
19 }
20
```

```
D:\Demonstration\Demonstration-VII\Demonstration_78>java Demonstration_78
Class B:100
Class
A: Hello Java!40
D:\Demonstration\Demonstration-VII\Demonstration_78>
```





```
1  /* Example-2: Private access modifier */
2
3  class A{
4      private int data = 40;
5      public void msg(){
6          System.out.println("Class A: Hello Java!" + data);
7      }
8  }
9
10 public class Demonstration_78 {
11     public static void main(String args[]){
12         //private int data2 = 100;
13         public int data2 = 100;
14         //int data2 = 100;
15         A obj = new A(); //OK : Class A is public
16         System.out.println("Class B:" + data2); //OK: private data in the same class
17         obj.msg(); // Private data is accessible through public method
18     }
19 }
20
```

```
D:\Demonstration\Demonstration-VII\Demonstration_78>javac Demonstration_78.java
Demonstration_78.java:13: error: illegal start of expression
        public int data2 = 100;
        ^
```

1 error

```
D:\Demonstration\Demonstration-VII\Demonstration_78>
```



```
1  /* Example-2: Private access modifier */
2
3  class A{
4      private int data = 40;
5      public void msg(){
6          System.out.println("Class A: Hello Java!" + data);
7      }
8  }
9
10 public class Demonstration_78 {
11     public static void main(String args[]){
12         private int data2 = 100;
13         //public int data2 = 100;
14         //int data2 = 100;
15         A obj = new A(); //OK : Class A is public
16         System.out.println("Class B:" + data2); //OK: private data in the same class
17         obj.msg(); // Private data is accessible through public method
18     }
19 }
20
```

```
D:\Demonstration\Demonstration-VII\Demonstration_78>javac Demonstration_78.java
Demonstration_78.java:12: error: illegal start of expression
        private int data2 = 100;
        ^
1 error

D:\Demonstration\Demonstration-VII\Demonstration_78>
```



```
D:\Demonstration\Demonstration-VII\Demonstration_79\Demonstration_79.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_79.java
1 class A{
2     private A(){
3         //private constructor
4     }
5
6     void msg(){
7         System.out.println("Class A: Hello Java!");
8     }
9 }
10
11 public class Demonstration_79 {
12     public static void main(String args[]){
13         A obj = new A(); //Compile Time Error
14     }
15 }
16
```

```
Command Prompt
D:\Demonstration\Demonstration-VII\Demonstration_79>javac Demonstration_79.java
Demonstration_79.java:13: error: A() has private access in A
        A obj = new A(); //Compile Time Error
                   ^
1 error

D:\Demonstration\Demonstration-VII\Demonstration_79>
```





D:\Demonstration\Demonstration-VII\Demonstration\_79\Demonstration\_79.java - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

Demonstration\_79.java

```
1 class A{
2     public A() {
3         //private constructor
4     }
5
6     void msg() {
7         System.out.println("Class A: Hello Java!");
8     }
9 }
10
11 public class Demonstration_79 {
12     public static void main(String args[]){
13         A obj = new A(); //Compile Time Error
14     }
15 }
16
```

Java source file length: 247 lines: 16 Ln: 2 Col: 11 Sel: 0 | 0 Windows (CR LF) UTF-8 INS

Command Prompt

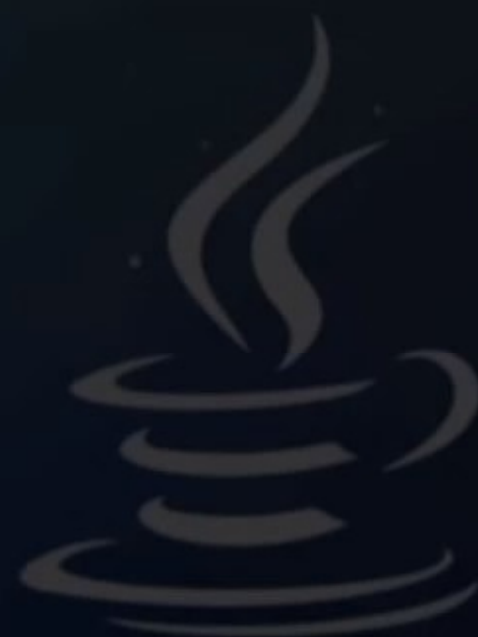
```
D:\Demonstration\Demonstration-VII\Demonstration_79>javac Demonstration_79.java
D:\Demonstration\Demonstration-VII\Demonstration_79>java Demonstration_79
D:\Demonstration\Demonstration-VII\Demonstration_79>_
```



```
D:\Demonstration\Demonstration-VII\Demonstration_710\Demonstration_710.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_710.java
1  /* Example 1: protected modifier */
2
3  class A {
4      protected int rollNo = 555;
5      protected void msg() {
6          System.out.println("Class A: Hello Java!" + rollNo);
7      }
8  }
9
10 class Demonstration_710 {
11     public static void main(String args[]) {
12         A obj = new A();
13         obj.msg();
14         obj.rollNo();
15     }
16 }
17
```

```
Command Prompt
D:\Demonstration\Demonstration-VII\Demonstration_710>javac Demonstration_710.java
Demonstration_710.java:14: error: cannot find symbol
        obj.rollNo();
            ^
    symbol:   method rollNo()
    location: variable obj of type A
1 error

D:\Demonstration\Demonstration-VII\Demonstration_710>
```



```
D:\Demonstration\Demonstration-VII\Demonstration_710\Demonstration_710.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_710.java
1  /* Example 1: protected modifier */
2
3  class A {
4      protected int rollNo = 555;
5      protected void msg() {
6          System.out.println("Class A: Hello Java!" + rollNo);
7      }
8  }
9
10 class Demonstration_710 {
11     public static void main(String args[]) {
12         A obj = new A();
13         obj.msg();
14         //obj.rollNo();
15         System.out.println("Class A: Hello Java!" + obj.rollNo);
16     }
17 }
18
```

```
Command Prompt
D:\Demonstration\Demonstration-VII\Demonstration_710>javac Demonstration_710.java
D:\Demonstration\Demonstration-VII\Demonstration_710>java Demonstration_710
Class A: Hello Java!555
Class A: Hello Java!555
D:\Demonstration\Demonstration-VII\Demonstration_710>
```



File Edit Format View Encoding Language Settings Tools Macro Run Plugins Window ?

D:\Demonstration\Demonstration-VII\Demonstration\_710\Demonstration\_710.java - Notepad++

1 /\* Example 1: protected modifier \*/

2

3 class A {

4 protected int rollNo = 555;

5 protected void msg() {

6 System.out.println("Class A: Hello Java!" + rollNo);

7 }

8 }

9

10 class Demonstration\_710 {

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

12 A obj = new A();

13 obj.msg();

14 //obj.rollNo();

15 System.out.println("Class A: Hello Java!" + obj.rollNo);

16 }

17 }

18 }

Ln: 15 Col: 57 Sel: 0 | 0

Windows (CR LF) UTF-8 INS

Command Prompt

D:\Demonstration\Demonstration-VII\Demonstration\_710>javac Demonstration\_710.java

D:\Demonstration\Demonstration-VII\Demonstration\_710>java Demonstration\_710

Class A: Hello Java!555

Class A: Hello Java!555

D:\Demonstration\Demonstration-VII\Demonstration\_710>

Watch later Share

```
1  /* Simple example of access modifier. In a class hierarchy, private members remain private to their class. This program
2
3
4  // Create a superclass.
5  class A {
6      int i; // public by default
7      private int j; // private to A
8
9      void setij(int x, int y) {
10         i = x;
11         j = y;
12     }
13 }
14
15 // A's j is not accessible here.
16 class B extends A {
17     int total;
18
19     void sum() {
20         total = i + j; // ERROR, j is not accessible here
21     }
22 }
23
24
25 class Demonstration_714{
26     public static void main(String args[]) {
27         B subOb = new B();
28         subOb.setij(10, 12);
29         subOb.sum();
```



## Lecture 16: Demonstration-VII

Press **Esc** to exit full screen

```
1  /* Simple example of access modifier. In a class hierarchy, private
2  This program contains an error and will not compile. */
3
4
5  // Create a superclass.
6  class A {
7      int i; // public by default
8      private int j; // private to A
9
10     void setij(int x, int y) {
11         i = x;
12         j = y;
13     }
14 }
15
16 // A's j is not accessible here.
17 class B extends A {
18     int total;
19
20     void sum() {
21         total = i + j; // ERROR, j is not accessible here
22     }
23 }
24
25
26 class Demonstration_714{
27     public static void main(String args[]) {
28         B subOb = new B();
```

Command Prompt

```
D:\Demonstration\Demonstration-VII\Demonstration_714>javac Demonstration_714.java
Demonstration_714.java:20: error: j has private access in A
        total = i + j; // ERROR, j is not accessible here
                        ^
1 error

D:\Demonstration\Demonstration-VII\Demonstration_714>
```

Watch later Share

Java source file length: 666 lines: 34 Ln: 3 Col: 1 Sel: 0|0 Windows (CR LF) UTF-8 INS

28:25 / 37:17

CC YouTube



```
*D:\Demonstration\Demonstration-VII\Demonstration_714\Demonstration_714.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_714.java
1  /* Simple example of access modifier. In a class hierarchy, private
2  This program contains an error and will not compile. */
3
4
5  // Create a superclass.
6  class A {
7      int i; // public by default
8      private int j; // private to A
9
10     void setij(int x, int y) {
11         i = x;
12         j = y;
13     }
14 }
15
16 // A's j is not accessible here.
17 class B extends A {
18     int total;
19
20     void sum() {
21         total = i + j; // ERROR, j is not accessible here
22     }
23 }
24
25
26 class Demonstration_714{
27     public static void main(String args[]) {
28         B subOb = new B();
29     }
30 }
```

```
Command Prompt
D:\Demonstration\Demonstration-VII\Demonstration_714>javac Demo
nstration_714.java
Demonstration_714.java:20: error: j has private access in A
        total = i + j; // ERROR, j is not accessible he
re
^
1 error

D:\Demonstration\Demonstration-VII\Demonstration_714>
```

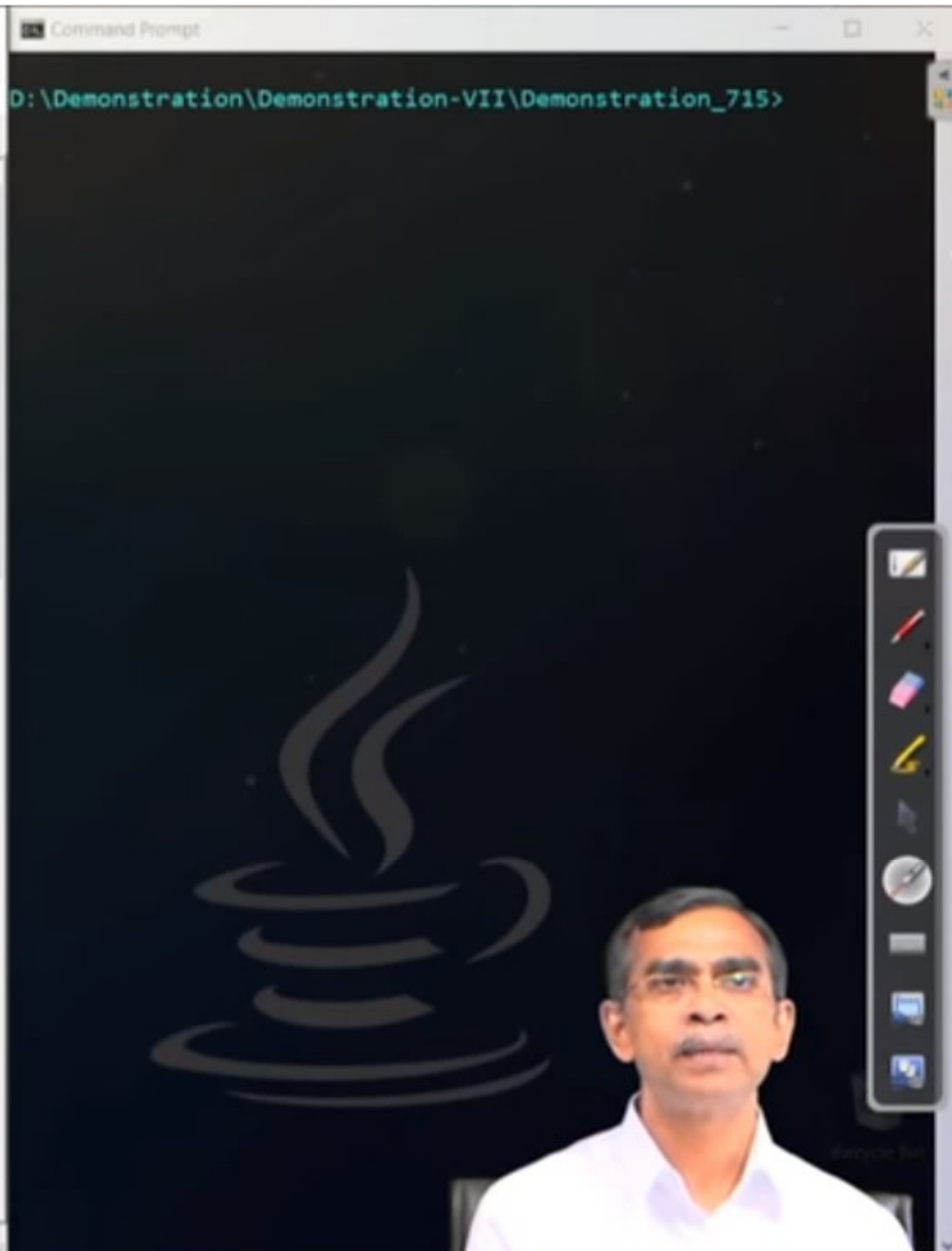


```
D:\Demonstration\Demonstration-VII\Demonstration_714\Demonstration_714.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_714.java
1  /* Simple example of access modifier. In a class hierarchy, private
2  This program contains an error and will not compile. */
3
4
5  // Create a superclass.
6  class A {
7      int i; // public by default
8      protected int j; // private to A
9
10     void setij(int x, int y) {
11         i = x;
12         j = y;
13     }
14 }
15
16 // A's j is not accessible here.
17 class B extends A {
18     int total;
19
20     void sum() {
21         total = i + j; // ERROR, j is not accessible here
22     }
23 }
24
25
26 class Demonstration_714{
27     public static void main(String args[]) {
28         B subOb = new B();
29     }
30 }
```

```
Command Prompt
D:\Demonstration\Demonstration-VII\Demonstration_714>java Demonstration_714
Total is 22
D:\Demonstration\Demonstration-VII\Demonstration_714>
```

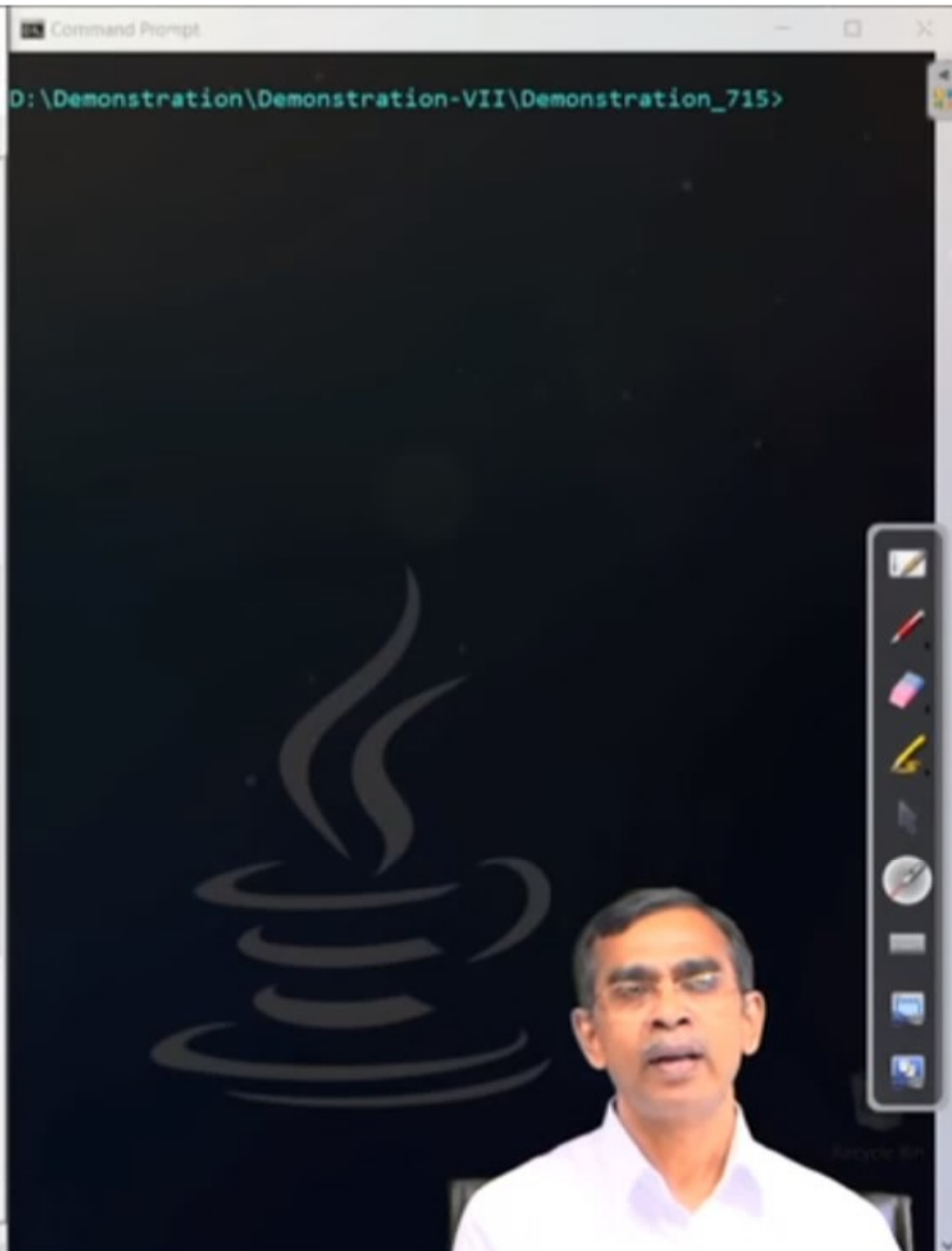


```
D:\Demonstration\Demonstration-VII\Demonstration_715.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_715.java
1  /* Another example of access modifier with public, private and prote
2
3  class BaseClass {
4      public int x = 10;
5      private int y = 10;
6      protected int z = 10;
7      int a = 10; //Implicit Default Access Modifier
8
9      public int getX() {
10         return x;
11     }
12
13     public void setX(int x) {
14         this.x = x;
15     }
16
17     private int getY() {
18         return y;
19     }
20
21     private void setY(int y) {
22         this.y = y;
23     }
24
25     protected int getZ() {
26         return z;
27     }
28
Java source file    length: 1,590    lines: 70    Ln: 1 Col: 1 Sel: 0|0    Windows (CR LF)    UTF-8    INS
```





```
D:\Demonstration\Demonstration-VII\Demonstration_715\Demonstration_715.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Demonstration_715.java
28
29 protected void setZ(int z) {
30     this.z = z;
31 }
32
33 int getA() {
34     return a;
35 }
36
37 void setA(int a) {
38     this.a = a;
39 }
40
41
42
43 public class Demonstration_715 extends BaseClass {
44     public static void main(String args[]) {
45         BaseClass rr = new BaseClass();
46         rr.z = 0;
47         Demonstration_715 subClassObj = new Demonstration_715();
48         //Access Modifiers - Public
49         System.out.println("Value of x is : " + subClassObj.x);
50         subClassObj.setX(20);
51         System.out.println("Value of x is : " + subClassObj.x);
52         //Access Modifiers - Public
53         // If we remove the comments it would result in a compilation
54         // error as the fields and methods being accessed are p
55
Java source file length: 1,590 lines: 70 Ln: 1 Col: 1 Sel: 0|0 Windows (CR LF) UTF-8 INS
```



```
42
43 public class Demonstration_715 extends BaseClass {
44     public static void main(String args[]) {
45         BaseClass rr = new BaseClass();
46         rr.z = 0;
47         Demonstration_715 subClassObj = new Demonstration_715();
48         //Access Modifiers - Public
49         System.out.println("Value of x is : " + subClassObj.x);
50         subClassObj.setX(20);
51         System.out.println("Value of x is : " + subClassObj.x);
52         //Access Modifiers - Public
53         // If we remove the comments it would result in a compilation
54         // error as the fields and methods being accessed are private
55
56         /* System.out.println("Value of y is : "+subClassObj.y);
57         subClassObj.setY(20);
58         System.out.println("Value of y is : "+subClassObj.y);*/
59
60         //Access Modifiers - Protected
61         System.out.println("Value of z is : " + subClassObj.z);
62         subClassObj.setZ(30);
63         System.out.println("Value of z is : " + subClassObj.z);
64         //Access Modifiers - Default
65         System.out.println("Value of x is : " + subClassObj.a);
66         subClassObj.setA(20);
67         System.out.println("Value of x is : " + subClassObj.a);
68     }
69 }
70
```

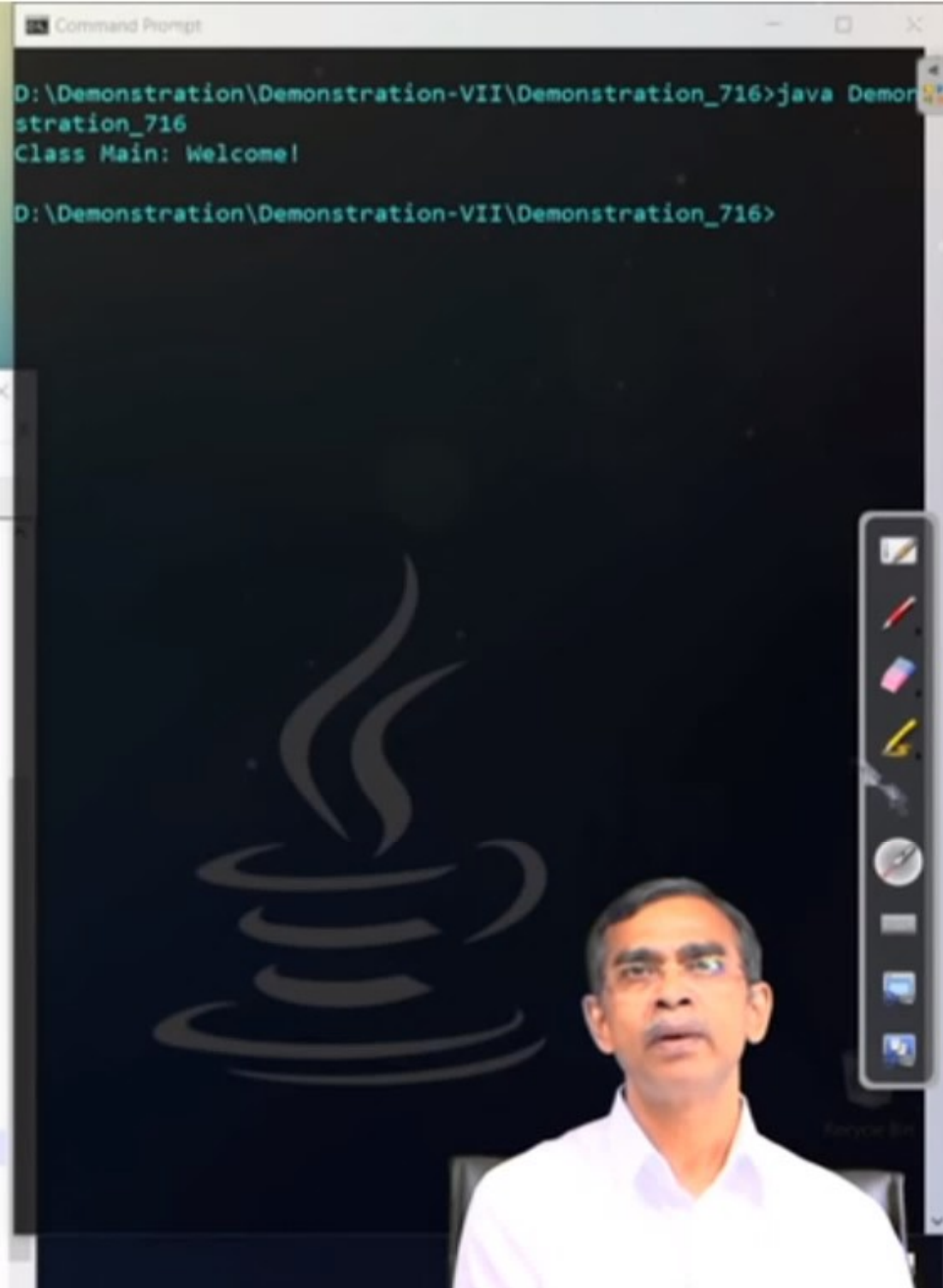
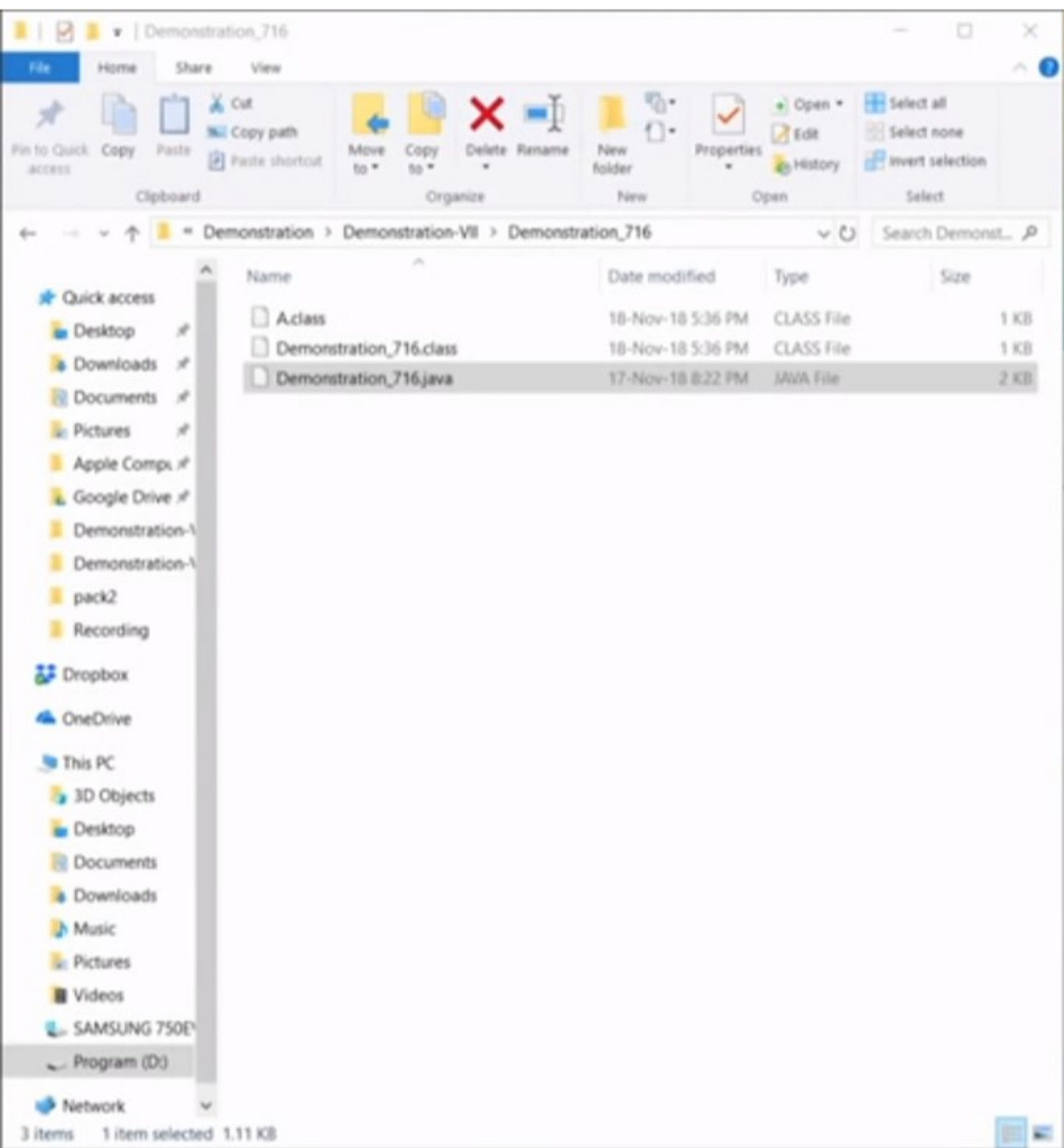


```
1  /* Example of method-overriding */
2
3
4  class A{
5      public void msg1() {
6          System.out.println("Class A: Public!");
7      }
8
9      private void msg2() {
10         System.out.println("Class A: Private!");
11     }
12     protected void msg3(){
13         System.out.println("Class A: Protected!");
14     }
15 }
16
17 public class Demonstration_716 extends A{
18     void msg() {
19         System.out.println("Class Main: Welcome!");
20     }
21     public void msg1() { // If modifire is set to default it cannot override.
22         System.out.println("Overriding public method!");
23     }
24
25     void msg2() {
26         System.out.println("Overriding private method!");
27     }
28     // If modifire is set to private it can be overridden.
29 }
```



```
17 public class Demonstration_716 extends A{
18     void msg() {
19         System.out.println("Class Main: Welcome!");
20     }
21     public void msg1() { // If modifire is set to default it cannot override.
22         System.out.println("Overriding public method!");
23     }
24
25
26     void msg2() {
27         System.out.println("Overriding private method!");
28     }
29     // If modifire is set to private it can be overridden.
30     public void msg3() {
31         System.out.println("Overriding protected method!");
32     }
33
34     public static void main(String args[]) {
35         Demonstration_716 obj = new Demonstration_716();
36         obj.msg();
37         //obj.msg1();
38         //obj.msg2();
39         //obj.msg3();
40     }
41 }
42
43
44
45
```





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