Concepts of Programming

Day 6: Sep 2022

Introduction to Java

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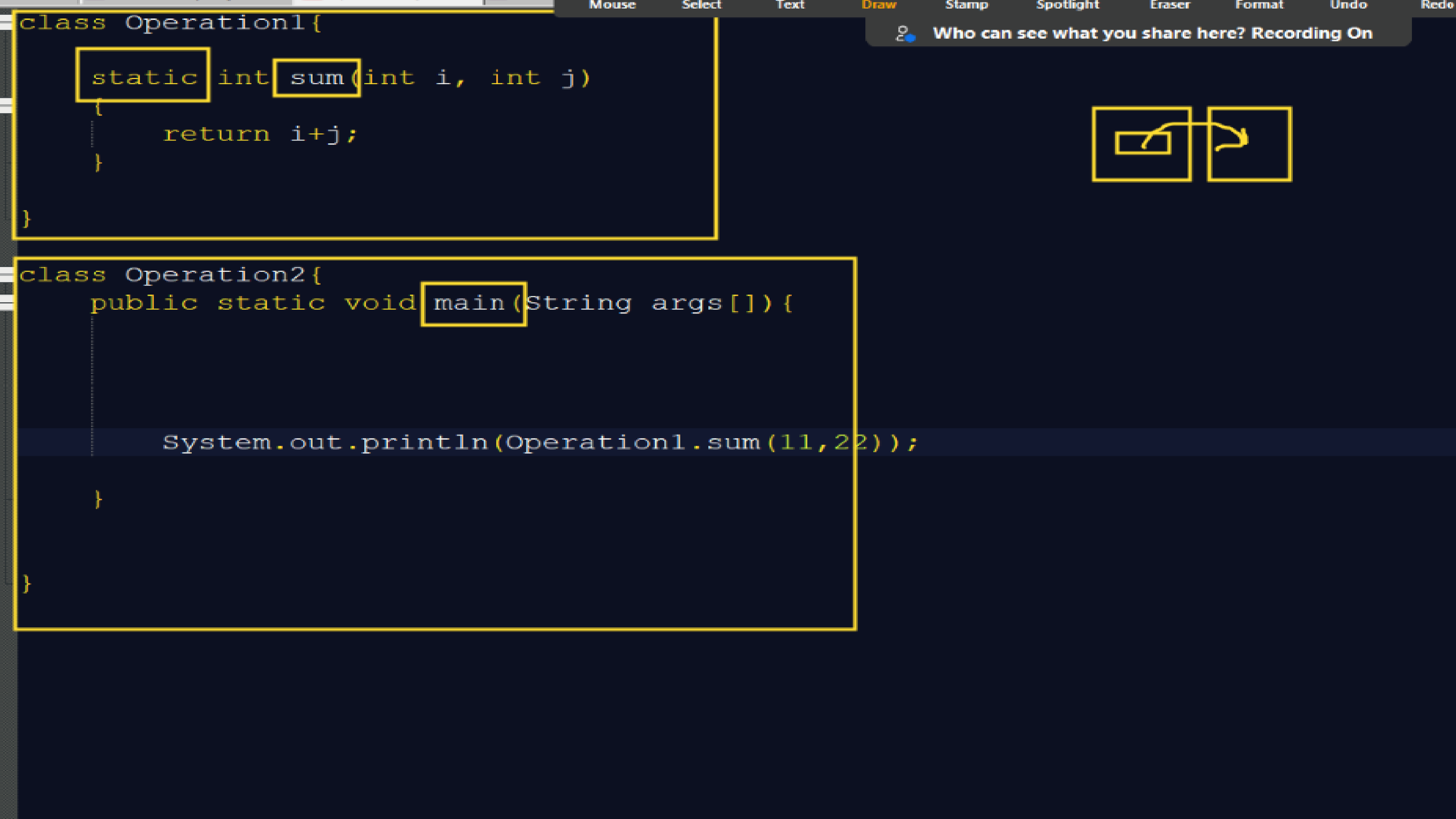
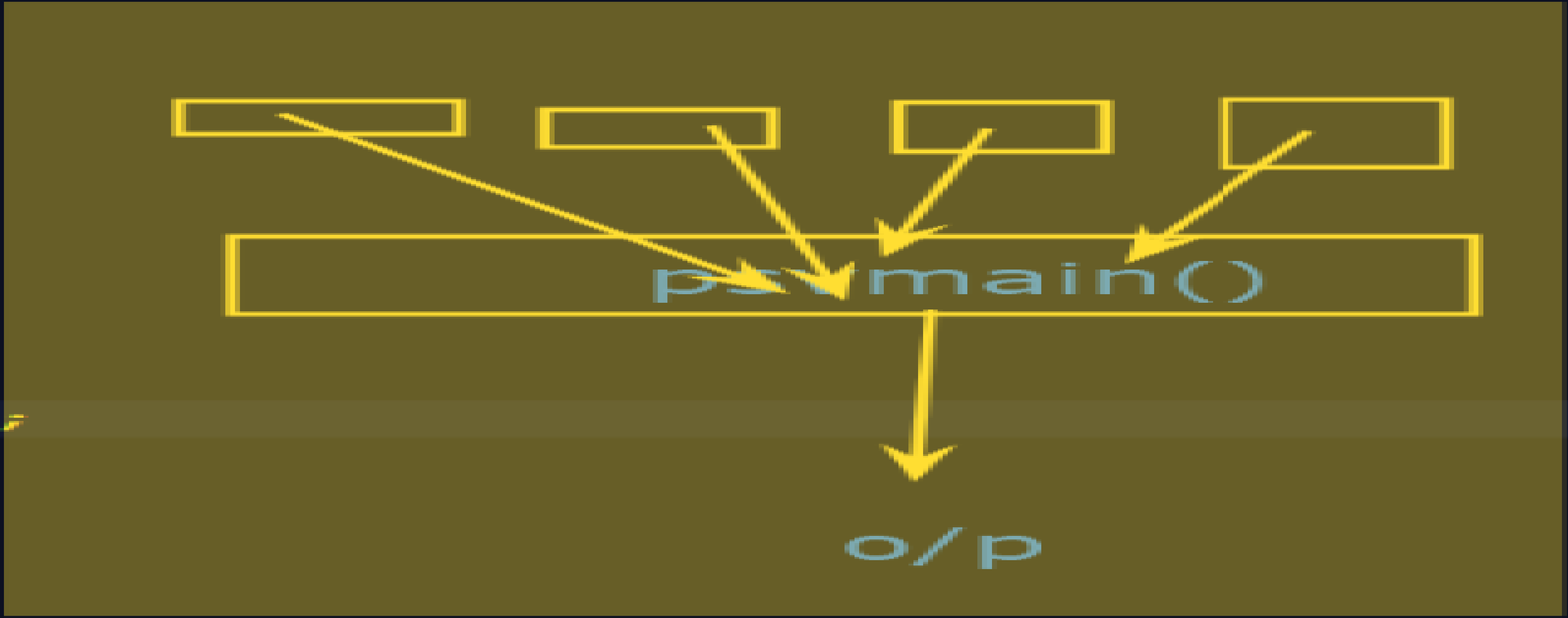
CDAC Mumbai

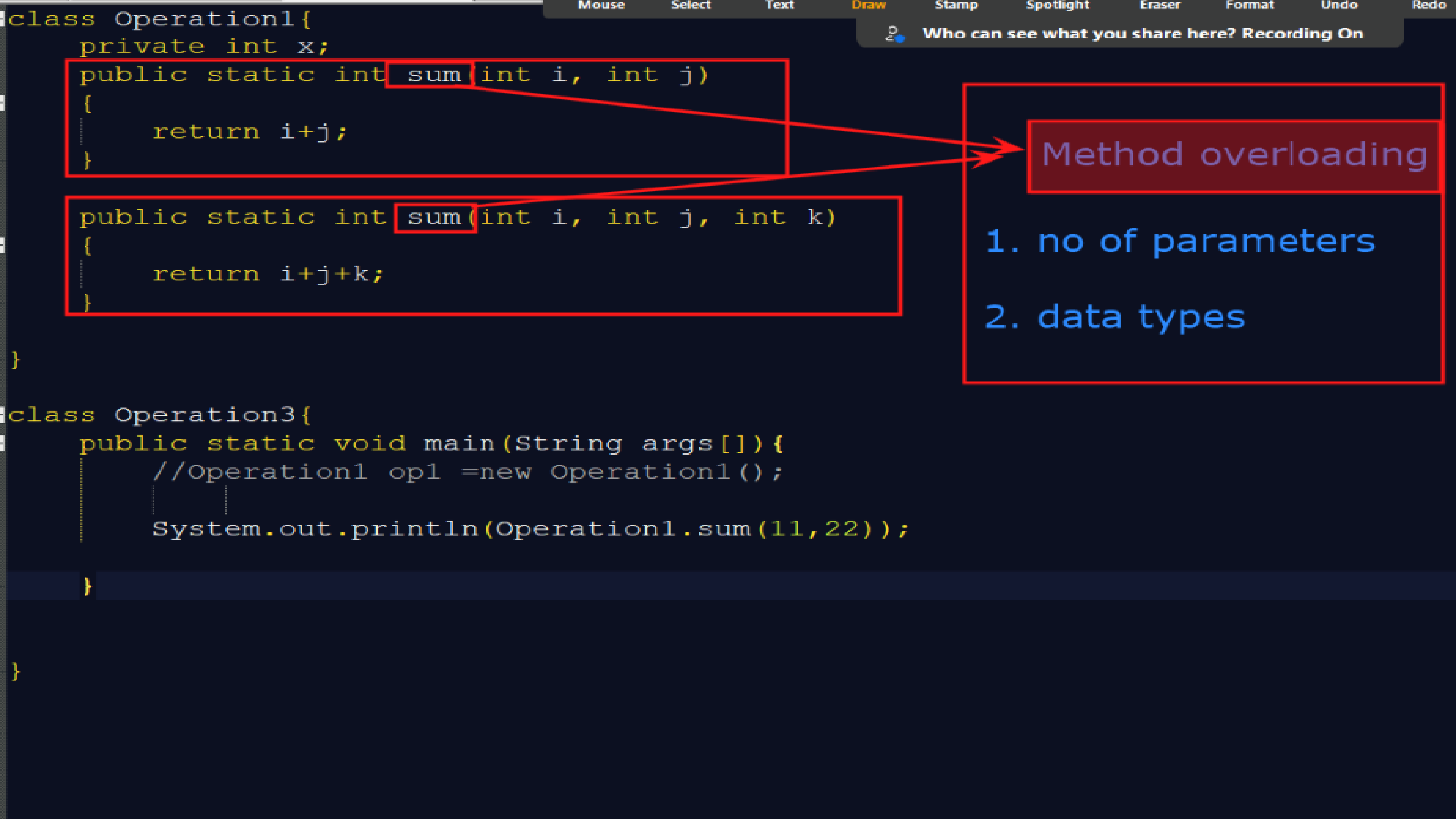


```
class Operation1{

    static int sum(int i, int j)
    {
        return i+j;
    }

}

class Operation2{
    public static void main(String args[]){



        System.out.println(Operation1.sum(11,22));

    }


}
```

e));



userdefined package

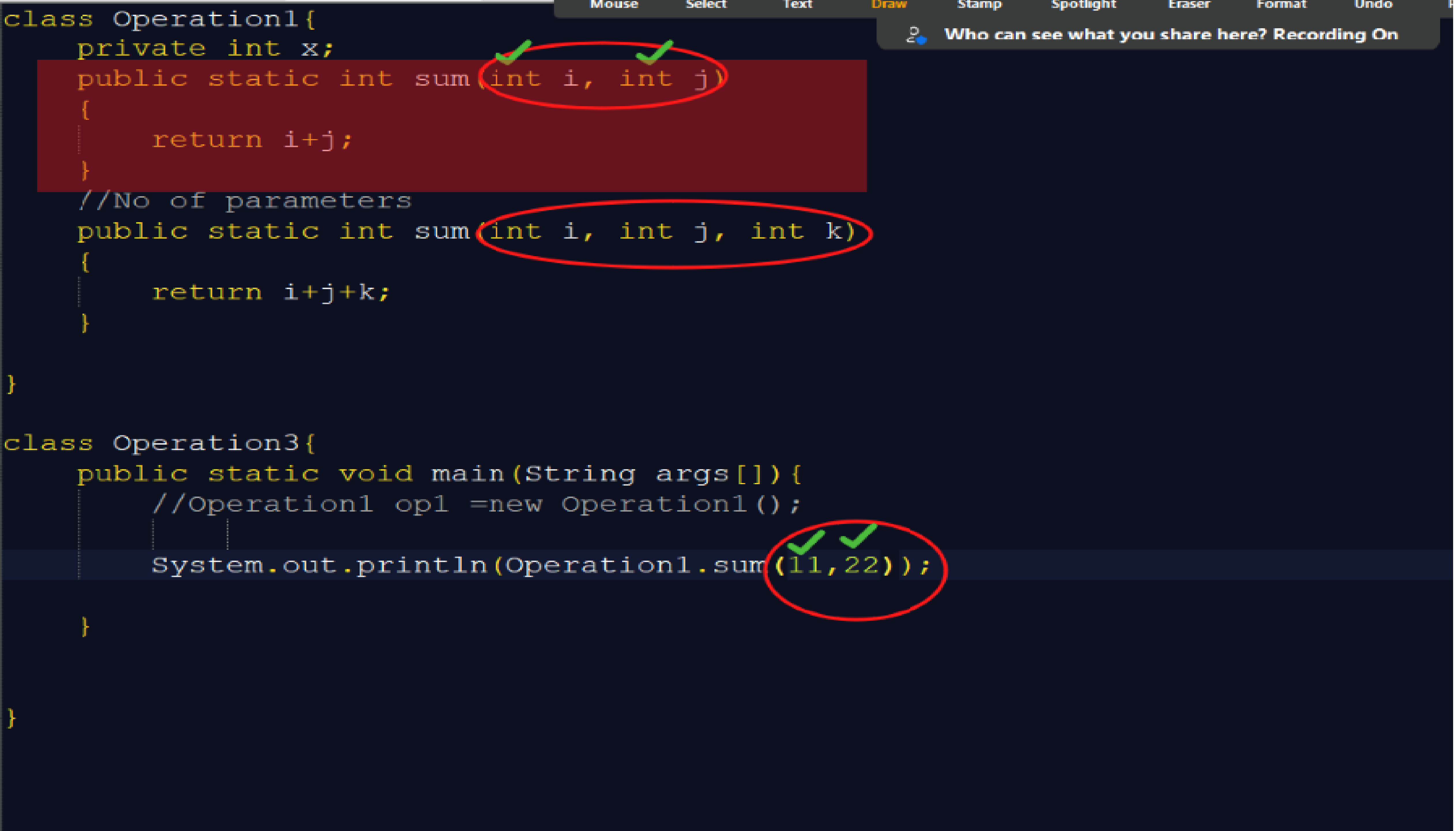


```
class Operation1{
    private int x;
    public static int sum(int i, int j)
    {
        return i+j;
    }

    public static int sum(int i, int j, int k)
    {
        return i+j+k;
    }

}

class Operation3{
    public static void main(String args[]){
        //Operation1 op1 =new Operation1();

        System.out.println(Operation1.sum(11,22));

    }


}
```

Method overloading

1. no of parameters

2. data types



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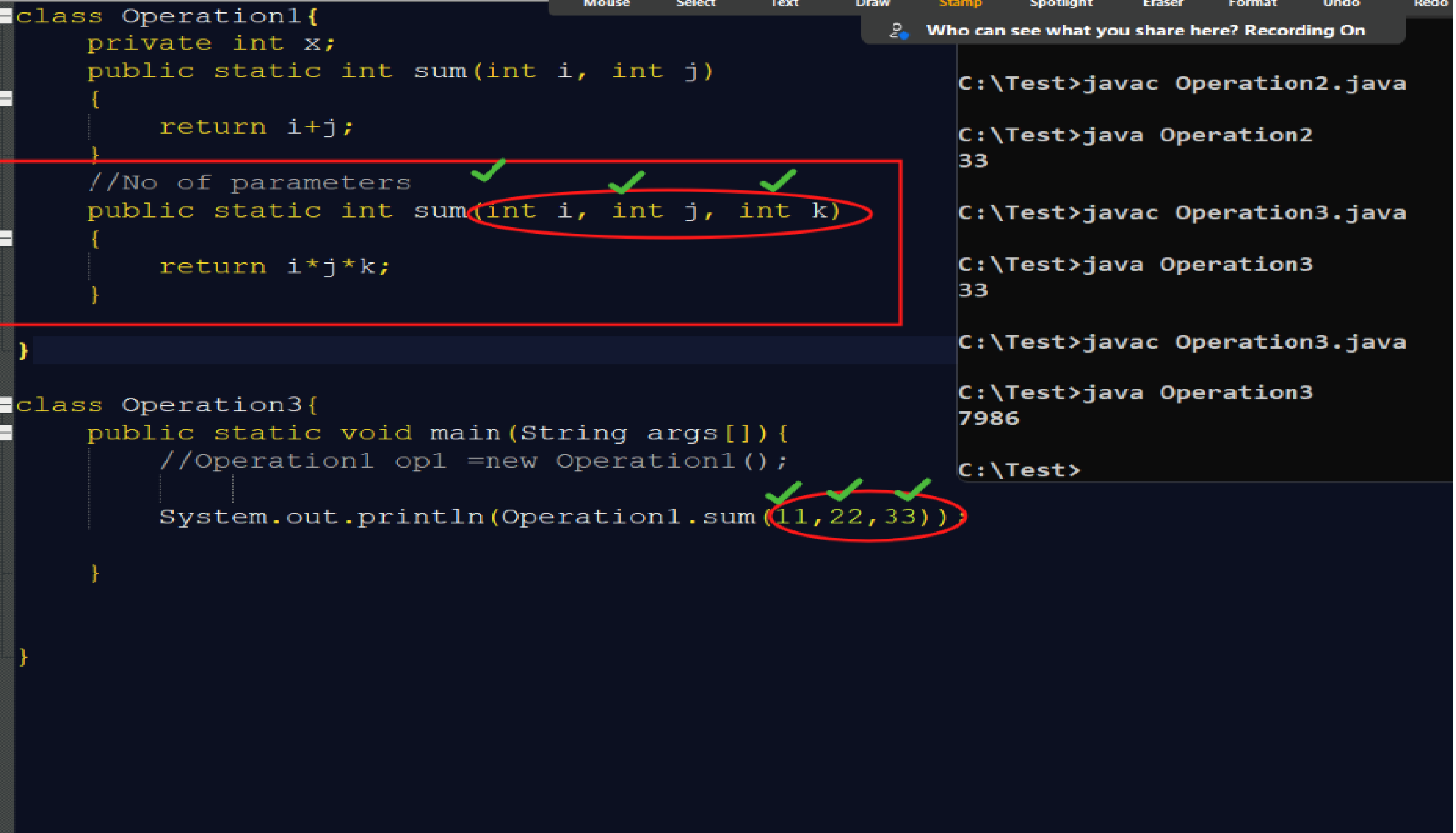
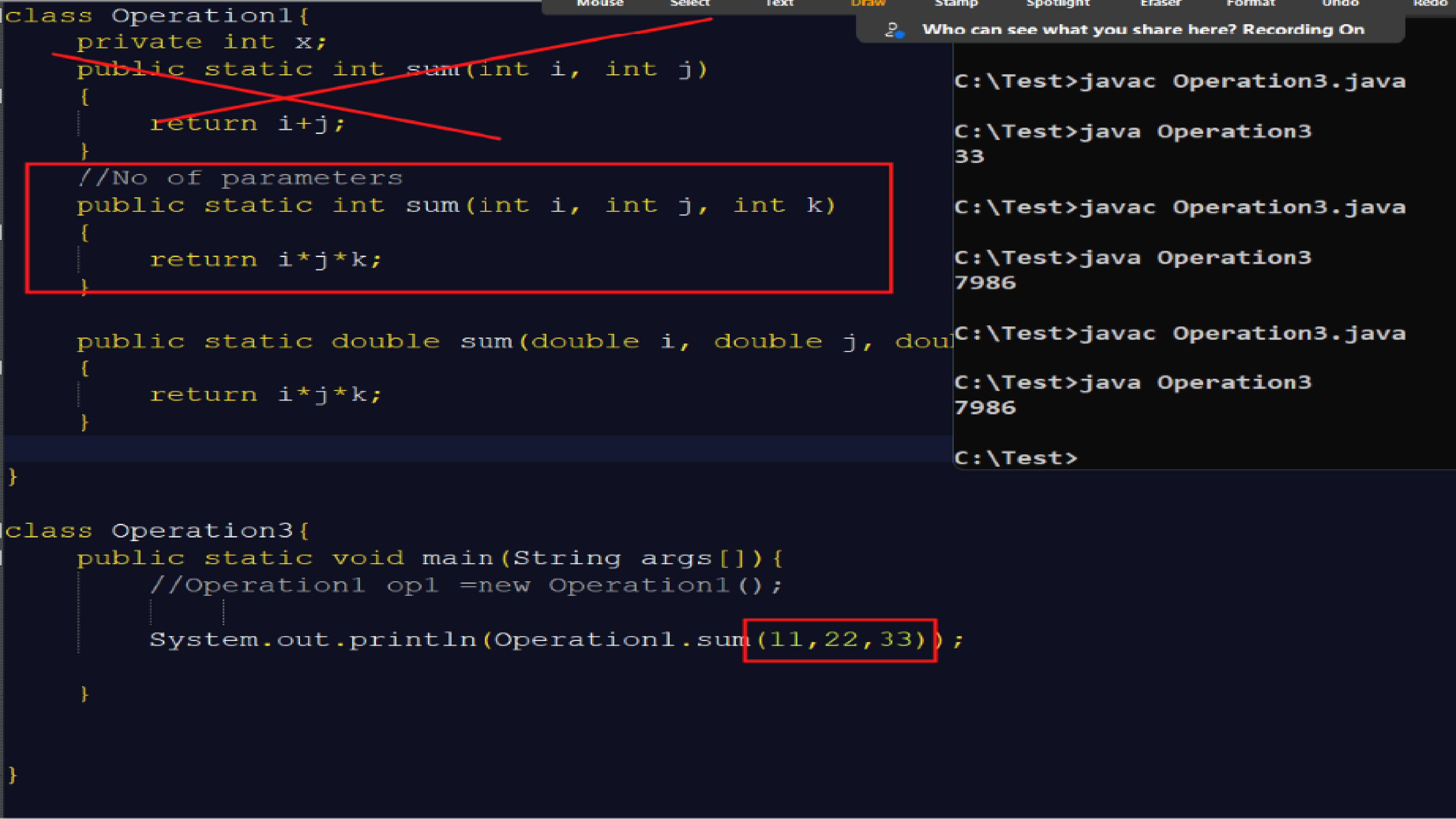
```
class Operation1{
    private int x;
    public static int sum(int i, int j)
    {
        return i+j;
    }
    //No of parameters
    public static int sum(int i, int j, int k)
    {
        return i+j+k;
    }

}

class Operation3{
    public static void main(String args[]){
        //Operation1 op1 =new Operation1();

        System.out.println(Operation1.sum(11,22));

    }


}
```



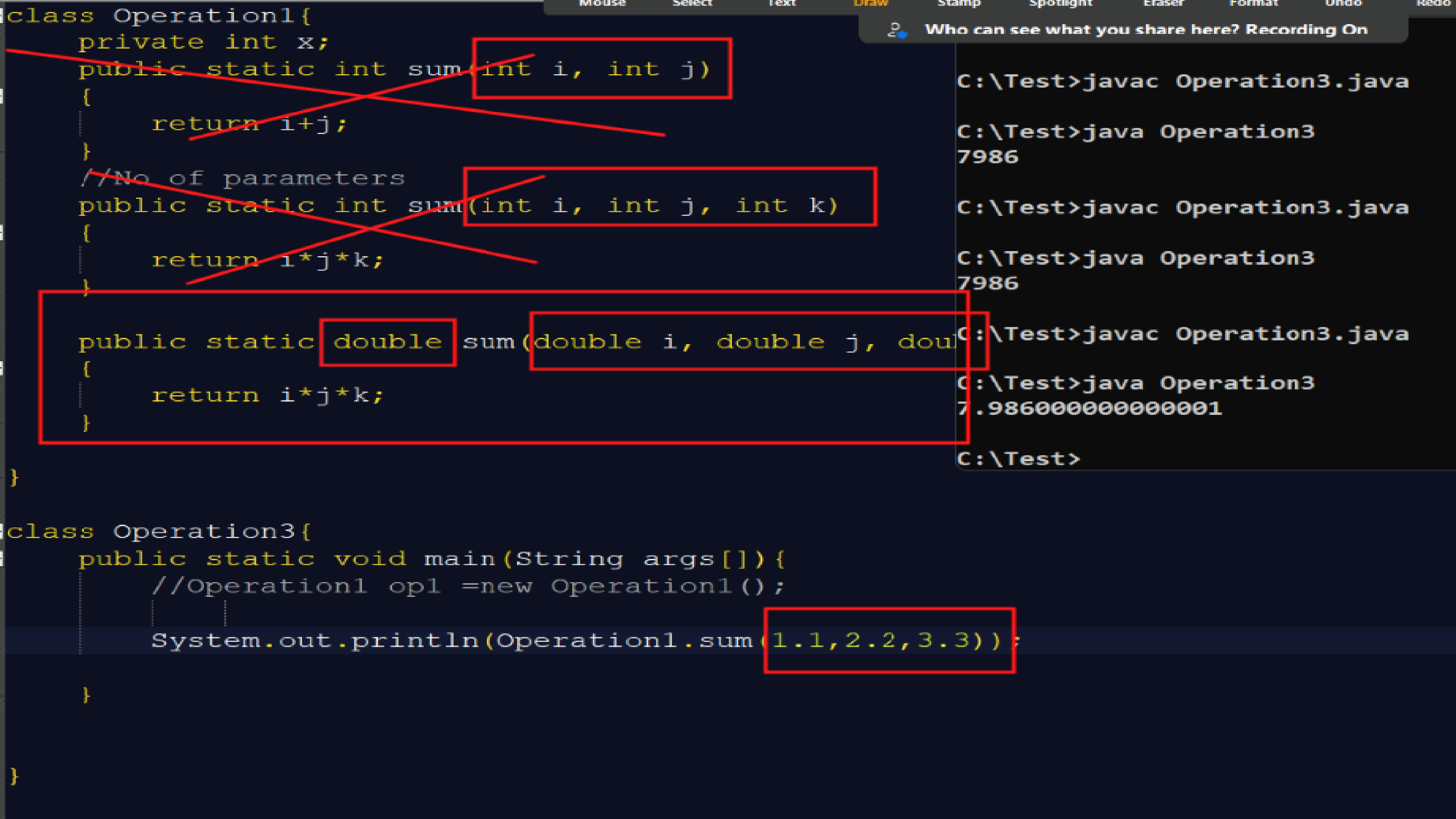
```
class Operation1{
    private int x;
    public static int sum(int i, int j)
    {
        return i+j;
    }
    //No of parameters
    public static int sum(int i, int j, int k)
    {
        return i*j*k;
    }

}

class Operation3{
    public static void main(String args[]){
        //Operation1 op1 =new Operation1();

        System.out.println(Operation1.sum(11,22,33));

    }


}
```

```
C:\Test>javac Operation2.java

C:\Test>java Operation2
33

C:\Test>javac Operation3.java

C:\Test>java Operation3
33

C:\Test>javac Operation3.java

C:\Test>java Operation3
7986

C:\Test>
```



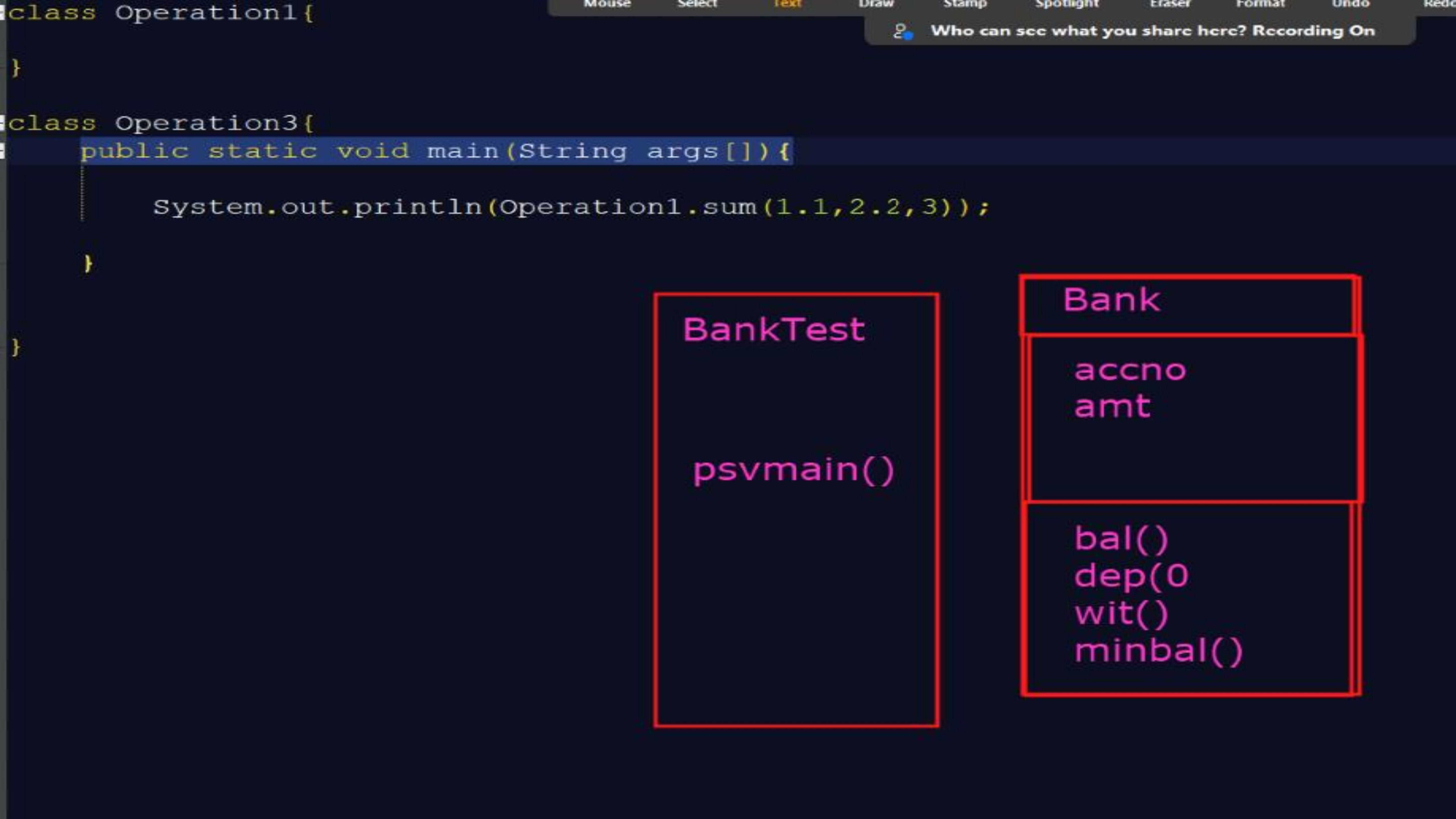
```java
class Operation1{
    private int x;
    public static int sum(int i, int j)
    {
        return i+j;
    }
    //No of parameters
    public static int sum(int i, int j, int k)
    {
        return i*j*k;
    }

    public static double sum(double i, double j, dou
    {
        return i*j*k;
    }

}

class Operation3{
    public static void main(String args[]){
        //Operation1 op1 =new Operation1();

        System.out.println(Operation1.sum(11,22,33));

    }


}
```

```
C:\Test>javac Operation3.java

C:\Test>java Operation3
33

C:\Test>javac Operation3.java

C:\Test>java Operation3
7986

C:\Test>javac Operation3.java

C:\Test>java Operation3
7986

C:\Test>
```



```java
class Operation1{
    private int x;
    public static int sum(int i, int j)
    {
        return i+j;
    }
    //No of parameters
    public static int sum(int i, int j, int k)
    {
        return i*j*k;
    }

    public static double sum(double i, double j, dou
    {
        return i*j*k;
    }

}

class Operation3{
    public static void main(String args[]){
        //Operation1 op1 =new Operation1();

        System.out.println(Operation1.sum(1.1,2.2,3.3));

    }


}
```

```
C:\Test>javac Operation3.java

C:\Test>java Operation3
7986

C:\Test>javac Operation3.java

C:\Test>java Operation3
7986

C:\Test>javac Operation3.java

C:\Test>java Operation3
7.986000000000001

C:\Test>
```



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```
class Operation1{

}

class Operation3{
	public static void main(String args[]){

		System.out.println(Operation1.sum(1.1,2.2,3));

	}


}
```

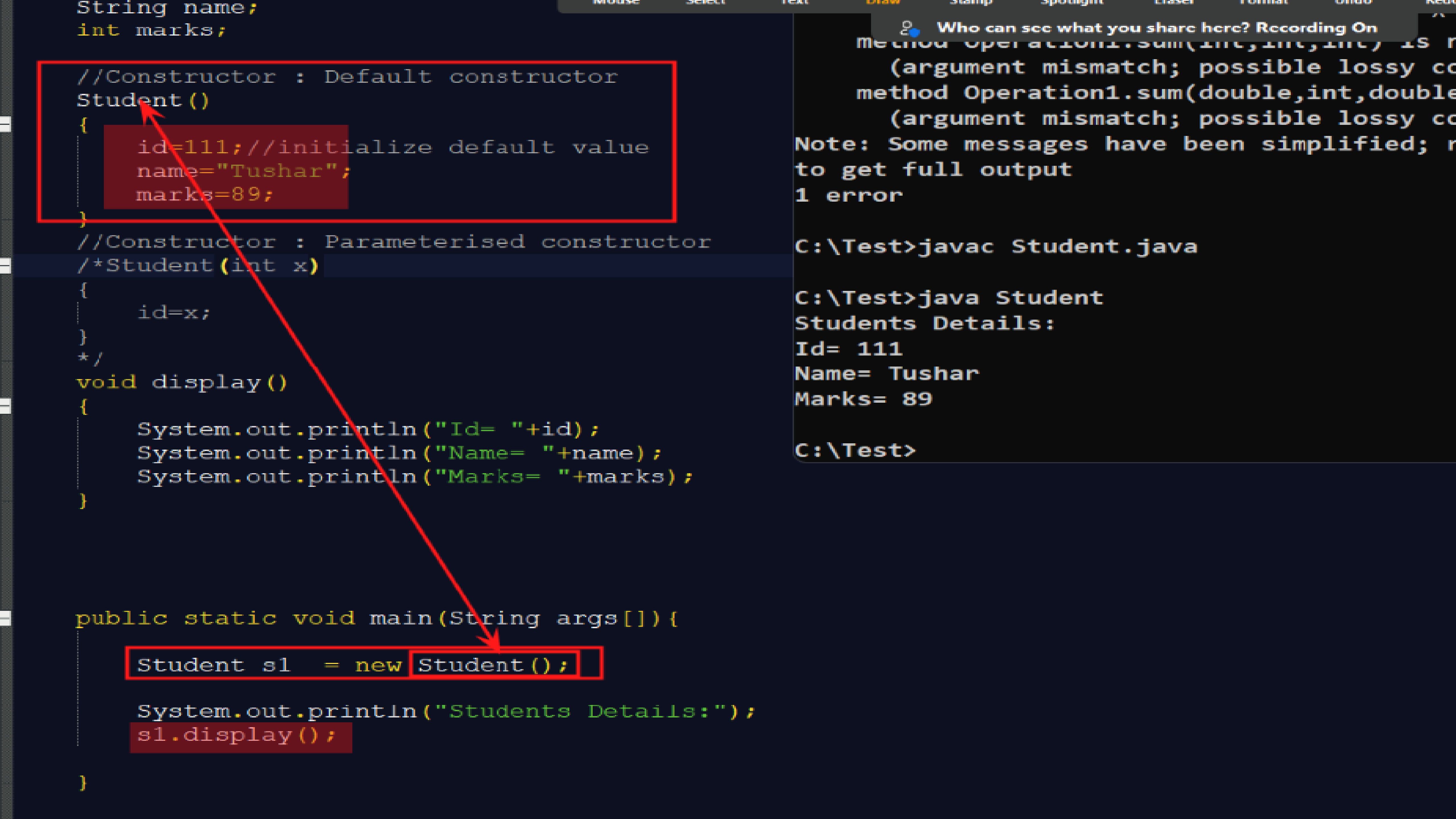
BankTest

psvmain()

Bank

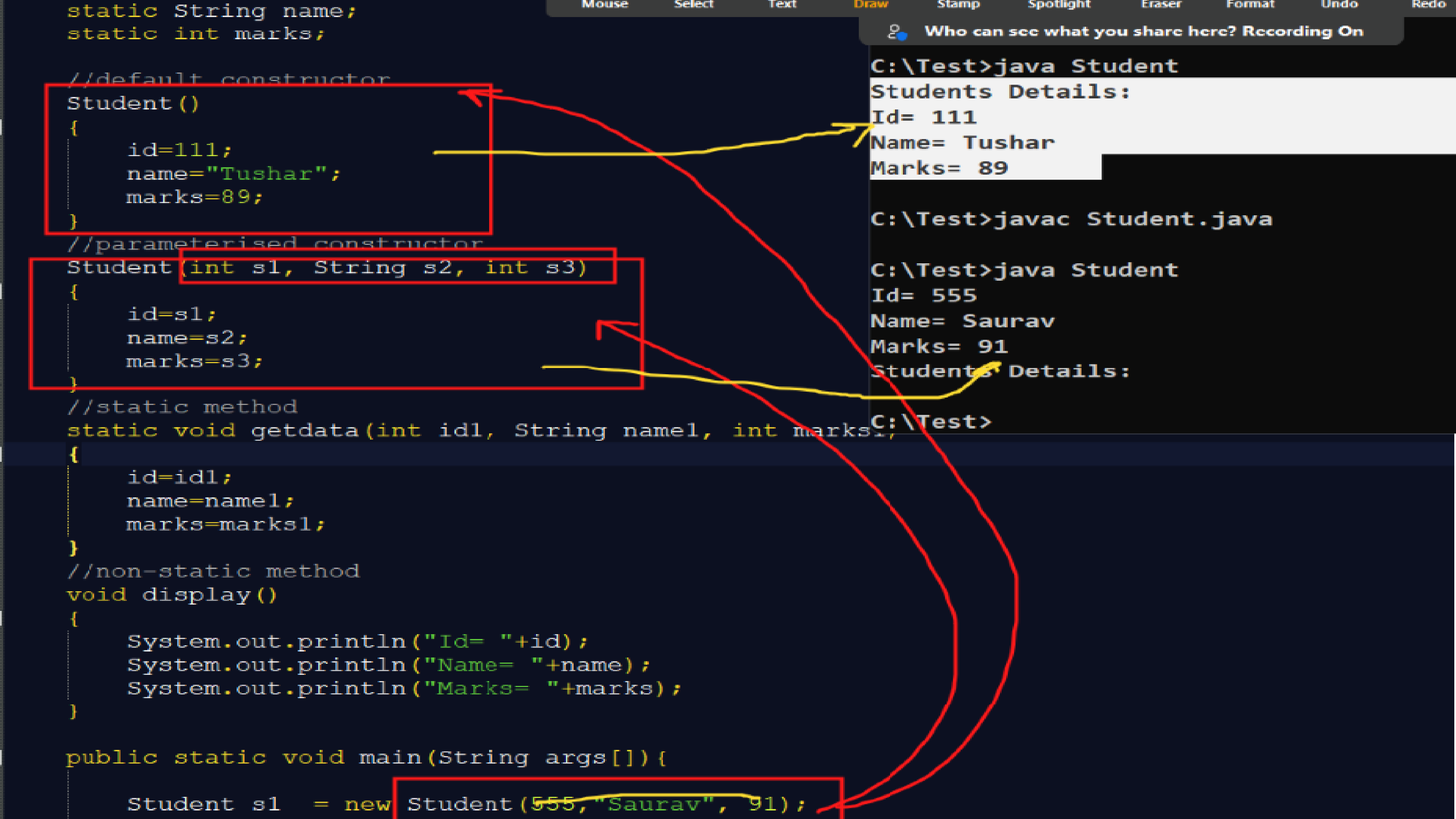
accno
amt

bal()
dep(0
wit()
minbal()



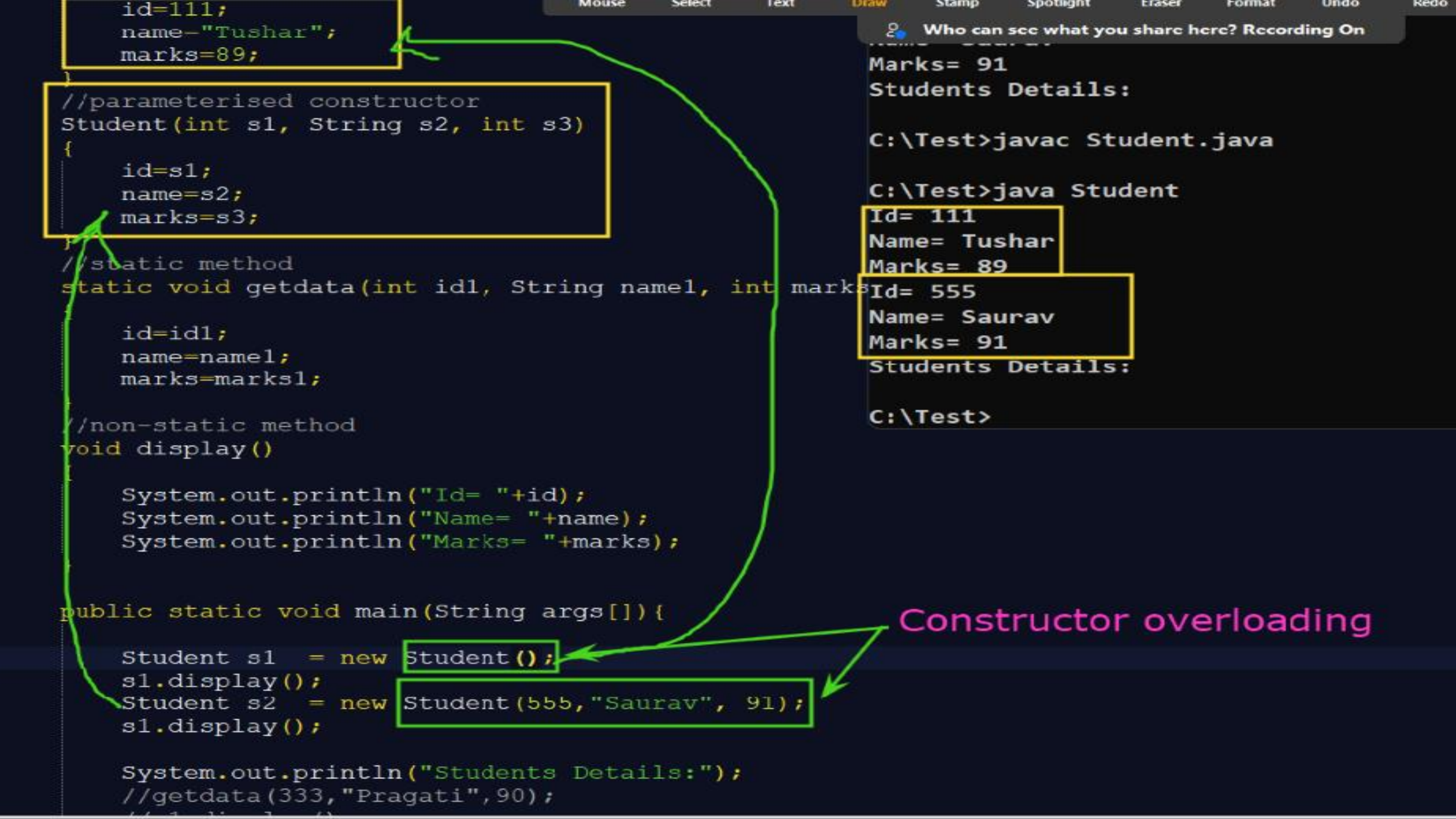
```
    String name;
    int marks;

    //Constructor : Default constructor
    Student()
    {
        id=111;//initialize default value
        name="Tushar";
        marks=89;
    }
    //Constructor : Parameterised constructor
    /*Student(int x)
    {
        id=x;
    }
    */
    void display()
    {
        System.out.println("Id= "+id);
        System.out.println("Name= "+name);
        System.out.println("Marks= "+marks);
    }



    public static void main(String args[]){

        Student s1  = new Student();

        System.out.println("Students Details:");
        s1.display();

    }
```

```
    method Operation1.sum(int,int,int) is r
      (argument mismatch; possible lossy co
    method Operation1.sum(double,int,double
      (argument mismatch; possible lossy co
Note: Some messages have been simplified; r
to get full output
1 error

C:\Test>javac Student.java

C:\Test>java Student
Students Details:
Id= 111
Name= Tushar
Marks= 89

C:\Test>
```



```
    static String name;
    static int marks;

    //default constructor
    Student()
    {
        id=111;
        name="Tushar";
        marks=89;
    }
    //parameterised constructor
    Student(int s1, String s2, int s3)
    {
        id=s1;
        name=s2;
        marks=s3;
    }
    //static method
    static void getdata(int id1, String name1, int marks1
    {
        id=id1;
        name=name1;
        marks=marks1;
    }
    //non-static method
    void display()
    {
        System.out.println("Id= "+id);
        System.out.println("Name= "+name);
        System.out.println("Marks= "+marks);
    }

    public static void main(String args[]){

        Student s1  = new Student(555,"Saurav", 91);
```

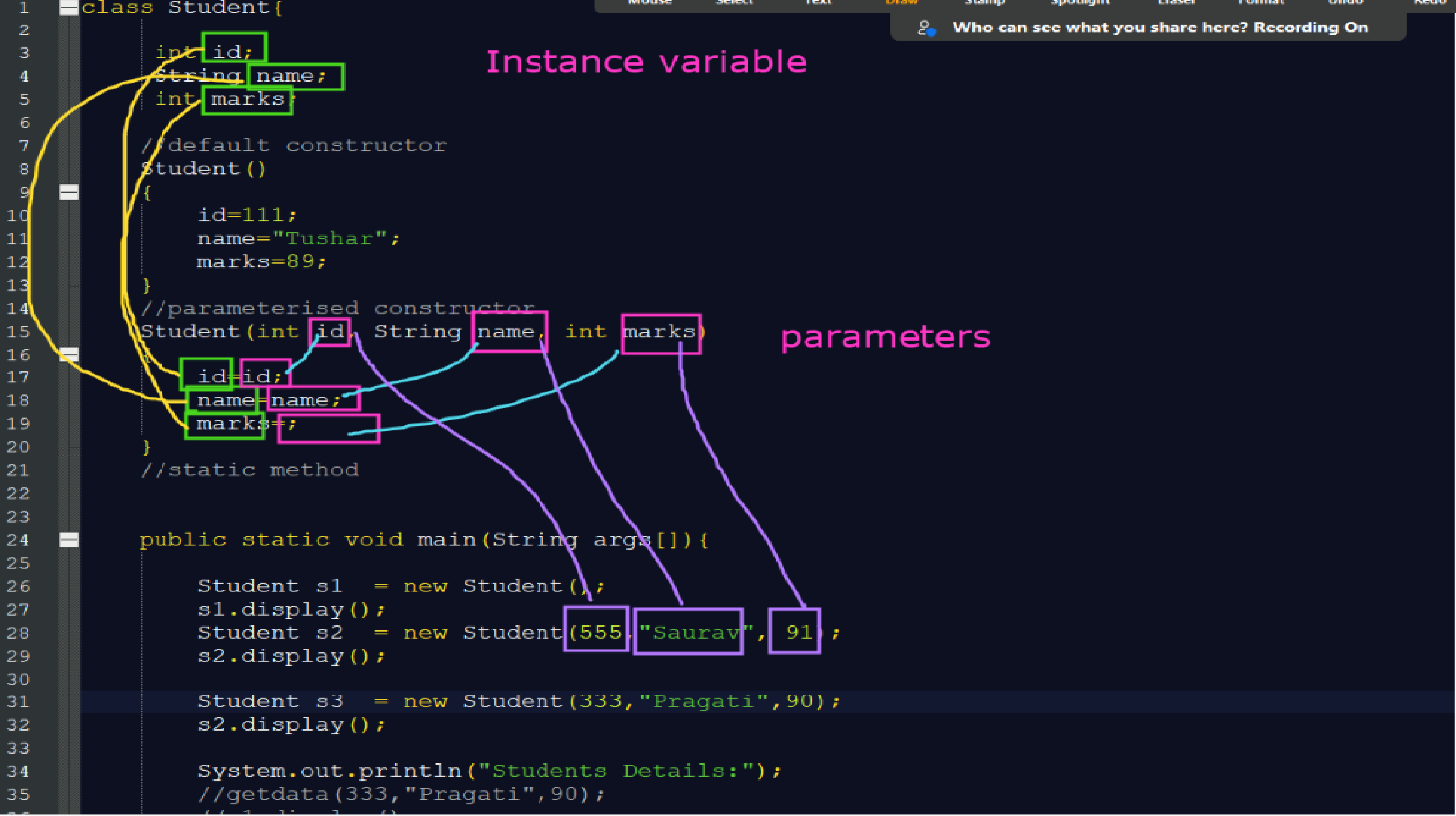
```
C:\Test>java Student
Students Details:
Id= 111
Name= Tushar
Marks= 89

C:\Test>javac Student.java

C:\Test>java Student
Id= 555
Name= Saurav
Marks= 91
Students Details:

C:\Test>
```



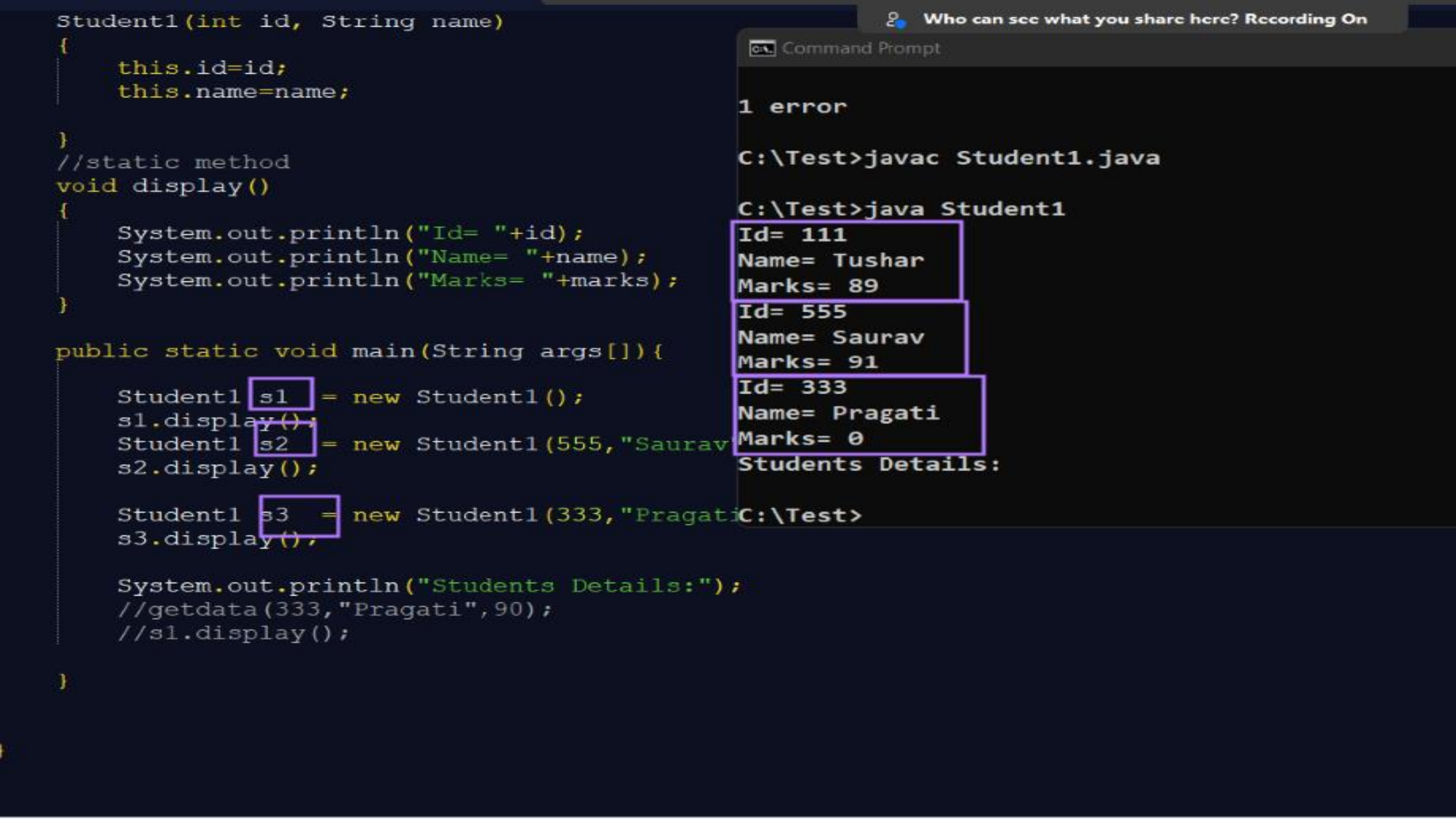
Who can see what you share here? Recording On

```
    id=111;
    name="Tushar";
    marks=89;
}
//parameterised constructor
Student(int s1, String s2, int s3)
{
    id=s1;
    name=s2;
    marks=s3;
}
//static method
static void getdata(int id1, String name1, int marks
{
    id=id1;
    name=name1;
    marks=marks1;
}
//non-static method
void display()
{
    System.out.println("Id= "+id);
    System.out.println("Name= "+name);
    System.out.println("Marks= "+marks);
}

public static void main(String args[]){

    Student s1  = new Student();
    s1.display();
    Student s2  = new Student(555,"Saurav", 91);
    s1.display();

    System.out.println("Students Details:");
    //getdata(333,"Pragati",90);
```

```
Marks= 91
Students Details:

C:\Test>javac Student.java

C:\Test>java Student
Id= 111
Name= Tushar
Marks= 89
Id= 555
Name= Saurav
Marks= 91
Students Details:

C:\Test>
```

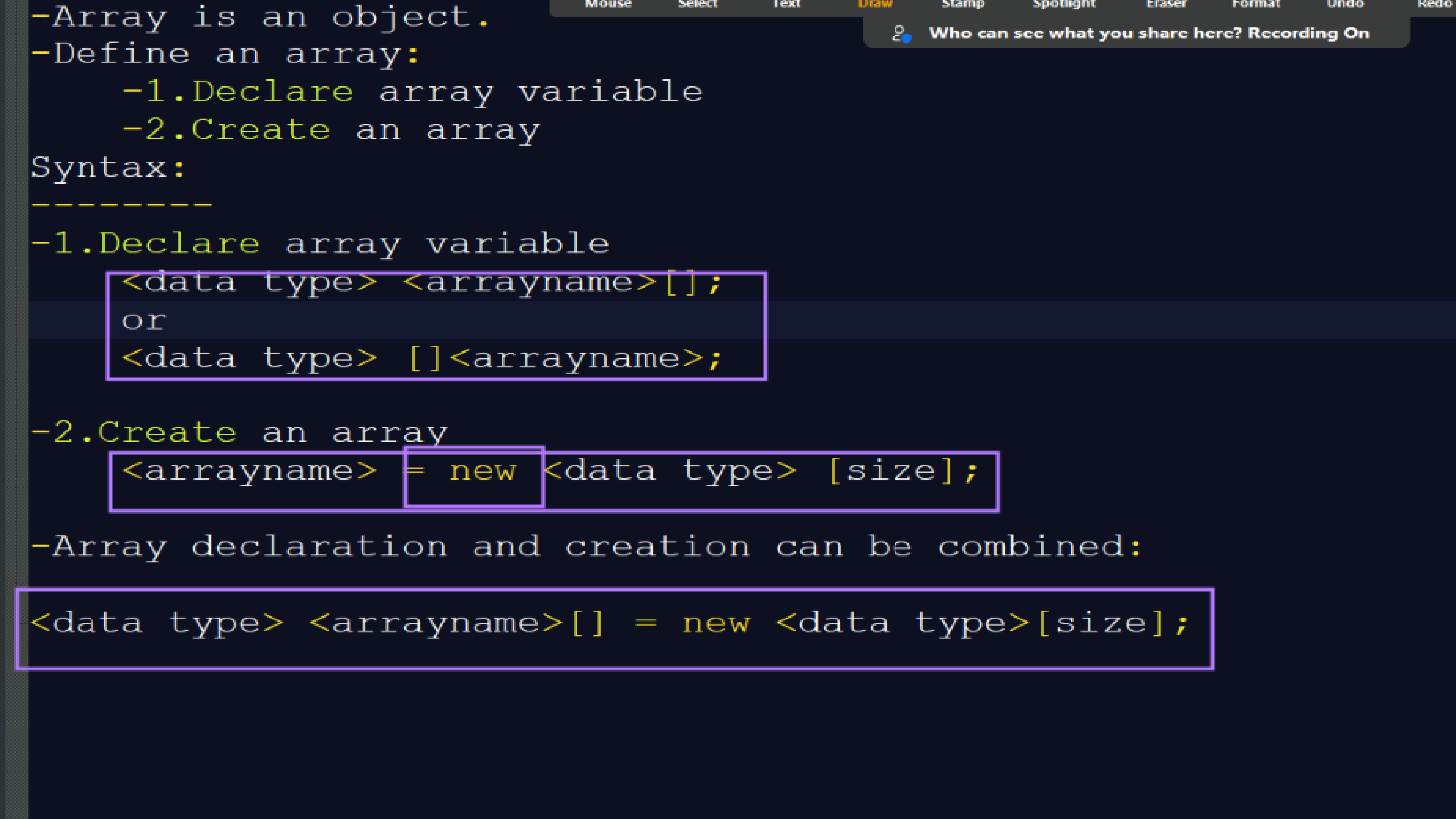


```
class Student{

     int id;
     String name;
     int marks;

    //default constructor
    Student()
    {
        id=111;
        name="Tushar";
        marks=89;
    }
    //parameterised constructor
    Student(int id, String name, int marks)
    {
        id=id;
        name=name;
        marks=;
    }
    //static method


    public static void main(String args[]){

        Student s1  = new Student();
        s1.display();
        Student s2  = new Student(555,"Saurav", 91);
        s2.display();

        Student s3  = new Student(333,"Pragati",90);
        s2.display();

        System.out.println("Students Details:");
        //getdata(333,"Pragati",90);
```

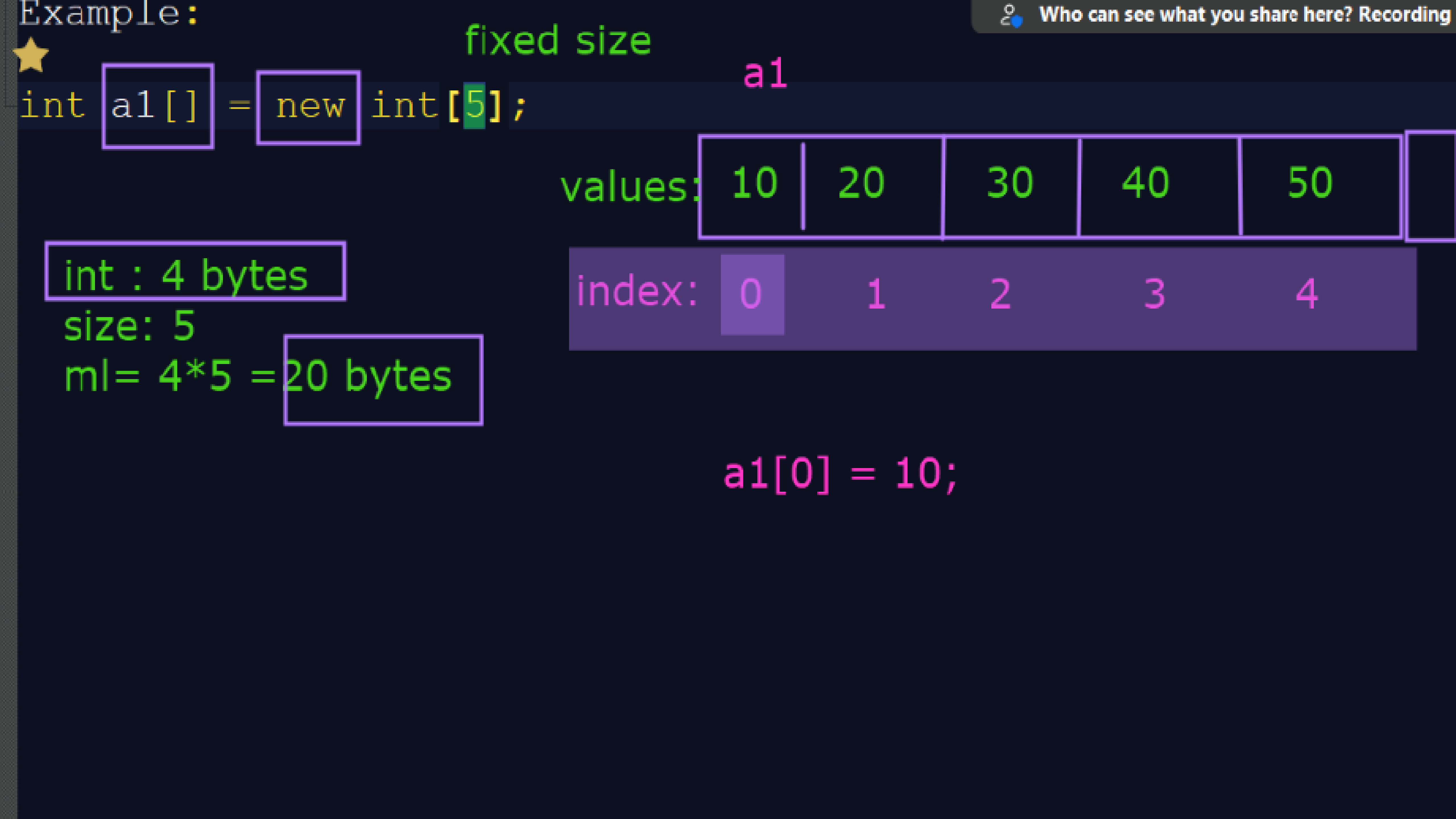


```java
    Student1(int id, String name)
    {
        this.id=id;
        this.name=name;

    }
    //static method
    void display()
    {
        System.out.println("Id= "+id);
        System.out.println("Name= "+name);
        System.out.println("Marks= "+marks);
    }

    public static void main(String args[]){

        Student1 s1 = new Student1();
        s1.display();
        Student1 s2 = new Student1(555,"Saurav
        s2.display();

        Student1 s3 = new Student1(333,"Pragati
        s3.display();

        System.out.println("Students Details:");
        //getdata(333,"Pragati",90);
        //s1.display();

    }

}
```

```
1 error

C:\Test>javac Student1.java

C:\Test>java Student1
Id= 111
Name= Tushar
Marks= 89
Id= 555
Name= Saurav
Marks= 91
Id= 333
Name= Pragati
Marks= 0
Students Details:

C:\Test>
```



```
-Array is an object.
-Define an array:
    -1.Declare array variable
    -2.Create an array
Syntax:
--------
-1.Declare array variable
    <data type> <arrayname>[];
    or
    <data type> []<arrayname>;

-2.Create an array
    <arrayname> = new <data type> [size];

-Array declaration and creation can be combined:

<data type> <arrayname>[] = new <data type>[size];
```



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Example:

fixed size

```
int a1[] = new int[5];
```

a1

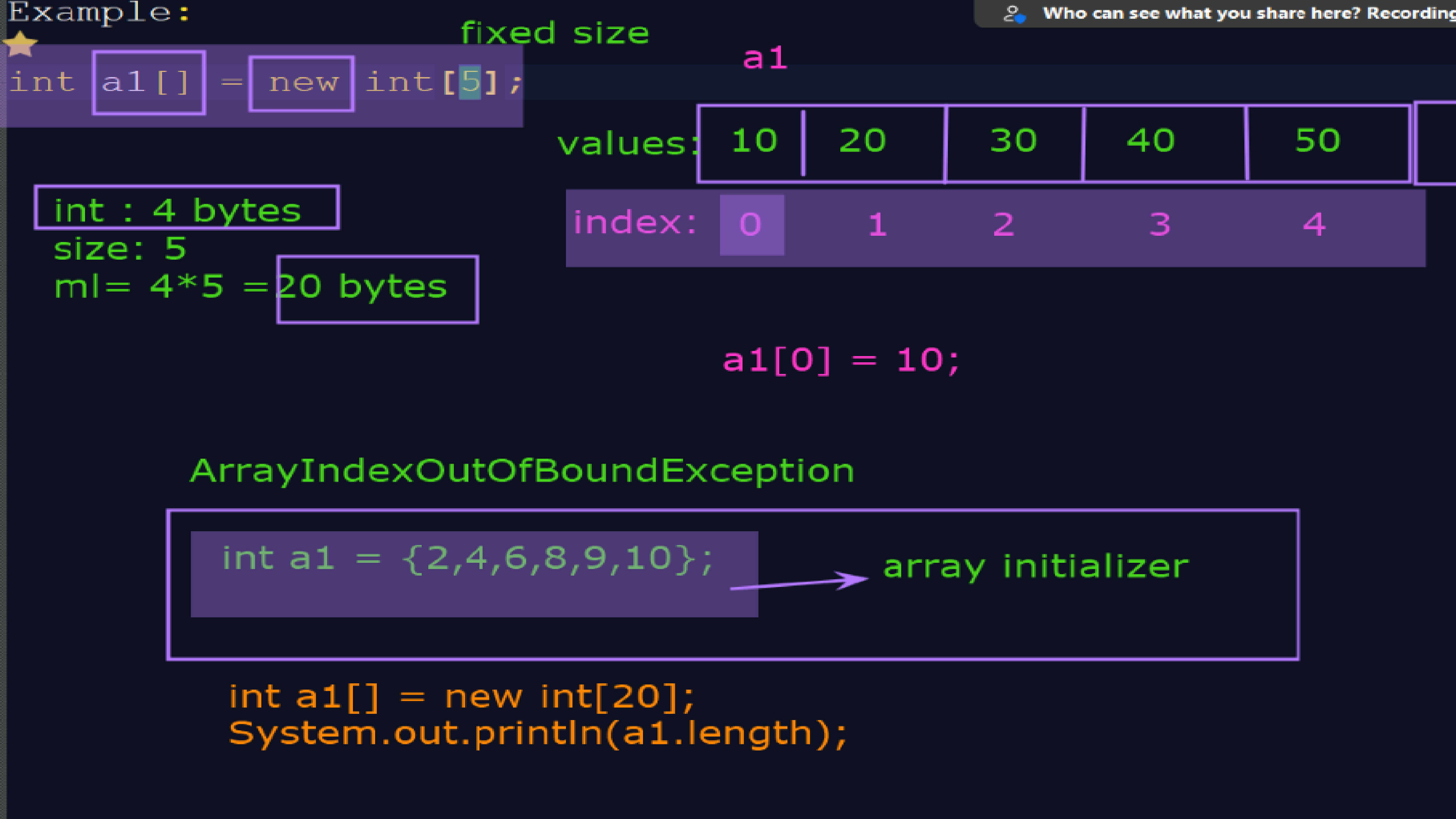
values:	10	20	30	40	50
index:	0	1	2	3	4

int : 4 bytes

size: 5

ml= 4*5 =20 bytes

```
a1[0] = 10;
```



Example:

fixed size

a1

```
int a1[] = new int[5];
```

values:	10	20	30	40	50
index:	0	1	2	3	4

int : 4 bytes
size: 5
ml= 4*5 =20 bytes

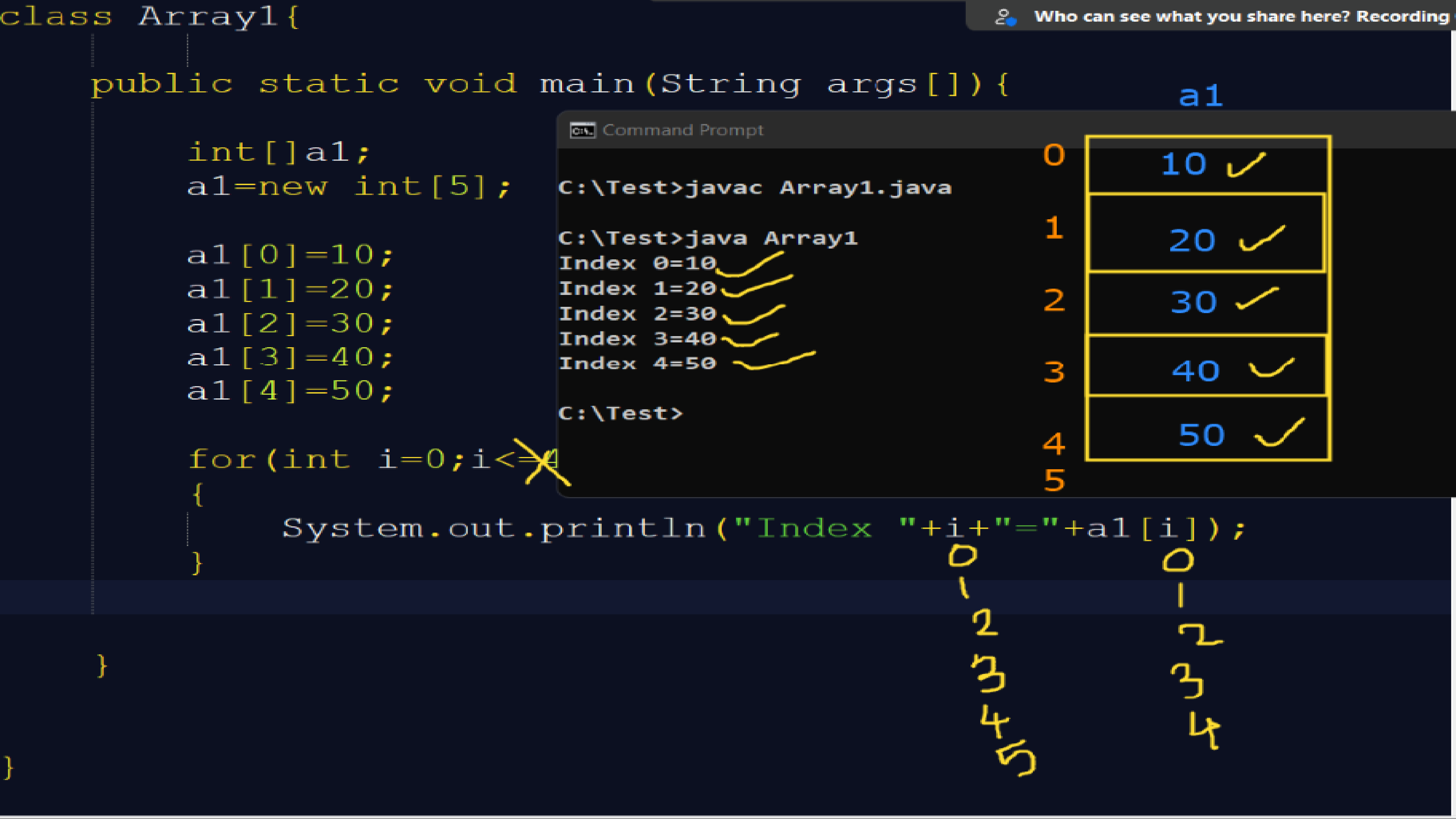
```
a1[0] = 10;
```

ArrayIndexOutOfBoundException

```
int a1 = {2,4,6,8,9,10};
```

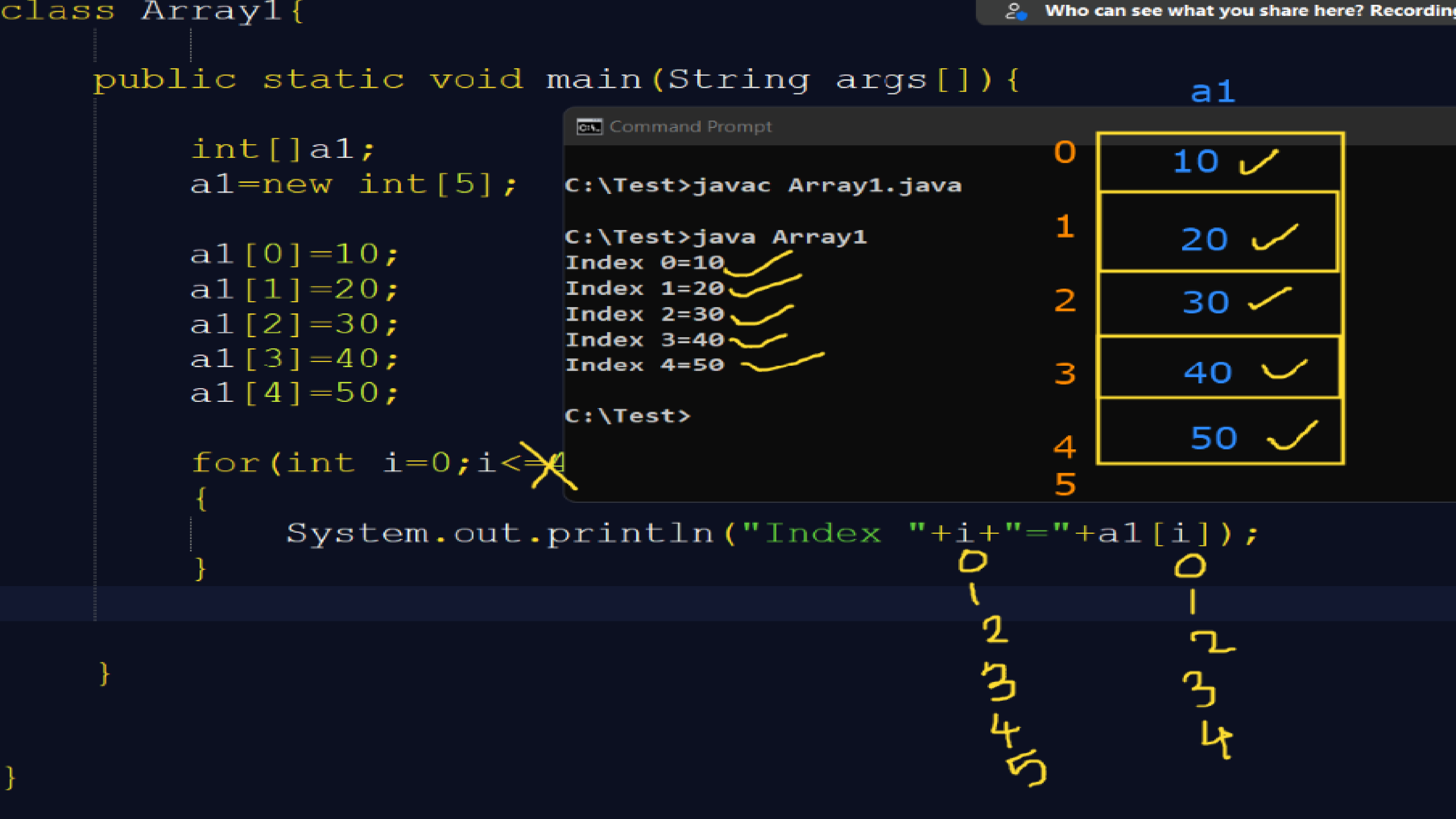
→ array initializer

```
int a1[] = new int[20];
System.out.println(a1.length);
```



```
class Array1{

    public static void main(String args[]){

        int[]a1;
        a1=new int[5];

        a1[0]=10;
        a1[1]=20;
        a1[2]=30;
        a1[3]=40;
        a1[4]=50;

        for(int i=0;i<=4
        {
            System.out.println("Index "+i+"="+a1[i]);
        }

    }

}
```

```
C:\Test>javac Array1.java

C:\Test>java Array1
Index 0=10
Index 1=20
Index 2=30
Index 3=40
Index 4=50

C:\Test>
```



```
class Array1{

    public static void main(String args[]){

        int[]a1;
        a1=new int[5];

        a1[0]=10;
        a1[1]=20;
        a1[2]=30;
        a1[3]=40;
        a1[4]=50;

        for(int i=0;i<~~=~~4
        {
            System.out.println("Index "+i+"="+a1[i]);
        }

    }

}
```

```
C:\Test>javac Array1.java

C:\Test>java Array1
Index 0=10
Index 1=20
Index 2=30
Index 3=40
Index 4=50

C:\Test>
```

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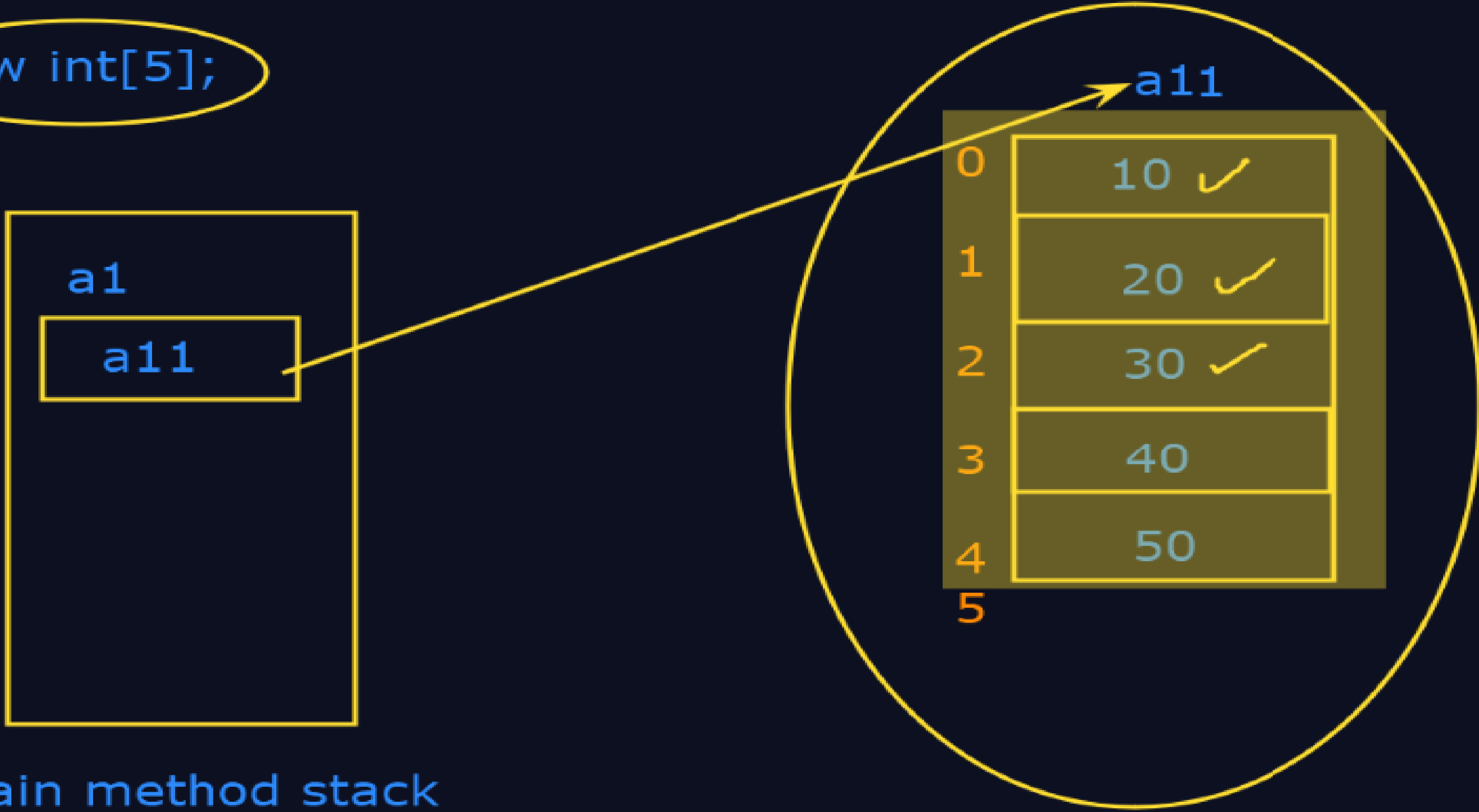
```
int a1[] = new int[5];
```



a1

a11

a11

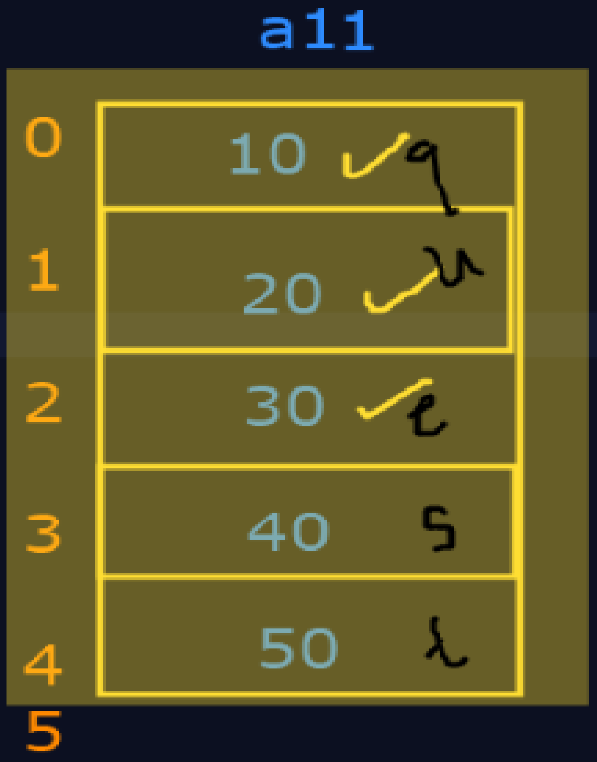
0	10 ✓
1	20 ✓
2	30 ✓
3	40
4	50
5	

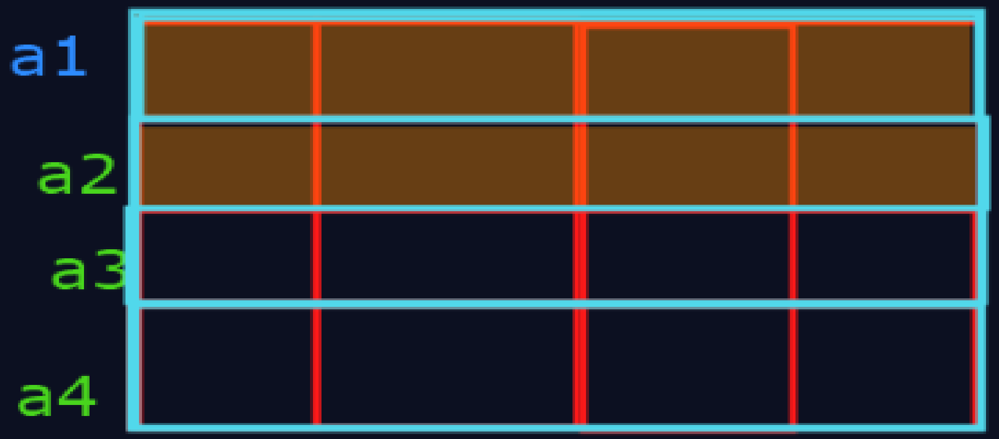
main method stack

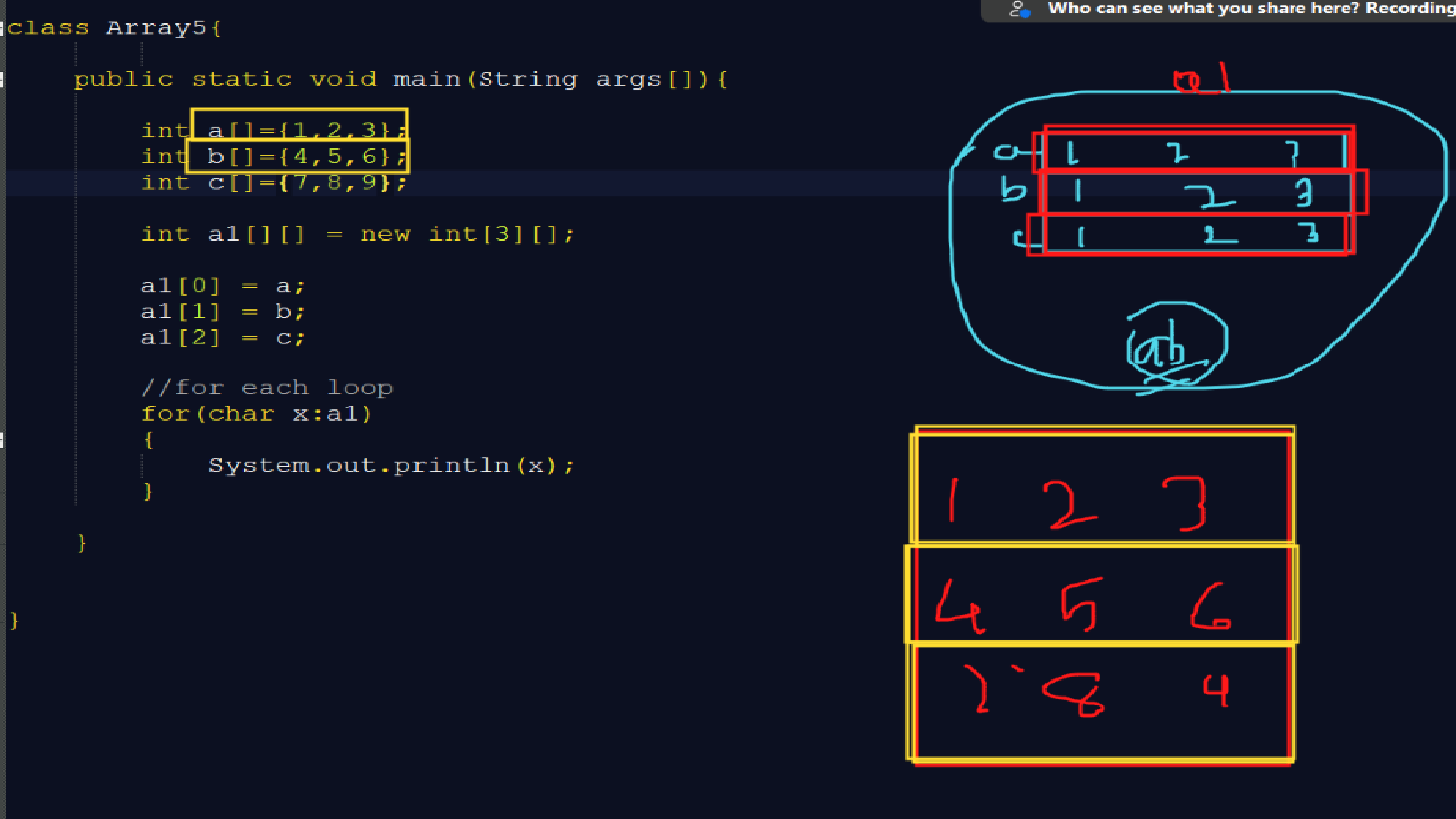
Who can see what you share here? Recording

```
a1 = new int[5];


2D dimensional:
------------------

int a1[][] = new int[5][5];


<data type> <arrayname>[][] = new <data type>[row][col];
```

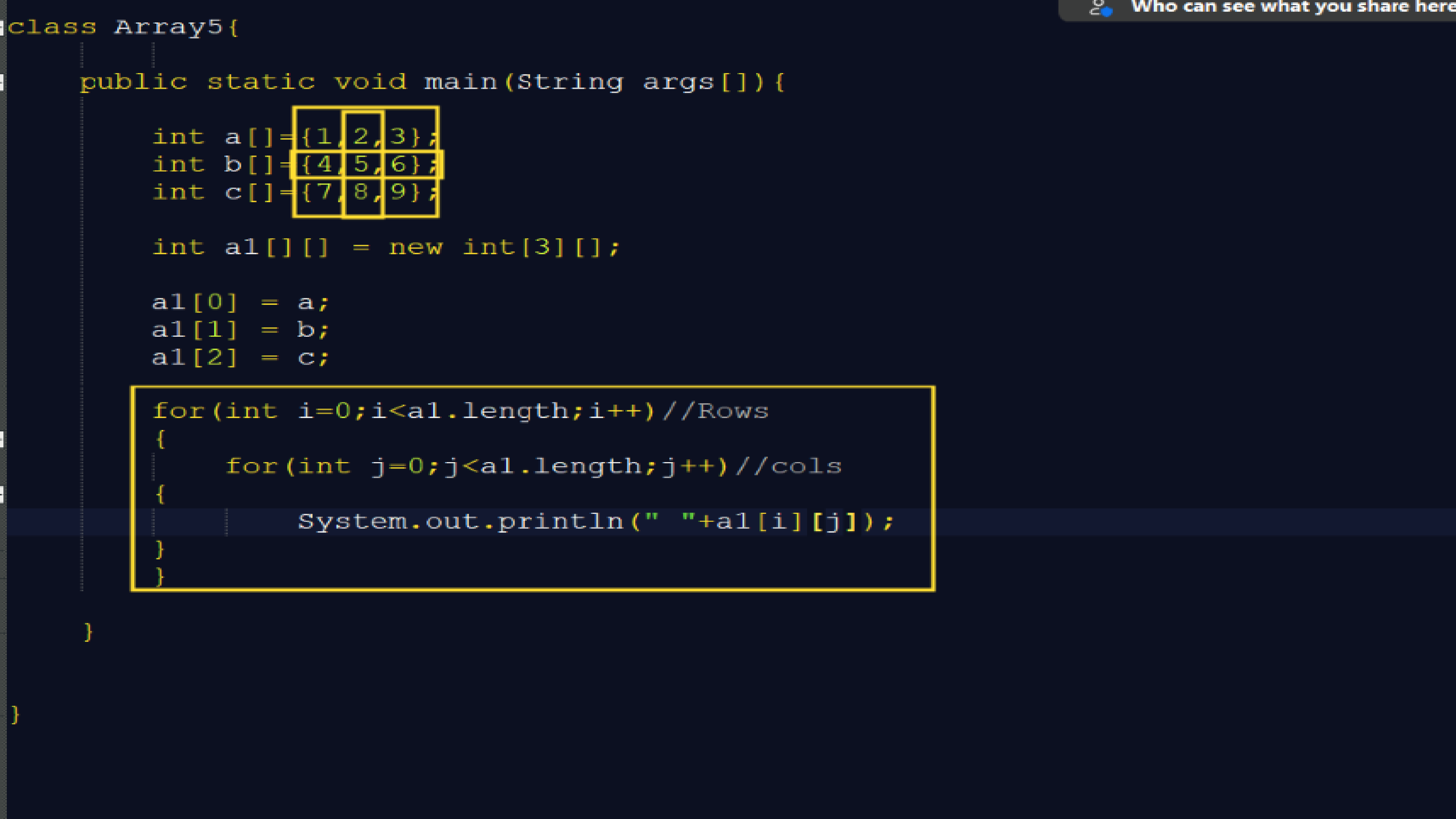
row: no of arrays in the 2D array
col: no of elements present in each array



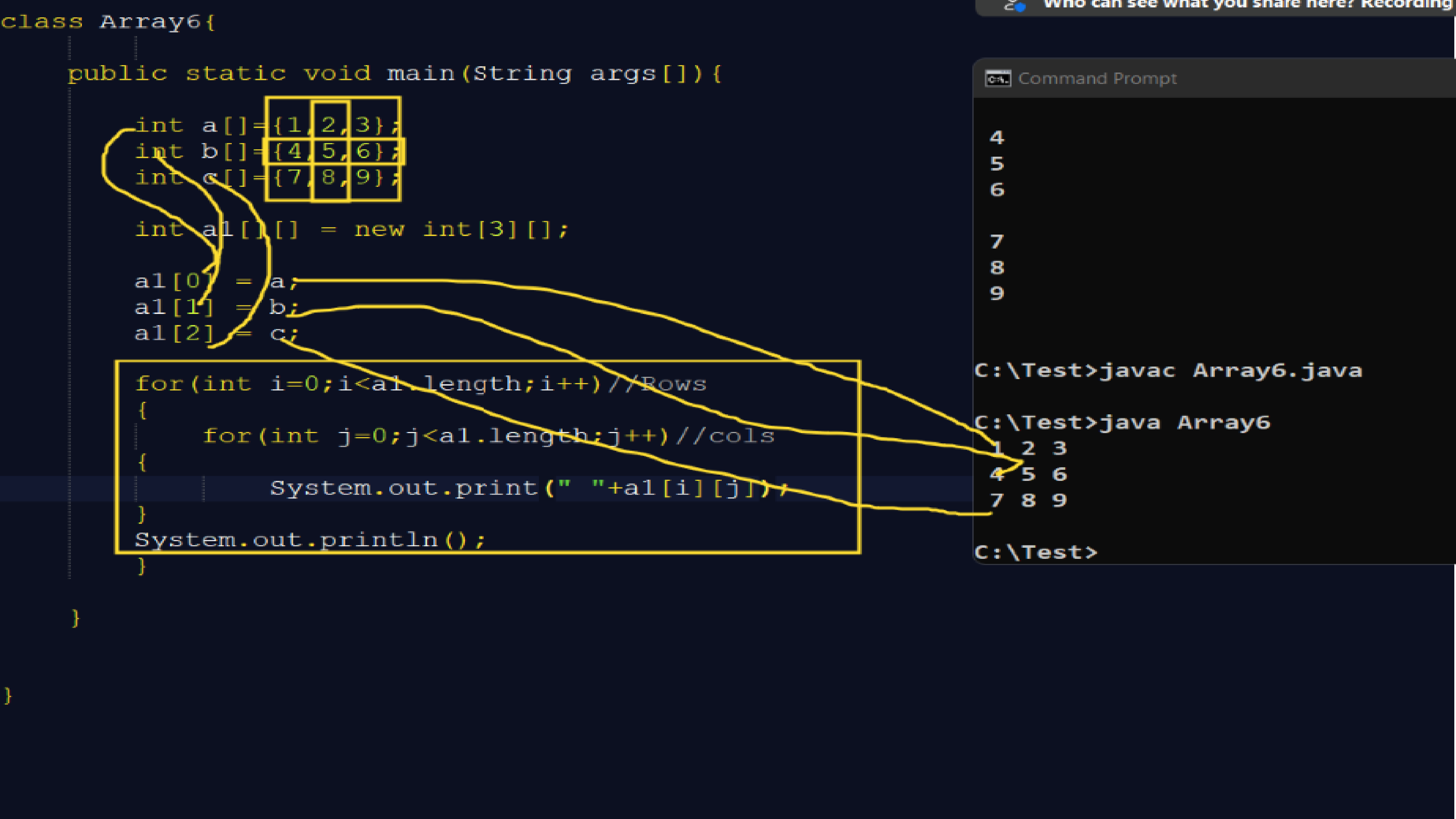




```
class Array5{

    public static void main(String args[]){

        int a[]={1,2,3};
        int b[]={4,5,6};
        int c[]={7,8,9};

        int a1[][] = new int[3][];

        a1[0] = a;
        a1[1] = b;
        a1[2] = c;

        //for each loop
        for(char x:a1)
        {
            System.out.println(x);
        }

    }


}
```



```
class Array5{

    public static void main(String args[]){

        int a[]={1,2,3};
        int b[]={4,5,6};
        int c[]={7,8,9};

        int a1[][] = new int[3][];

        a1[0] = a;
        a1[1] = b;
        a1[2] = c;

        for(int i=0;i<a1.length;i++)//Rows
        {
            for(int j=0;j<a1.length;j++)//cols
        {
                System.out.println(" "+a1[i][j]);
        }
        }

    }


}
```



```
class Array6{

    public static void main(String args[]){

        int a[]={1,2,3};
        int b[]={4,5,6};
        int c[]={7,8,9};

        int a1[][] = new int[3][];

        a1[0] = a;
        a1[1] = b;
        a1[2] = c;

        for(int i=0;i<a1.length;i++)//Rows
        {
            for(int j=0;j<a1.length;j++)//cols
        {
                System.out.print(" "+a1[i][j]);
        }
        System.out.println();
        }

    }


}
```

```
 4
 5
 6

 7
 8
 9


C:\Test>javac Array6.java

C:\Test>java Array6
 1 2 3
 4 5 6
 7 8 9

C:\Test>
```