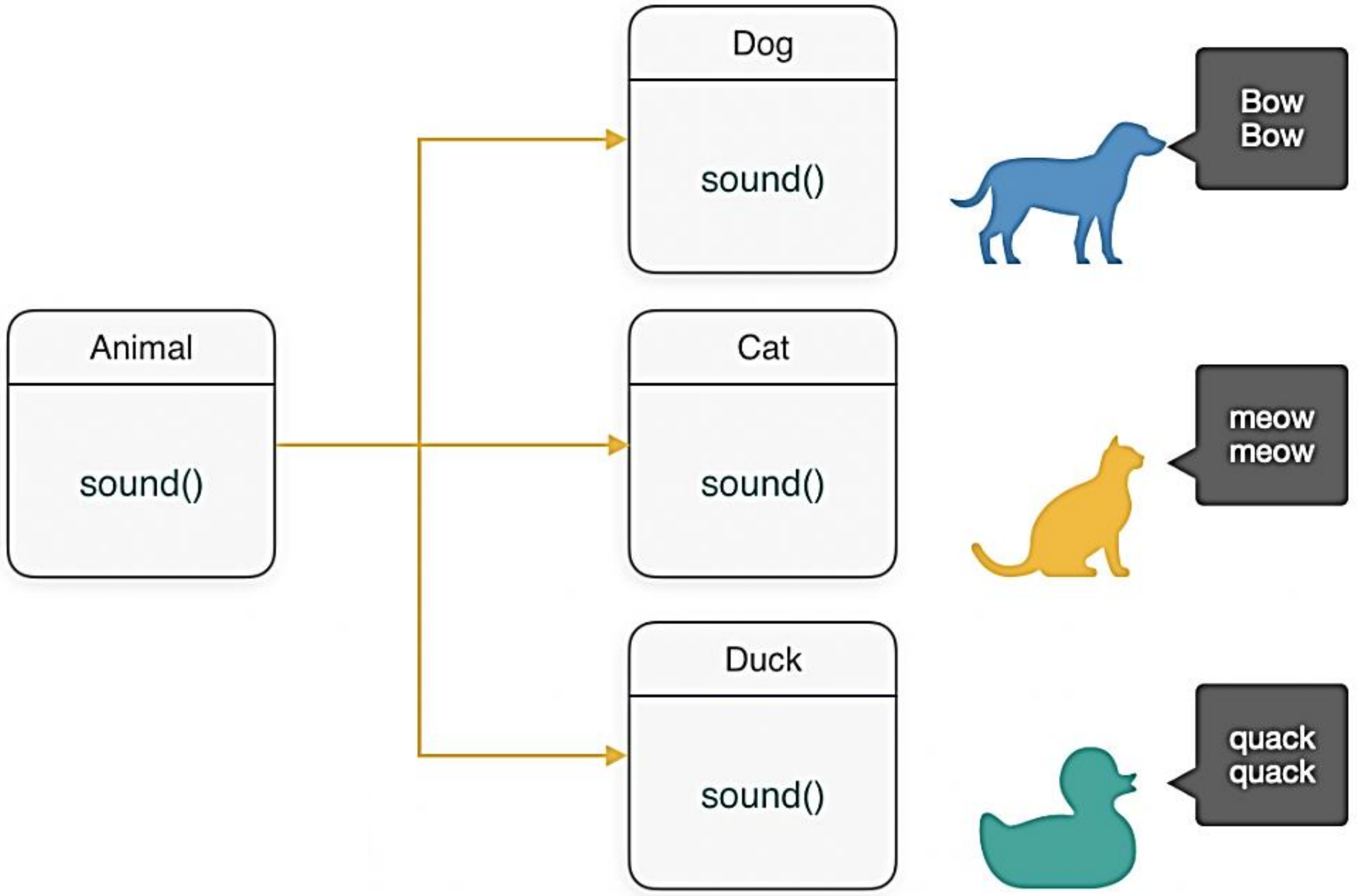
POLYMORPHISM

(METHOD OVERLOADING)



IN THE NAME OF ALLAH

بسم الله الرحمن الرحيم

THE GRACIOUS, THE MERCIFUL.

GETS - GETTING EDUCATION WITH TECHNOLOGICAL SYSTEM

Instructor: Sir A.Rehman Ali Brohi

LECTURE: 8
Polymorphism in java

What is Polymorphism?

Poly	**Morphism**
(many)	**(forms)**

Shapes: circle, square, triangle etc.
Sound: bark, roar etc
Water: solid, liquid, gas

polymorphism in Java allows us to perform the same action in many different ways

Types of Polymorphism

1. Compile-time/Static Polymorphism

Method Overloading

Compiler handle it

1. Run-Time/Dynamic Polymorphism

Method Overriding

JVM handle it

Method Overloading

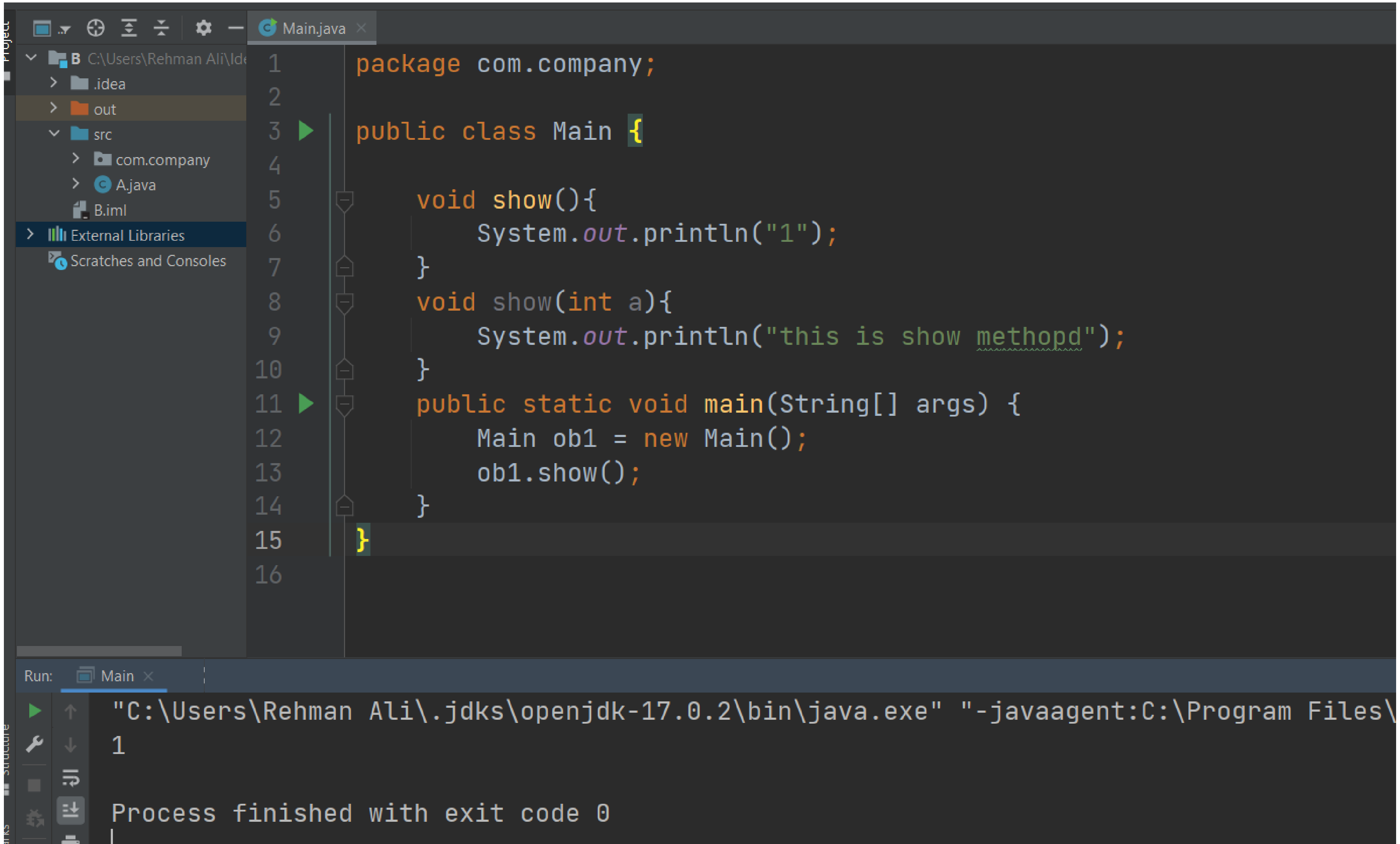
1.Same Name
2.Same Class
3.Different Arguments
    -No of Arg
    -Seg of Arg
    -Types of Arg

Method Overriding

1. Same Name
2. Different Class
3. Same Arguments
    -No of Arg
    -Seg of Arg
    -Types of Arg
4. Inheritance (IS-A)

In this exercise we will practice with method overloading

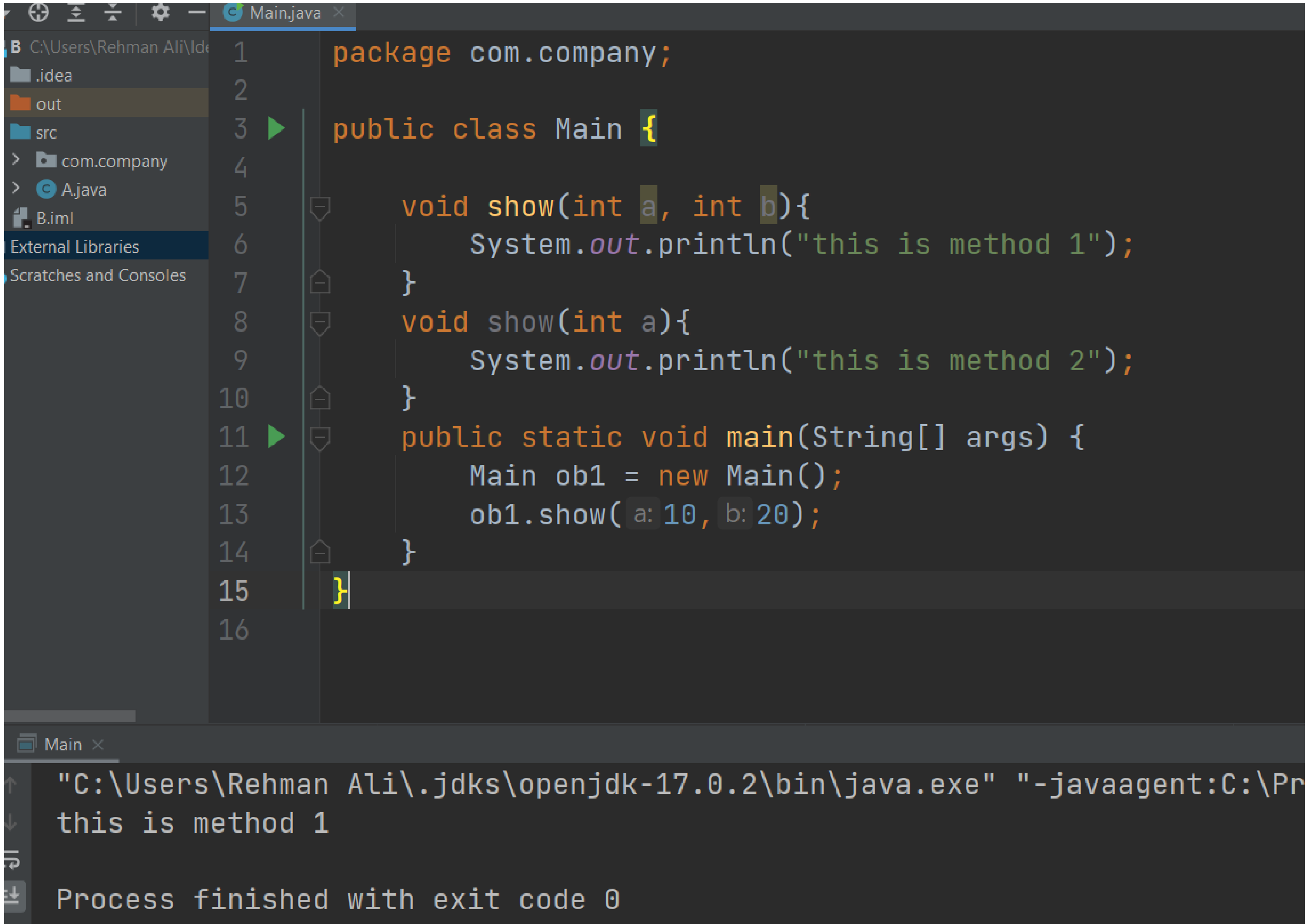
Program to create same-class and same-method but different-in-arg it is known as Polymorphism



```java
package com.company;

public class Main {

    void show(){
        System.out.println("1");
    }
    void show(int a){
        System.out.println("this is show methopd");
    }
    public static void main(String[] args) {
        Main ob1 = new Main();
        ob1.show();
    }
}
```

```
"C:\Users\Rehman Ali\.jdks\openjdk-17.0.2\bin\java.exe" "-javaagent:C:\Program Files\
1

Process finished with exit code 0
```

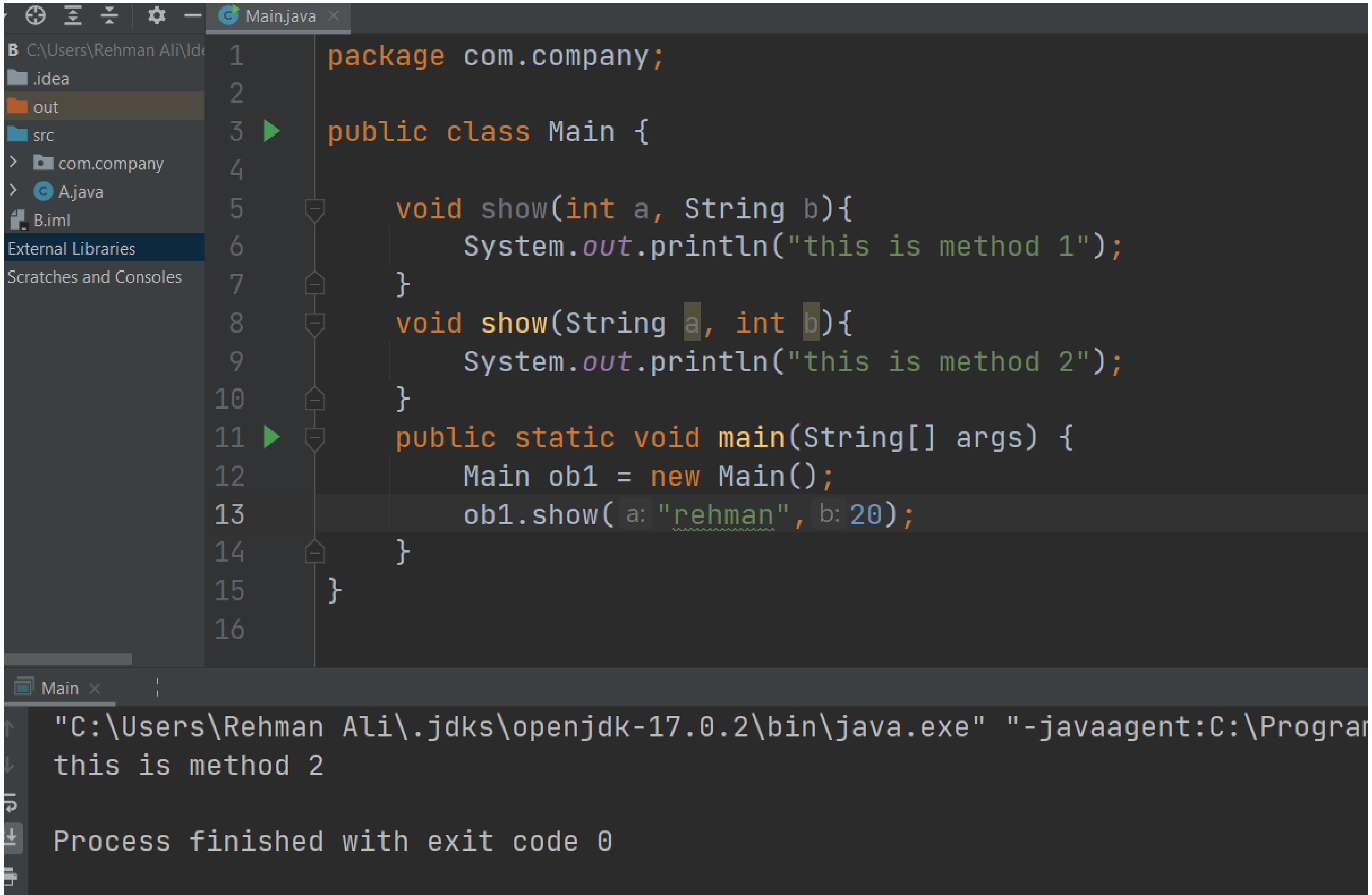
Program to change the No of arguments



```java
package com.company;

public class Main {

    void show(int a, int b){
        System.out.println("this is method 1");
    }
    void show(int a){
        System.out.println("this is method 2");
    }
    public static void main(String[] args) {
        Main ob1 = new Main();
        ob1.show( a: 10, b: 20);
    }
}
```

```
"C:\Users\Rehman Ali\.jdks\openjdk-17.0.2\bin\java.exe" "-javaagent:C:\Pr
this is method 1

Process finished with exit code 0
```

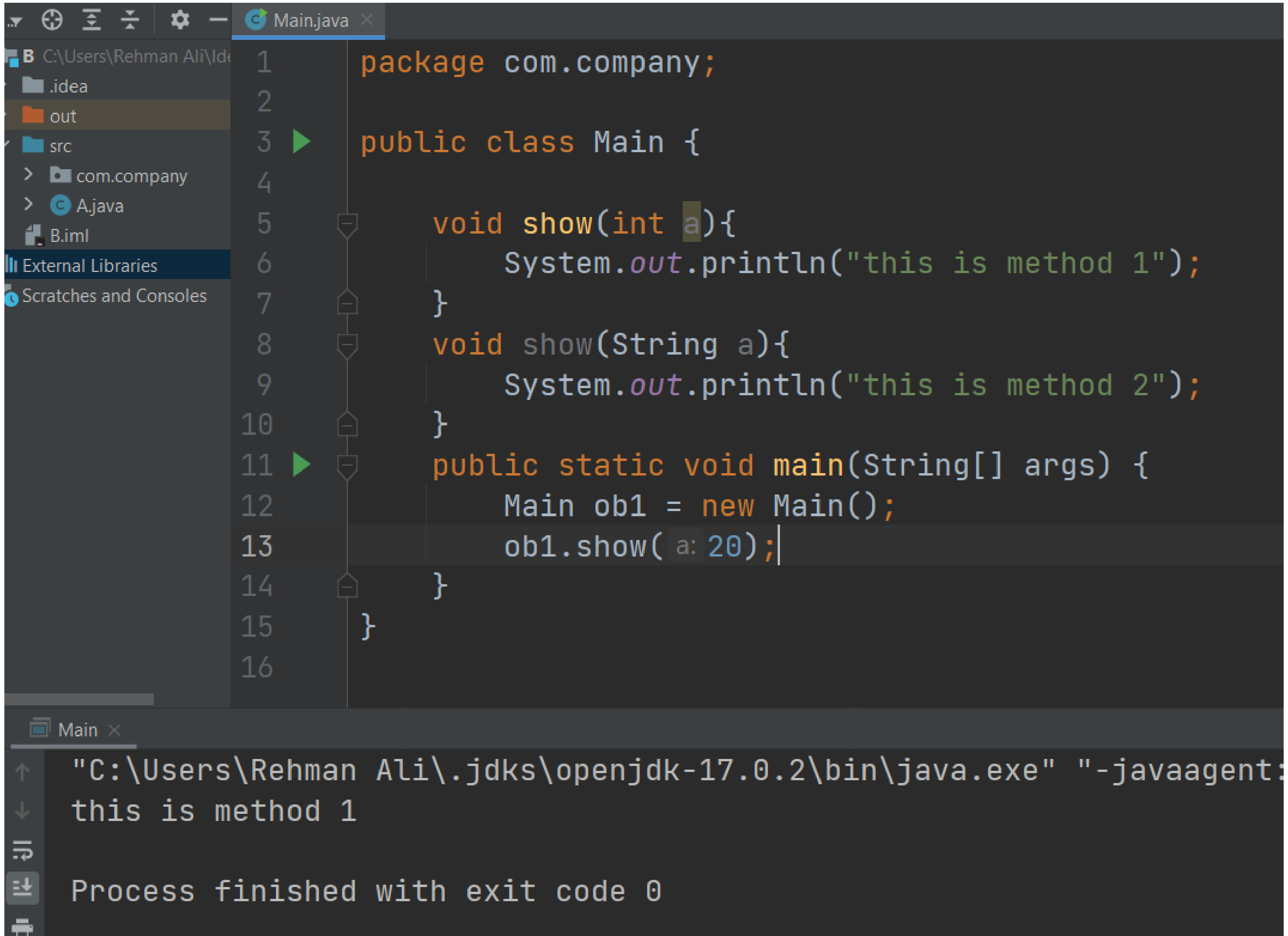
Program to change the Seg of arguments



```java
package com.company;

public class Main {

    void show(int a, String b){
        System.out.println("this is method 1");
    }
    void show(String a, int b){
        System.out.println("this is method 2");
    }
    public static void main(String[] args) {
        Main ob1 = new Main();
        ob1.show( a: "rehman", b: 20);
    }
}
```

```
"C:\Users\Rehman Ali\.jdks\openjdk-17.0.2\bin\java.exe" "-javaagent:C:\Progra
this is method 2

Process finished with exit code 0
```

Program to change the Type of arguments



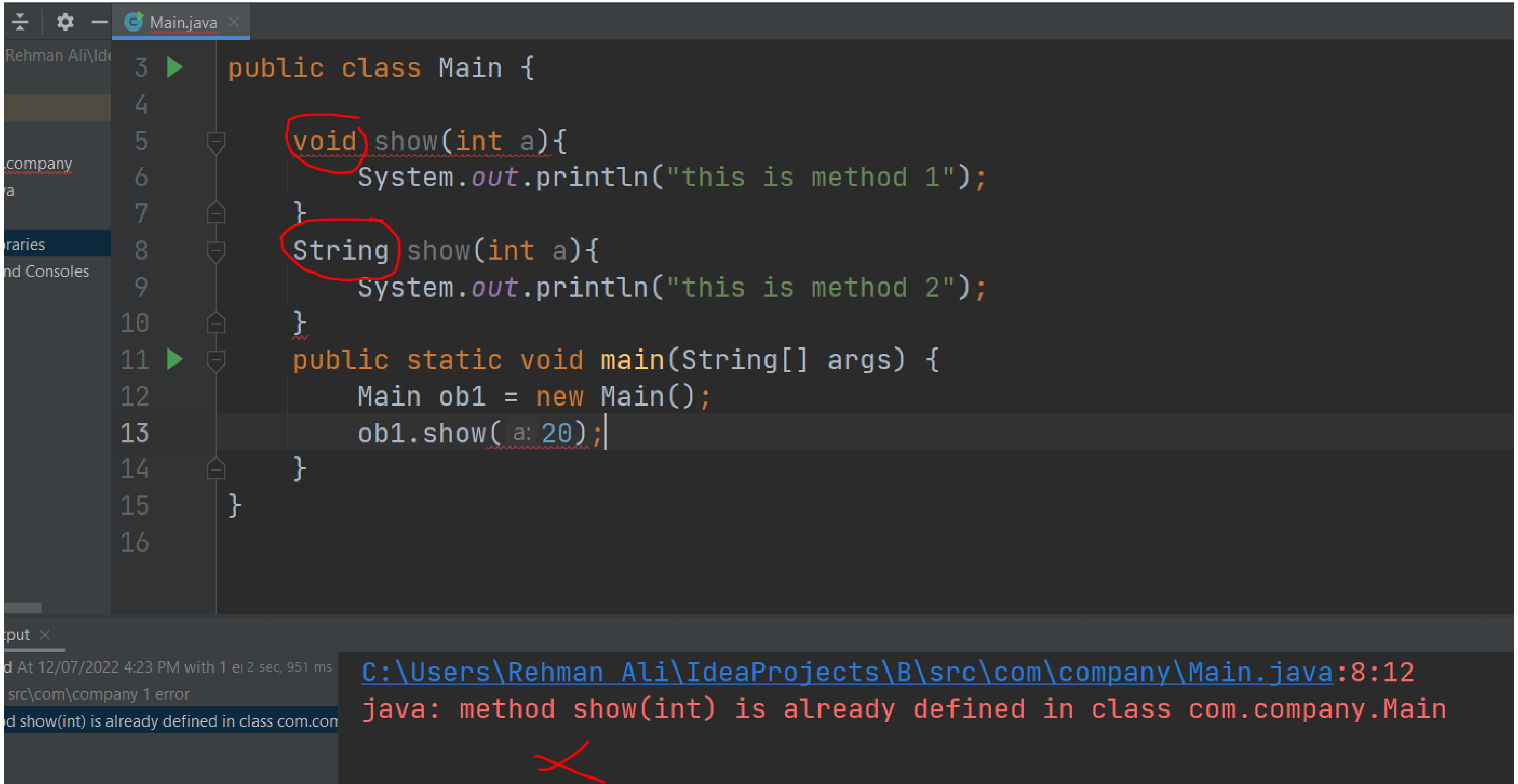
```java
package com.company;

public class Main {

    void show(int a){
        System.out.println("this is method 1");
    }
    void show(String a){
        System.out.println("this is method 2");
    }
    public static void main(String[] args) {
        Main ob1 = new Main();
        ob1.show( a: 20);
    }
}
```

```
"C:\Users\Rehman Ali\.jdks\openjdk-17.0.2\bin\java.exe" "-javaagent:
this is method 1

Process finished with exit code 0
```

IMPORTANT NOTE (useful interview questions)

1. Can we achieve method overloading by changing return type of method only.
2. Can we overload java main() method?

1. Answer is NO



Main.java

Rehman Ali\Ide

.company

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nd Consoles

```java
public class Main {

    void show(int a){
        System.out.println("this is method 1");
    }
    String show(int a){
        System.out.println("this is method 2");
    }
    public static void main(String[] args) {
        Main ob1 = new Main();
        ob1.show( a: 20);
    }
}
```

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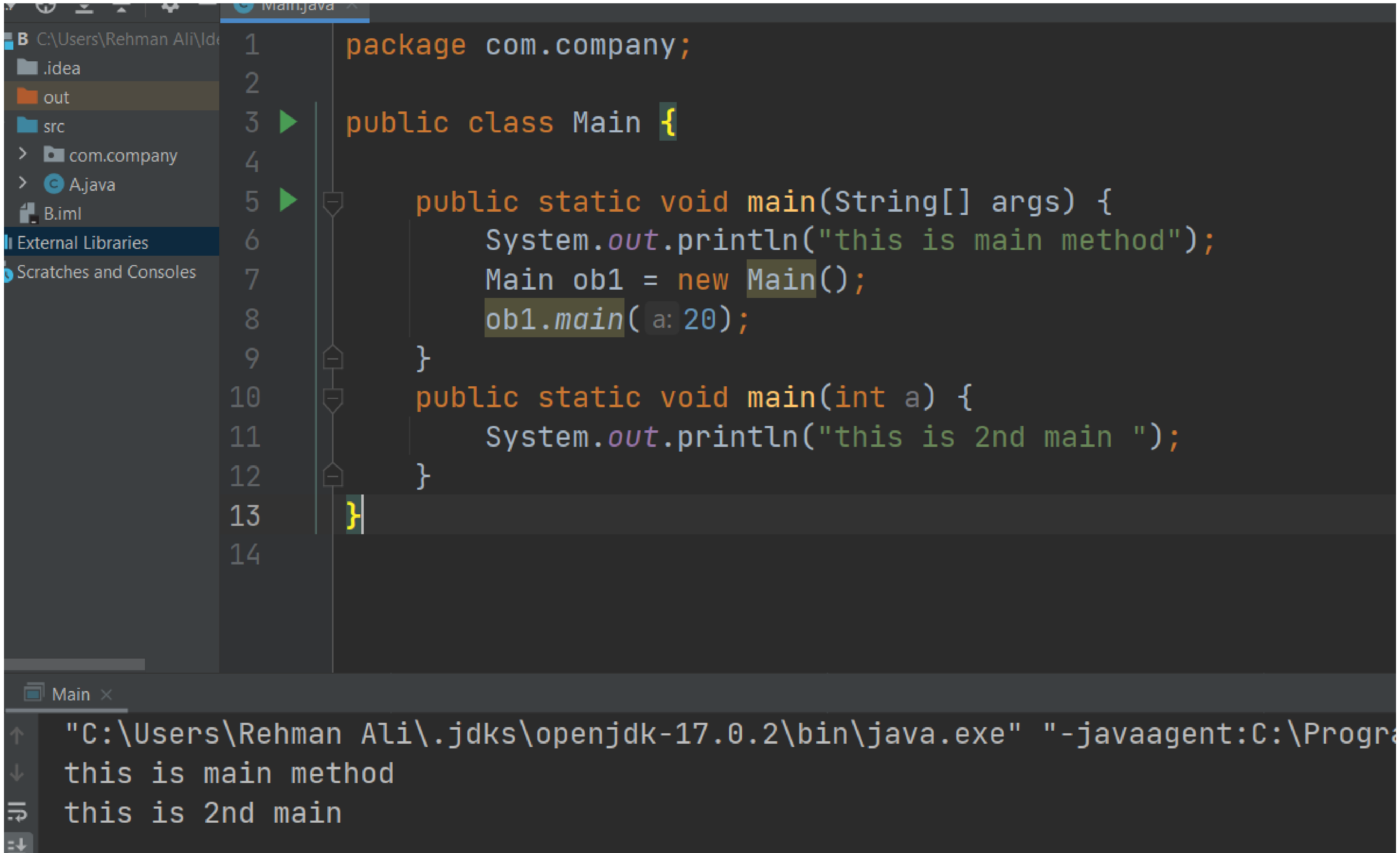
src\com\company 1 error

d show(int) is already defined in class com.com

```
C:\Users\Rehman Ali\IdeaProjects\B\src\com\company\Main.java:8:12
java: method show(int) is already defined in class com.company.Main
```

2. Answer is YES



Main.java

B C:\Users\Rehman Ali\Ide
.idea
out
src
com.company
A.java
B.iml
External Libraries
Scratches and Consoles

```java
package com.company;

public class Main {

    public static void main(String[] args) {
        System.out.println("this is main method");
        Main ob1 = new Main();
        ob1.main( a: 20);
    }
    public static void main(int a) {
        System.out.println("this is 2nd main ");
    }
}
```

Main

```
"C:\Users\Rehman Ali\.jdks\openjdk-17.0.2\bin\java.exe" "-javaagent:C:\Progr
this is main method
this is 2nd main
```