

# VIT<sup>®</sup>

**Vellore Institute of Technology**  
(Deemed to be University under section 3 of UGC Act, 1956)

## **Computer Programming Java**

### **MOODLE LAB TASK 6**

**Faculty: Sathya Raj R**

**Slot: L3+L4+L29+L30**

**Venue: SJT 515**

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## Exception Handling

**Q1. How can you modify Code 1 to handle a potential `ArrayIndexOutOfBoundsException` in addition to the existing `ArithmeticException`?**

### CODE:

```
public class Expdemo_1 {  
    public static void main(String args[]) {  
        int a = 10, b = 0, c = 0;  
  
        try {  
            c = a / b;  
        } catch (ArithmeticException e) {  
            System.err.println("x: " + e);  
        }  
  
        System.out.println("value " + c);  
        System.out.println("x: " + "End");  
    }  
}
```

## OUTPUT:

```
Exceptionhandling.java > J Expdemo_1.java > ⚙ Expdemo_1 > 📄 main(String[])
1  public class Expdemo_1 {
    Run | Debug
2      public static void main(String args[]) {
3          int a = 10, b = 0, c = 0;
4
5          try {
6              c = a / b;
7          } catch (ArithmeticException e) {
8              System.err.println("x: " + e);
9          }
10
11         System.out.println("value " + c);
12         System.out.println("x: " + "End");
13     }
14 }
```

```
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\New folder\MyJavaProject\Exceptionhandling.java> cd "c:\Users\Soumyojyoti Saha\OneDrive
Project\Exceptionhandling.java\" ; if ($?) { javac Expdemo_1.java } ; if ($?) { java Expdemo_1 }
x: java.lang.ArithmeticException: / by zero
value 0
x: End
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\New folder\MyJavaProject\Exceptionhandling.java> █
```

**Q2. How can you modify Code 2 to handle a potential `ArrayIndexOutOfBoundsException` in addition to the existing `ArithmeticException` and `NullPointerException`?**

## CODE:

```
public class Expdemo_2 {
    public static void main(String[] args) {
        int a = 10, b = 0, c = 0;
```

```
int[] arr = null;

try {
    c = a / b;
    System.out.println(arr[1]);
} catch (ArithmeticException e) {
    System.out.println("x: Arithmetic Exception Error");
} catch (NullPointerException e) {
    System.out.println("x: Null Pointer Exception Error");
} catch (Exception e) {
    System.out.println("x: ERROR");
} finally {
    System.out.println("x: FINAL");
}

System.out.println("value " + c);
System.out.println("x: End");
}
}
```

## OUTPUT:

```
Exceptionhandling.java > J Expdemo_2.java > Expdemo_2 > main(String[])
1 public class Expdemo_2 {
2     Run | Debug
3     public static void main(String[] args) {
4         int a = 10, b = 0, c = 0;
5         int[] arr = null;
6
7         try {
8             c = a / b;
9             System.out.println(arr[1]);
10        } catch (ArithmeticException e) {
11            System.out.println(x:"x: Arithmetic Exception Error");
12        } catch (NullPointerException e) {
13            System.out.println(x:"x: Null Pointer Exception Error");
14        } catch (Exception e) {
15            System.out.println(x:"x: ERROR");
16        } finally {
17            System.out.println(x:"x: FINAL");
18        }
19
20        System.out.println("value " + c);
21        System.out.println(x:"x: End");
22    }
}
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\New folder\MyJavaProject> cd "c:\Users\Soumyojyoti Saha\OneDrive -
Exceptionhandling.java\" ; if ($?) { javac Expdemo_2.java } ; if ($?) { java Expdemo_2 }
x: Arithmetic Exception Error
x: FINAL
value 0
x: End
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\New folder\MyJavaProject\Exceptionhandling.java>
```

### **Q3. Create a user-defined exception and catch it.**

#### **CODE:**

```
class MyException extends Exception {  
    public MyException(String s) {  
        // Call constructor of parent Exception  
        super(s);  
    }  
}  
  
// A Class that uses the above MyException  
public class Main {  
    // Driver Program  
    public static void main(String[] args) {  
        try {  
            // Throw an object of user defined exception  
            throw new MyException("GeeksGeeks");  
        }  
        catch (MyException ex) {  
            System.out.println("Caught");  
            // Print the message from MyException object  
            System.out.println(ex.getMessage());  
        }  
    }  
}
```

```
J Example1.java J ExceptionExample1.java J Main.java X
Exceptionhandling > J Main.java > Main > main(String[])
1 // User-Defined Exception Handling
2 // Example 1:
3 // Question: Create a user-defined exception and catch it.
4
5 // A Class that represents user-defined exception
6 class MyException extends Exception {
7     public MyException(String s) {
8         // Call constructor of parent Exception
9         super(s);
10    }
11 }
12
13 // A Class that uses the above MyException
14 public class Main {
15     // Driver Program
16     public static void main(String[] args) {
17         try {
18             // Throw an object of user defined exception
19             throw new MyException(s:"GeeksGeeks");
20         }
21         catch (MyException ex) {
22             System.out.println(x:"Caught");
23             // Print the message from MyException object
24             System.out.println(ex.getMessage());
25         }
26     }
27 }
28
```

## OUTPUT:

```
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive
g\" ; if ($?) { javac Main.java } ; if ($?) { java Main }
Caught
GeeksGeeks
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7\Exceptionhandling>
```

**Q4. Throw and catch a user-defined exception without a message.**

**CODE:**

```
class MyException extends Exception { }

// A Class that uses the above MyException
public class setText {
    // Driver Program
    public static void main(String[] args) {
        try {
            // Throw an object of user defined exception
            throw new MyException();
        }
        catch (MyException e) {
            System.out.println("Caught");
        }
    }
}
```



Exceptionhandling > J setText.java > ...

```
1 // Example 2:
2 // Question: Throw and catch a user-defined exception without a message.
3
4 // A Class that represents user-defined exception
5 class MyException extends Exception {}
6
7 // A Class that uses the above MyException
8 public class setText {
9     // Driver Program
10    Run | Debug
11    public static void main(String[] args) {
12        try {
13            // Throw an object of user defined exception
14            throw new MyException();
15        }
16        catch (MyException e) {
17            System.out.println(x:"Caught");
18        }
19    }
20 }
```

## OUTPUT:

PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
● PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7"
$?) { java setText }
Caught
○ PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7\Exceptionhandling>
```

**Q5. Create a custom exception to check the validity of an age for voting.**

**CODE:**

```
import java.util.Scanner;

class InvalidAgeException extends Exception {
    public InvalidAgeException(String str) {
        // calling the constructor of parent Exception
        super(str);
    }
}

// Class that uses custom exception InvalidAgeException
class TestCustomException1new {
    // method to check the age
    static void validate(int age) throws InvalidAgeException {
        if (age < 18) {
            // throw an object of user defined exception
            throw new InvalidAgeException("\n age is not valid to vote");
        } else {
            System.out.println("Welcome to vote");
        }
    }

    public static void main(String[] args) {
        try {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the age: ");
        }
    }
}
```

```

        int age = sc.nextInt();

        validate(age);
    }

    catch (InvalidAgeException ex) {

        System.out.println("Caught the exception");

        // printing the message from InvalidAgeException object

        System.out.println("Exception occurred: " + ex);

    }

    System.out.println("rest of the code...");

}

}

```

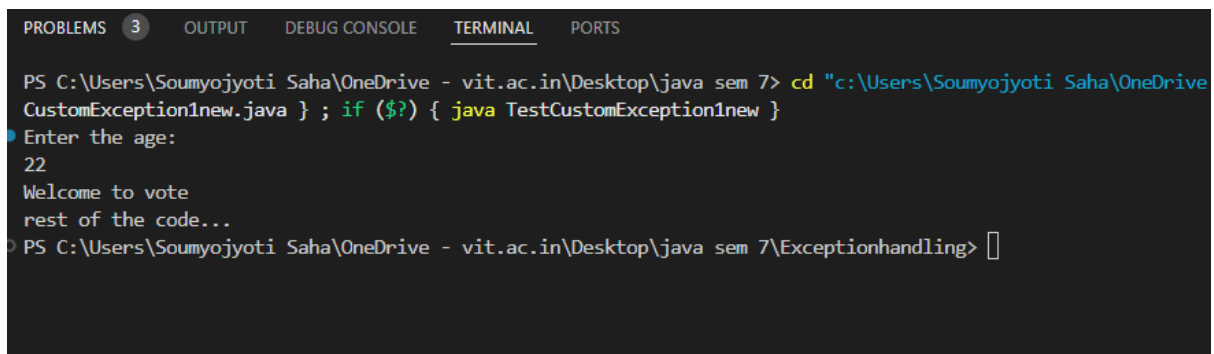
Exceptionhandling > TestCustomException1new.java > TestCustomException1new > main(String[])

```

1  // Example 3:
2  // Question: Create a custom exception to check the validity of an age for voting.
3
4  import java.util.Scanner;
5
6  class InvalidAgeException extends Exception {
7      public InvalidAgeException(String str) {
8          // calling the constructor of parent Exception
9          super(str);
10     }
11 }
12
13 // Class that uses custom exception InvalidAgeException
14 class TestCustomException1new {
15     // method to check the age
16     static void validate(int age) throws InvalidAgeException {
17         if (age < 18) {
18             // throw an object of user defined exception
19             throw new InvalidAgeException(str: "\n age is not valid to vote");
20         } else {
21             System.out.println(x: "Welcome to vote");
22         }
23     }
24
25     Run | Debug
26     public static void main(String[] args) {
27         try {
28             Scanner sc = new Scanner(System.in);
29             System.out.println(x: "Enter the age: ");
30             int age = sc.nextInt();
31             validate(age);
32         } catch (InvalidAgeException ex) {
33             System.out.println(x: "Caught the exception");
34             // printing the message from InvalidAgeException object
35             System.out.println("Exception occurred: " + ex);
36         }
37         System.out.println(x: "rest of the code...");
38     }
39 }
40

```

## OUTPUT:



```
PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive
CustomException1new.java" ; if ($?) { java TestCustomException1new }
Enter the age:
22
Welcome to vote
rest of the code...
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7\Exceptionhandling> 
```

## Q6. Handle multiple types of exceptions within one try block.

### CODE:

```
class ExceptionExample1 {
    public static void main(String[] args) {
        try {
            int i = 8;
            int j = 0;
            int a[] = new int[5];
            int k = i / j; // may throw arithmetic exception
            a[6] = 10; // may throw array index out of bounds exception
            System.out.println("K value is: " + k);
        }
        catch (ArithmeticException e) {
            System.out.println("Error in arithmetic");
        }
        catch (ArrayIndexOutOfBoundsException e) {
            System.out.println("Array limit exceeds..");
        }
        catch (Exception e) {
            System.out.println("Error");
        }
    }
}
```

```

    }
    finally {
        System.out.println("\nProgram completed");
    }
}
}

```

```

J Example1.java X J ExceptionExample1.java X J Expdemo_1.java J TestCustomException1new.java 1
Exceptionhandling > J ExceptionExample1.java > ExceptionExample1 > main(String[])
1 // Example 4:
2 // Question: Handle multiple types of exceptions within one try block.
3
4 class ExceptionExample1 {
5     public static void main(String[] args) {
6         try {
7             int i = 8;
8             int j = 0;
9             int a[] = new int[5];
10            int k = i / j; // may throw arithmetic exception
11            a[6] = 10; // may throw array index out of bounds exception
12            System.out.println("K value is: " + k);
13        }
14        catch (ArithmeticException e) {
15            System.out.println(x:"Error in arithmetic");
16        }
17        catch (ArrayIndexOutOfBoundsException e) {
18            System.out.println(x:"Array limit exceeds..");
19        }
20        catch (Exception e) {
21            System.out.println(x:"Error");
22        }
23        finally {
24            System.out.println(x:"\nProgram completed");
25        }
26    }
27 }
28

```

## OUTPUT:

```

PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive -
ptionExample1.java" ; if ($?) { java ExceptionExample1 }
Error in arithmetic

Program completed
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7\Exceptionhandling>

```

**Q7. Create and throw a custom exception with a string message.**

**CODE:**

```
class MyException extends Exception {  
    String str1;  
    // Constructor of custom exception class  
    MyException(String str2) {  
        str1 = str2;  
    }  
  
    public String toString() {  
        return ("MyException Occurred: " + str1);  
    }  
}  
  
class Example1 {  
    public static void main(String[] args) {  
        try {  
            System.out.println("Starting of try block");  
            // Throw the custom exception  
            throw new MyException("This is My error Message");  
        }  
        catch (MyException exp) {  
            System.out.println("Catch Block");  
            System.out.println(exp);  
        }  
    }  
}
```

```

class MyException extends Exception {
    String str1;
    // Constructor of custom exception class
    MyException(String str2) {
        str1 = str2;
    }

    public String toString() {
        return ("MyException Occurred: " + str1);
    }
}

class Example1 {
    Run | Debug
    public static void main(String[] args) {
        try {
            System.out.println(x:"Starting of try block");
            // Throw the custom exception
            throw new MyException(str2:"This is My error Message");
        }
        catch (MyException exp) {
            System.out.println(x:"Catch Block");
            System.out.println(exp);
        }
    }
}

```

## OUTPUT:

```

PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7" & java Example1
Starting of try block
Catch Block
MyException Occurred: This is My error Message
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> Exceptionhandling>

```

**Q8. Handle an arithmetic exception where a division by zero occurs.**

**CODE:**

```
public class TryCatchExample1 {

    public static void main(String[] args) {

        try {

            int data = 50 / 0; // may throw exception

        }

        // handling the exception

        catch (ArithmeticException e) {

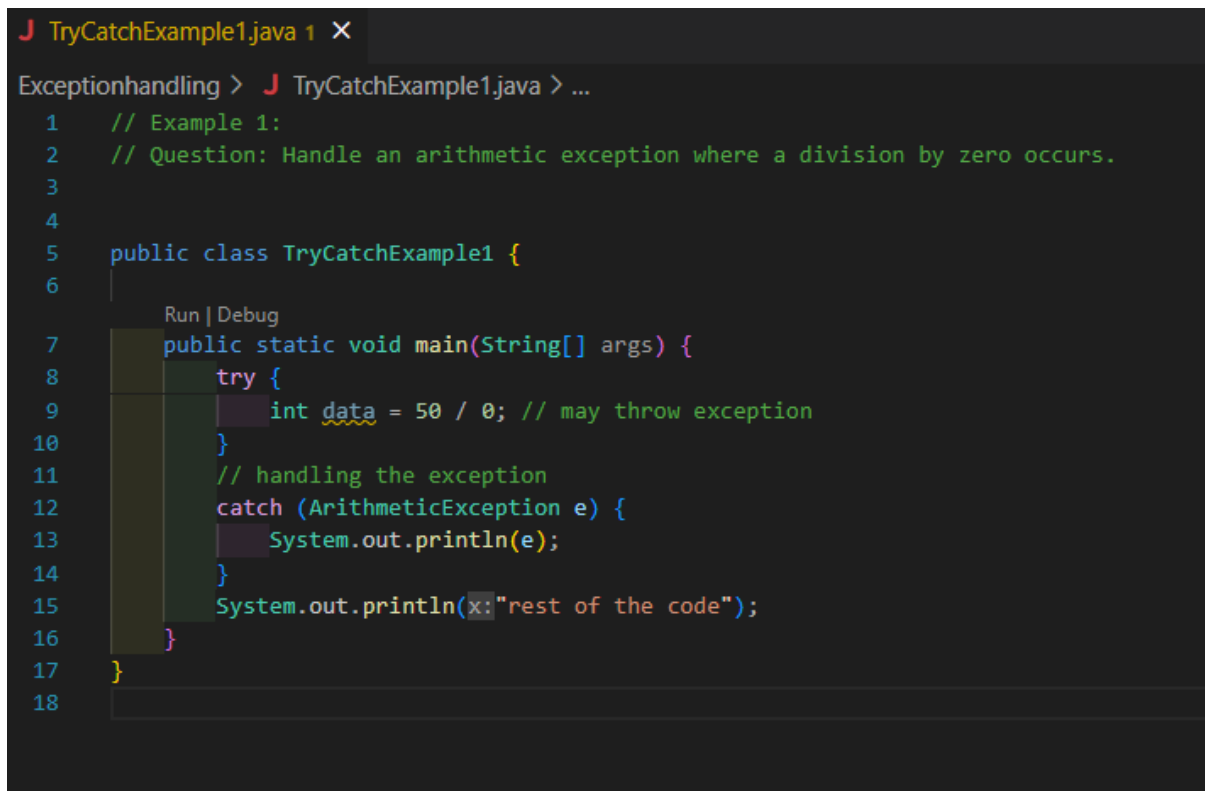
            System.out.println(e);

        }

        System.out.println("rest of the code");

    }

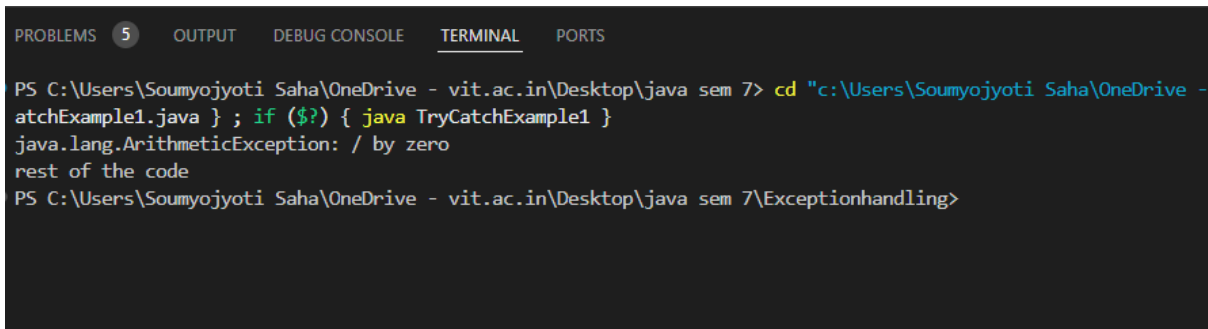
}
```



```
J TryCatchExample1.java 1 X
Exceptionhandling > J TryCatchExample1.java > ...
1 // Example 1:
2 // Question: Handle an arithmetic exception where a division by zero occurs.
3
4
5 public class TryCatchExample1 {
6
7     Run | Debug
8     public static void main(String[] args) {
9         try {
10             int data = 50 / 0; // may throw exception
11         }
12         // handling the exception
13         catch (ArithmeticException e) {
14             System.out.println(e);
15         }
16         System.out.println("rest of the code");
17     }
18 }
```



## OUTPUT:



```
PROBLEMS 5 OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive -
atchExample1.java } ; if ($?) { java TryCatchExample1 }
java.lang.ArithmeticException: / by zero
rest of the code
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7\Exceptionhandling>
```

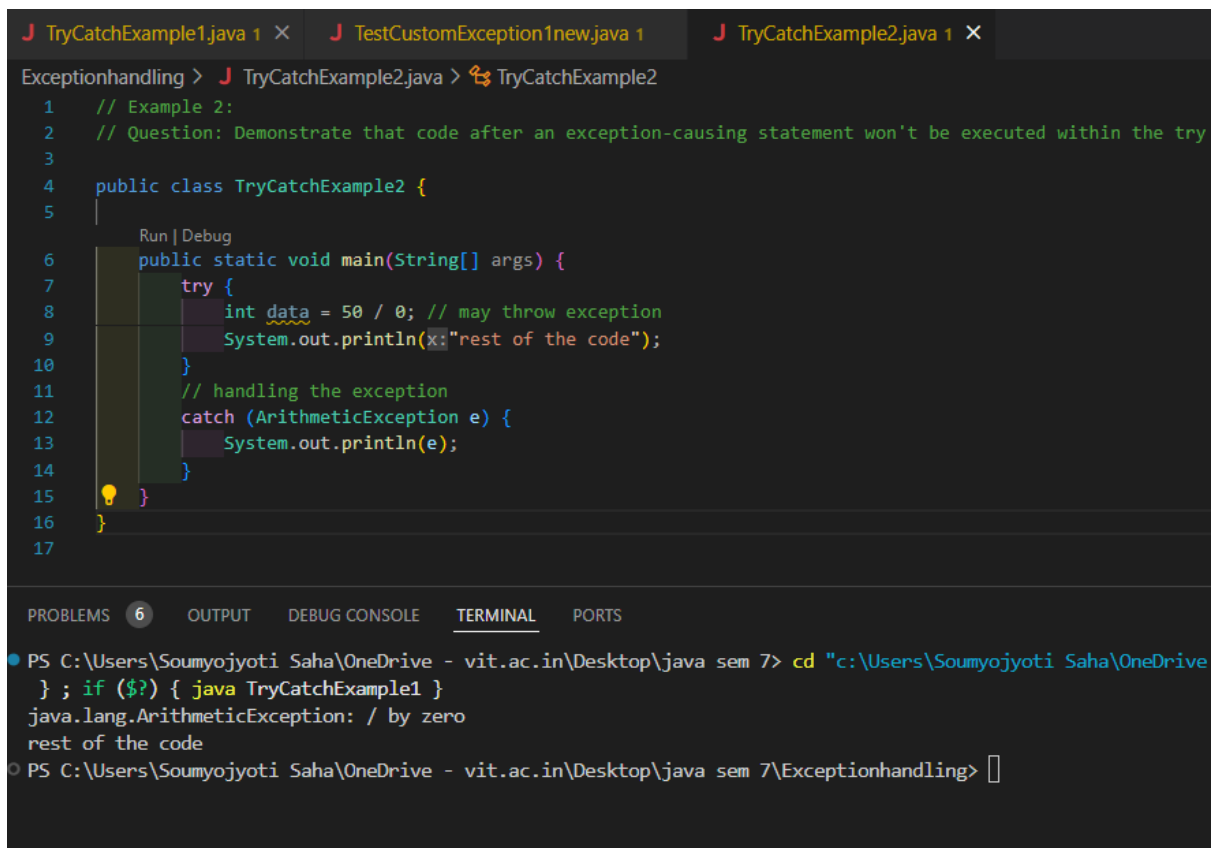
**Q9. Demonstrate that code after an exception-causing statement won't be executed within the try block.**

## CODE:

```
public class TryCatchExample2 {

    public static void main(String[] args) {
        try {
            int data = 50 / 0; // may throw exception
            System.out.println("rest of the code");
        }
        // handling the exception
        catch (ArithmeticException e) {
            System.out.println(e);
        }
    }
}
```

## OUTPUT:



The screenshot shows an IDE with three tabs: TryCatchExample1.java, TestCustomException1new.java, and TryCatchExample2.java. The active tab is TryCatchExample2.java, which contains the following code:

```
1 // Example 2:
2 // Question: Demonstrate that code after an exception-causing statement won't be executed within the try
3
4 public class TryCatchExample2 {
5
6     public static void main(String[] args) {
7         try {
8             int data = 50 / 0; // may throw exception
9             System.out.println("rest of the code");
10        }
11        // handling the exception
12        catch (ArithmeticException e) {
13            System.out.println(e);
14        }
15    }
16 }
17
```

The terminal output shows the execution of the code:

```
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive"
; if ($?) { java TryCatchExample1 }
java.lang.ArithmeticException: / by zero
rest of the code
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7\Exceptionhandling>
```

**Q10. Create a custom exception to check the validity of an age for voting.**

## CODE:

```
import java.util.Scanner;
```

```
class InvalidAgeException extends Exception {
    public InvalidAgeException(String str) {
        // calling the constructor of parent Exception
        super(str);
    }
}
```

```
// Class that uses custom exception InvalidAgeException
```

```
class TestCustomException1new {
```

```
// method to check the age
static void validate(int age) throws InvalidAgeException {
    if (age < 18) {
        // throw an object of user defined exception
        throw new InvalidAgeException("\n age is not valid to vote");
    } else {
        System.out.println("Welcome to vote");
    }
}

public static void main(String[] args) {
    try {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the age: ");
        int age = sc.nextInt();
        validate(age);
    }
    catch (InvalidAgeException ex) {
        System.out.println("Caught the exception");
        // printing the message from InvalidAgeException object
        System.out.println("Exception occurred: " + ex);
    }
    System.out.println("rest of the code...");
}
```

## OUTPUT:

```
J TryCatchExample1.java 1 X J TestCustomException1new.java 1, M X J TryCatchExample2.java 1
Exceptionhandling > J TestCustomException1new.java > TestCustomException1new > main(String[])
1 import java.util.Scanner;
2 class InvalidAgeException extends Exception {
3     public InvalidAgeException(String str) {
4         // calling the constructor of parent Exception
5         super(str);
6     }
7 }
8
9 // Class that uses custom exception InvalidAgeException
10 class TestCustomException1new {
11     // method to check the age
12     static void validate(int age) throws InvalidAgeException {
13         if (age < 18) {
14             // throw an object of user defined exception
15             throw new InvalidAgeException(str: "\n age is not valid to vote");
16         } else {
17             System.out.println(x: "Welcome to vote");
18         }
19     }
20
21     Run | Debug
22     public static void main(String[] args) {
23         try {
24             Scanner sc = new Scanner(System.in);
25             System.out.println(x: "Enter the age: ");
26             int age = sc.nextInt();
27             validate(age);
28         } catch (InvalidAgeException ex) {
29             System.out.println(x: "Caught the exception");
30             // printing the message from InvalidAgeException object
31             System.out.println("Exception occurred: " + ex);
32         }
33         System.out.println(x: "rest of the code...");
34     }
35 }
36
PROBLEMS 6 OUTPUT DEBUG CONSOLE TERMINAL PORTS
rest of the code
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7\Exceptionhandling> cd "c:\Users\Soumyojyoti
tCustomException1new.java" ; if ($?) { java TestCustomException1new }
Enter the age:
22
Welcome to vote
rest of the code...
```

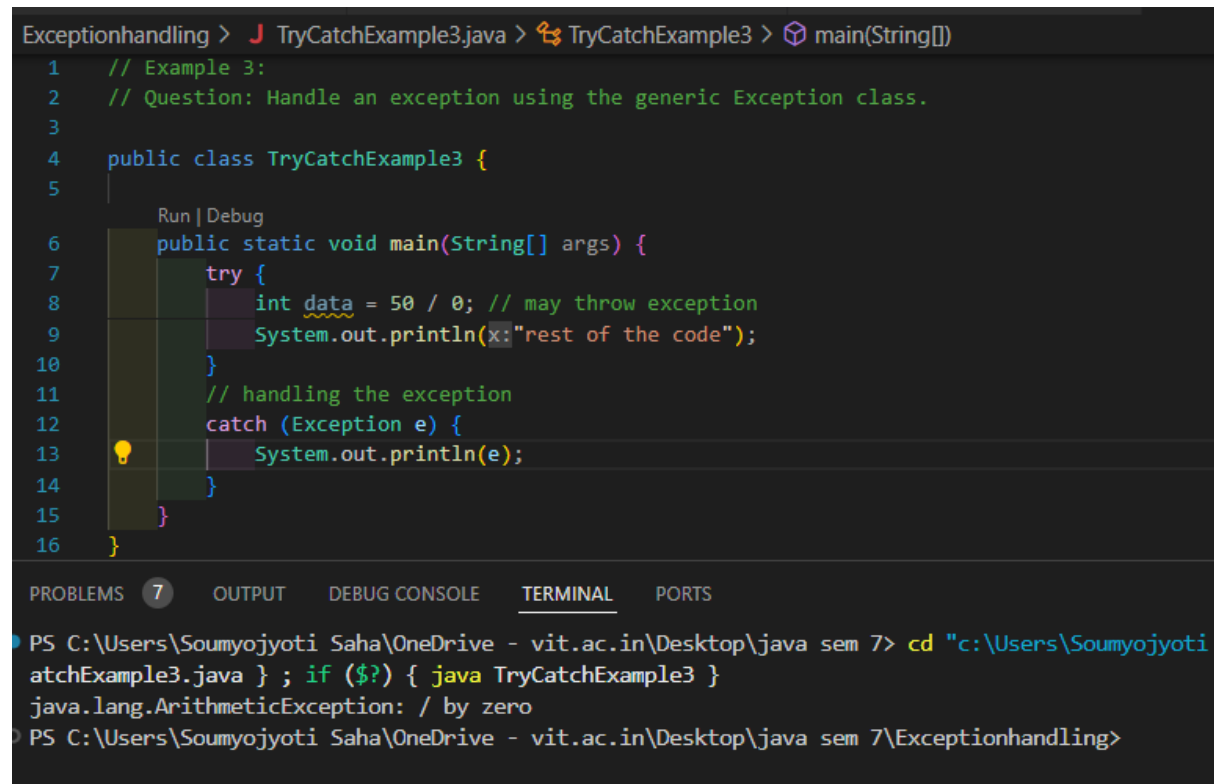
### Q11. Handle an exception using the generic Exception class.

#### CODE:

```
public class TryCatchExample3 {

    public static void main(String[] args) {
        try {
            int data = 50 / 0; // may throw exception
            System.out.println("rest of the code");
        }
        // handling the exception
        catch (Exception e) {
            System.out.println(e);
        }
    }
}
```

#### OUTPUT:

The screenshot shows an IDE window with a Java file named 'TryCatchExample3.java'. The code is as follows:

```
1 // Example 3:
2 // Question: Handle an exception using the generic Exception class.
3
4 public class TryCatchExample3 {
5
6     public static void main(String[] args) {
7         try {
8             int data = 50 / 0; // may throw exception
9             System.out.println("rest of the code");
10        }
11        // handling the exception
12        catch (Exception e) {
13            System.out.println(e);
14        }
15    }
16 }
```

The IDE has tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', and 'PORTS'. The 'TERMINAL' tab is active, showing the command prompt output:

```
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7"
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> java TryCatchExample3
java.lang.ArithmeticException: / by zero
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7>
```

**Q12. Catch and resolve an exception inside the catch block.**

**CODE:**

```
public class TryCatchExample4 {  
  
    public static void main(String[] args) {  
        int i = 50;  
        int j = 0;  
        int data;  
        try {  
            data = i / j; // may throw exception  
        }  
        // handling the exception  
        catch (Exception e) {  
            // resolving the exception in catch block  
            System.out.println(i / (j + 2));  
        }  
    }  
}
```

**OUTPUT:**

```
Exceptionhandling > J TryCatchExample4.java > TryCatchExample4 > main(String[])
1 // Example 4:
2 // Question: Catch and resolve an exception inside the catch block.
3
4 public class TryCatchExample4 {
5
6     Run | Debug
7     public static void main(String[] args) {
8         int i = 50;
9         int j = 0;
10        int data;
11        try {
12            data = i / j; // may throw exception
13        }
14        // handling the exception
15        catch (Exception e) {
16            // resolving the exception in catch block
17            System.out.println(i / (j + 2));
18        }
19    }
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```

```

        System.out.println(e);
    }
    System.out.println("rest of the code");
}
}

```

## OUTPUT:

The screenshot shows an IDE with a Java file named `TryCatchExample5.java`. The code defines a class `TryCatchExample5` with a `main` method. Inside the `main` method, there is a `try` block that declares an array `arr` with values `{1, 3, 5, 7}` and attempts to print `arr[10]`, which will throw an `ArrayIndexOutOfBoundsException`. This exception is caught in a `catch` block, and the error message is printed. Finally, the program prints "rest of the code".

The terminal output shows the command to run the program and the resulting output:

```

PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7> cd "c:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7" & java TryCatchExample5
java.lang.ArrayIndexOutOfBoundsException: Index 10 out of bounds for length 4
rest of the code
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\java sem 7>

```



## Packages

Write a Java program that demonstrates the following functionality:

### 1. CollegeStudent Class:

- Create a class CollegeStudent in the package Packages.student.
- The class should have the following attributes:
  - name (String): The student's name.
  - regno (String): The student's registration number.
  - age (int): The student's age.
  - courseEnrolled (String): The course the student is enrolled in.
  - contactNumber (String): The student's contact number.
  - email (String): The student's email address.
- Implement getter and setter methods for each attribute.
- Include a method displayStudentDetails to print all the student's details.

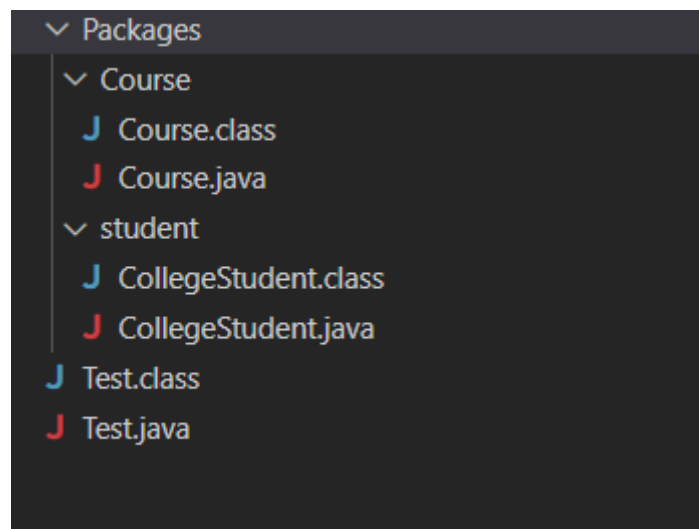
### 2. Course Class:

- Create a class Course in the package Packages.Course.
- The class should have the following attributes:
  - courseName (String): The name of the course.
  - courseCode (String): The code of the course.
  - courseDescription (String): A brief description of the course.
  - credits (int): The number of credits for the course.
  - instructorName (String): The name of the instructor.
- Implement getter and setter methods for each attribute.
- Include a method displayCourseDetails to print all the course's details.

### 3. Main Class:

- Create a Test class in the src folder that will:

- Create an instance of the CollegeStudent class, providing all relevant details (name, registration number, age, course enrolled, contact number, and email).
- Create an instance of the Course class, providing details such as course name, course code, description, credits, and instructor name.
- Call the respective methods to display the student's and course's details.



### Course/Course.java

```
package Packages.Course;
```

```
public class Course {
```

```
    private String courseName;
```

```
    private String courseCode;
```

```
    private String courseDescription;
```

```
    private int credits;
```

```
    private String instructorName;
```

```
    // Constructor to initialize course details
```

```
public Course(String courseName, String courseCode, String  
courseDescription, int credits, String instructorName) {
```

```
    this.courseName = courseName;
```

```
    this.courseCode = courseCode;
```

```
    this.courseDescription = courseDescription;
```

```
    this.credits = credits;
```

```
    this.instructorName = instructorName;
```

```
}
```

```
// Getter and Setter for Course Name
```

```
public String getCourseName() {
```

```
    return courseName;
```

```
}
```

```
public void setCourseName(String courseName) {
```

```
    this.courseName = courseName;
```

```
}
```

```
// Getter and Setter for Course Code
```

```
public String getCourseCode() {
```

```
    return courseCode;
```

```
}
```

```
public void setCourseCode(String courseCode) {
```

```
    this.courseCode = courseCode;
```

```
}
```

```
// Getter and Setter for Course Description
```

```
public String getCourseDescription() {  
    return courseDescription;  
}
```

```
public void setCourseDescription(String courseDescription) {  
    this.courseDescription = courseDescription;  
}
```

```
// Getter and Setter for Credits
```

```
public int getCredits() {  
    return credits;  
}
```

```
public void setCredits(int credits) {  
    this.credits = credits;  
}
```

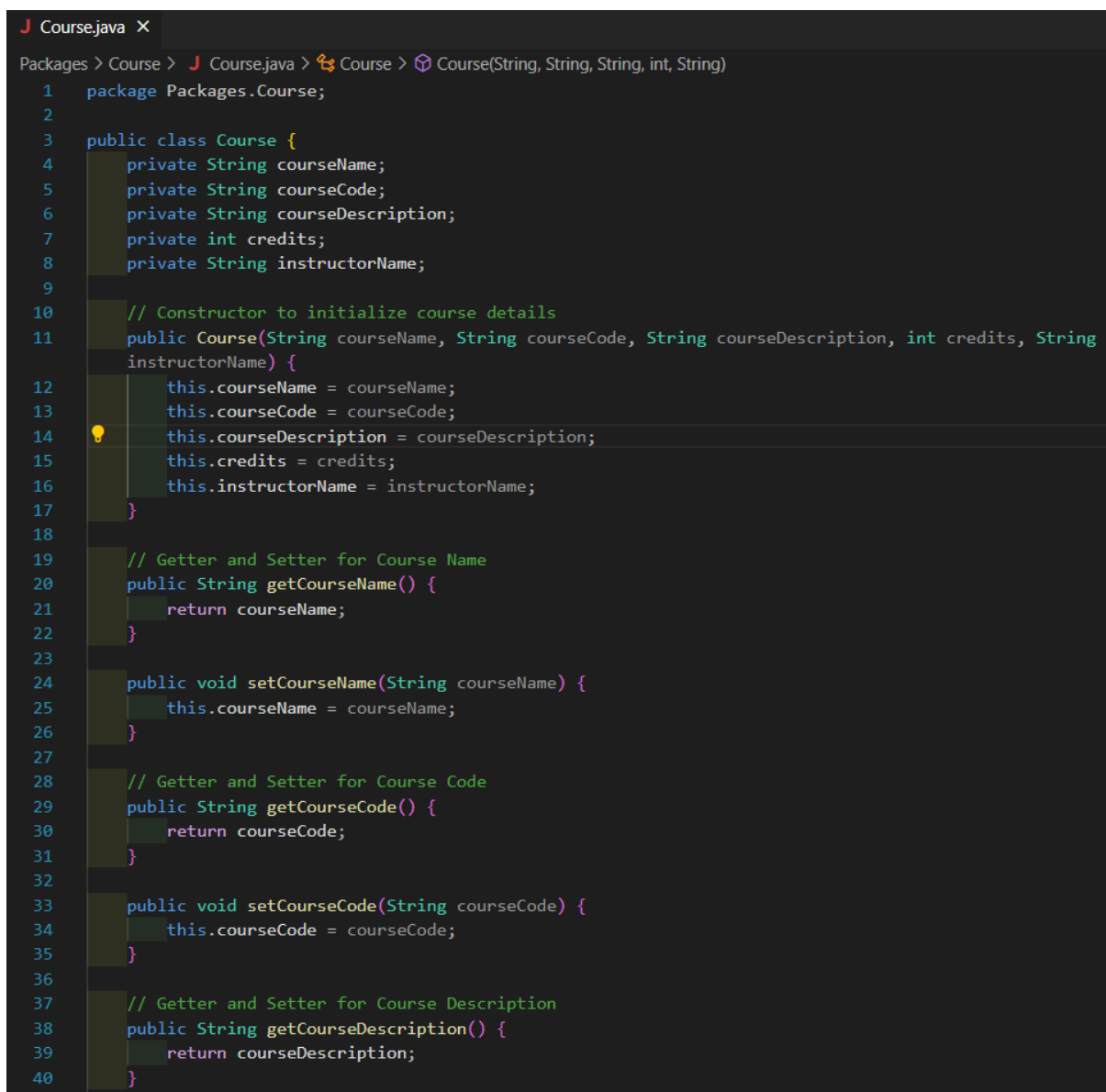
```
// Getter and Setter for Instructor Name
```

```
public String getInstructorName() {  
    return instructorName;  
}
```

```
public void setInstructorName(String instructorName) {  
    this.instructorName = instructorName;  
}
```

```
// Display course details
```

```
public void displayCourseDetails() {  
    System.out.println("Course Name: " + courseName);  
    System.out.println("Course Code: " + courseCode);  
    System.out.println("Course Description: " + courseDescription);  
    System.out.println("Credits: " + credits);  
    System.out.println("Instructor Name: " + instructorName);  
}  
}
```



The screenshot shows an IDE window titled "Course.java". The package path is "Packages > Course > Course.java". The code defines a "Course" class with private attributes for courseName, courseCode, courseDescription, credits, and instructorName. It includes a constructor to initialize these details and getter/setter methods for each attribute. A yellow lightbulb icon is visible next to line 14, indicating a suggestion or warning.

```
1 package Packages.Course;  
2  
3 public class Course {  
4     private String courseName;  
5     private String courseCode;  
6     private String courseDescription;  
7     private int credits;  
8     private String instructorName;  
9  
10    // Constructor to initialize course details  
11    public Course(String courseName, String courseCode, String courseDescription, int credits, String  
12    instructorName) {  
13        this.courseName = courseName;  
14        this.courseCode = courseCode;  
15        this.courseDescription = courseDescription;  
16        this.credits = credits;  
17        this.instructorName = instructorName;  
18    }  
19  
20    // Getter and Setter for Course Name  
21    public String getCourseName() {  
22        return courseName;  
23    }  
24  
25    public void setCourseName(String courseName) {  
26        this.courseName = courseName;  
27    }  
28  
29    // Getter and Setter for Course Code  
30    public String getCourseCode() {  
31        return courseCode;  
32    }  
33  
34    public void setCourseCode(String courseCode) {  
35        this.courseCode = courseCode;  
36    }  
37  
38    // Getter and Setter for Course Description  
39    public String getCourseDescription() {  
40        return courseDescription;  
41    }  
42 }
```

```

41
42     public void setCourseDescription(String courseDescription) {
43         this.courseDescription = courseDescription;
44     }
45
46     // Getter and Setter for Credits
47     public int getCredits() {
48         return credits;
49     }
50
51     public void setCredits(int credits) {
52         this.credits = credits;
53     }
54
55     // Getter and Setter for Instructor Name
56     public String getInstructorName() {
57         return instructorName;
58     }
59
60     public void setInstructorName(String instructorName) {
61         this.instructorName = instructorName;
62     }
63
64     // Display course details
65     public void displayCourseDetails() {
66         System.out.println("Course Name: " + courseName);
67         System.out.println("Course Code: " + courseCode);
68         System.out.println("Course Description: " + courseDescription);
69         System.out.println("Credits: " + credits);
70         System.out.println("Instructor Name: " + instructorName);
71     }
72 }
73

```

### Student/CollegeStudent.java

```
package Packages.student;
```

```

public class CollegeStudent {
    private String name;
    private String regno;
    private int age;
    private String courseEnrolled;
    private String contactNumber;
    private String email;

```

```
// Constructor to initialize college student details

public CollegeStudent(String name, String regno, int age, String
courseEnrolled, String contactNumber, String email) {

    this.name = name;

    this.regno = regno;

    this.age = age;

    this.courseEnrolled = courseEnrolled;

    this.contactNumber = contactNumber;

    this.email = email;

}
```

```
// Getter and Setter for Name
```

```
public String getName() {

    return name;

}
```

```
public void setName(String name) {

    this.name = name;

}
```

```
// Getter and Setter for Registration Number
```

```
public String getRegno() {

    return regno;

}
```

```
public void setRegno(String regno) {

    this.regno = regno;

}
```

// Getter and Setter for Age

```
public int getAge() {  
    return age;  
}
```

```
public void setAge(int age) {  
    this.age = age;  
}
```

// Getter and Setter for Course Enrolled

```
public String getCourseEnrolled() {  
    return courseEnrolled;  
}
```

```
public void setCourseEnrolled(String courseEnrolled) {  
    this.courseEnrolled = courseEnrolled;  
}
```

// Getter and Setter for Contact Number

```
public String getContactNumber() {  
    return contactNumber;  
}
```

```
public void setContactNumber(String contactNumber) {  
    this.contactNumber = contactNumber;  
}
```



```
// Getter and Setter for Email

public String getEmail() {
    return email;
}

public void setEmail(String email) {
    this.email = email;
}

// Display student details
public void displayStudentDetails() {
    System.out.println("Student Name: " + name);
    System.out.println("Registration Number: " + regno);
    System.out.println("Age: " + age);
    System.out.println("Course Enrolled: " + courseEnrolled);
    System.out.println("Contact Number: " + contactNumber);
    System.out.println("Email: " + email);
}
}
```

```
Course.java × CollegeStudent.class CollegeStudent.java ×
Packages > student > CollegeStudent.java > CollegeStudent > CollegeStudent(String, String, int, String, String, String)
1 package Packages.student;
2
3 public class CollegeStudent {
4     private String name;
5     private String regno;
6     private int age;
7     private String courseEnrolled;
8     private String contactNumber;
9     private String email;
10
11     // Constructor to initialize college student details
12     public CollegeStudent(String name, String regno, int age, String courseEnrolled, String
        contactNumber, String email) {
13         this.name = name;
14         this.regno = regno;
15         this.age = age;
16         this.courseEnrolled = courseEnrolled;
17         this.contactNumber = contactNumber;
18         this.email = email;
19     }
20
21     // Getter and Setter for Name
22     public String getName() {
23         return name;
24     }
25
26     public void setName(String name) {
27         this.name = name;
28     }
29
30     // Getter and Setter for Registration Number
31     public String getRegno() {
32         return regno;
33     }
34
35     public void setRegno(String regno) {
36         this.regno = regno;
37     }
38
39     // Getter and Setter for Age
40     public int getAge() {
41         return age;
```

```
Packages > student > CollegeStudent.java > CollegeStudent > CollegeStudent(String, String, int, String, String, String)
3  public class CollegeStudent {
44  public void setAge(int age) {
45      // Set age
46  }
47
48  // Getter and Setter for Course Enrolled
49  public String getCourseEnrolled() {
50      return courseEnrolled;
51  }
52
53  public void setCourseEnrolled(String courseEnrolled) {
54      this.courseEnrolled = courseEnrolled;
55  }
56
57  // Getter and Setter for Contact Number
58  public String getContactNumber() {
59      return contactNumber;
60  }
61
62  public void setContactNumber(String contactNumber) {
63      this.contactNumber = contactNumber;
64  }
65
66  // Getter and Setter for Email
67  public String getEmail() {
68      return email;
69  }
70
71  public void setEmail(String email) {
72      this.email = email;
73  }
74
75  // Display student details
76  public void displayStudentDetails() {
77      System.out.println("Student Name: " + name);
78      System.out.println("Registration Number: " + regno);
79      System.out.println("Age: " + age);
80      System.out.println("Course Enrolled: " + courseEnrolled);
81      System.out.println("Contact Number: " + contactNumber);
82      System.out.println("Email: " + email);
83  }
84  }
85
```

## Test.java

```
import Packages.student.CollegeStudent;
import Packages.Course.Course;

public class Test {

    public static void main(String[] args) {

        // Create a CollegeStudent with more information
```

```
CollegeStudent collegeStudent = new CollegeStudent("Soumyojyoti Saha", "21BCE4007", 21, "B.Tech in CSE", "7001813062", "soumyojyoti.saha2021@vitstudent.ac.in");
```

```
// Create a course
```

```
Course course = new Course("JAVA", "BCSE206", "Introduction to Java Programming", 3, "Dr. Sathyaraj");
```

```
// Display college student details
```

```
System.out.println("\nCollegeStudent Details:");
```

```
collegeStudent.displayStudentDetails();
```

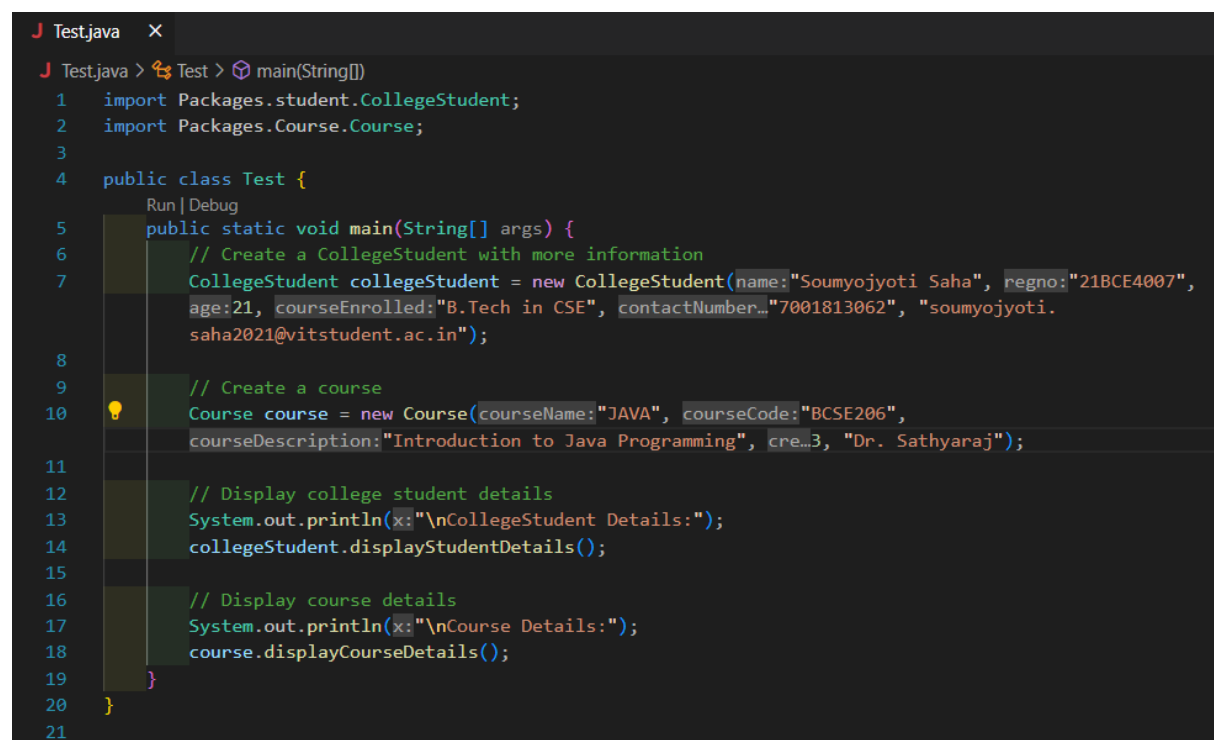
```
// Display course details
```

```
System.out.println("\nCourse Details:");
```

```
course.displayCourseDetails();
```

```
}
```

```
}
```



The screenshot shows an IDE window titled 'Test.java' with the following code:

```
J Test.java > Test > main(String[])
1  import Packages.student.CollegeStudent;
2  import Packages.Course.Course;
3
4  public class Test {
5      Run | Debug
6      // Create a CollegeStudent with more information
7      CollegeStudent collegeStudent = new CollegeStudent(name:"Soumyojyoti Saha", regno:"21BCE4007",
8          age:21, courseEnrolled:"B.Tech in CSE", contactNumber:"7001813062", "soumyojyoti.
9          saha2021@vitstudent.ac.in");
10
11     // Create a course
12     Course course = new Course(courseName:"JAVA", courseCode:"BCSE206",
13         courseDescription:"Introduction to Java Programming", cre...3, "Dr. Sathyaraj");
14
15     // Display college student details
16     System.out.println(x:"\nCollegeStudent Details:");
17     collegeStudent.displayStudentDetails();
18
19     // Display course details
20     System.out.println(x:"\nCourse Details:");
21     course.displayCourseDetails();
22 }
```

## OUTPUT:

```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
Student Name: Soumyojyoti Saha
Registration Number: 21BCE4007
Age: 21
Course Enrolled: B.Tech in CSE
Contact Number: 7001813062
Email: soumyojyoti.saha2021@vitstudent.ac.in

Course Details:
Course Name: JAVA
Course Code: BCSE206
Course Description: Introduction to Java Programming
Credits: 3
Instructor Name: Dr. Sathyaraj
PS C:\Users\Soumyojyoti Saha\OneDrive - vit.ac.in\Desktop\New folder\MyJavaProject>
```

**END**