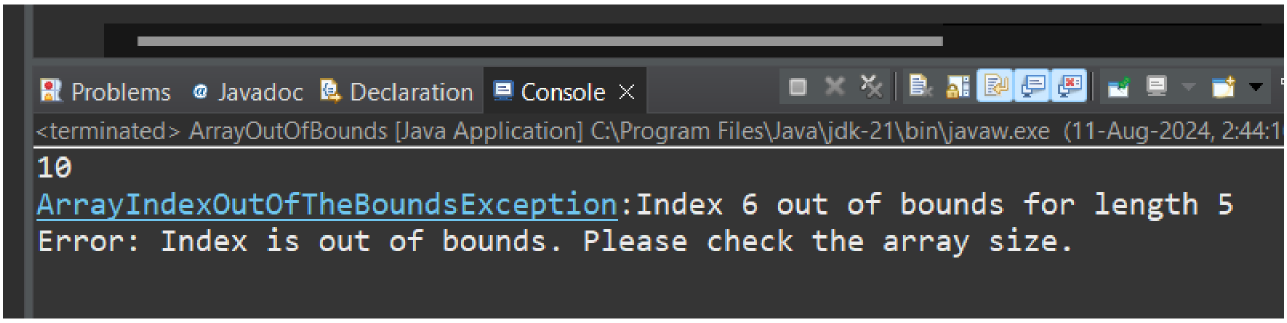
LAB7

1.Write a program that tries to access an element outside the bounds of an array and handles the ArrayIndexOutOfBoundsException by printing a user-friendly message.

Code:

```
package lab7;


public class ArrayOutOfBounds {


    public static void main(String[] args) {
            // TODO Auto-generated method stub
            int[] Numbers= {10,20,30,40,50};
            try {


                    System.out.println(Numbers[0]);
                    System.out.println(Numbers[6]);


            }
            catch(ArrayIndexOutOfBoundsException e){
                    System.out.println("ArrayIndexOutOfTheBoundsException:"+e.getMessage());
                    System.out.println("Error: Index is out of bounds. Please check the array size.");


            }
    }


}
```

Output:



```
<terminated> ArrayOutOfBounds [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe  (11-Aug-2024, 2:44:1
10
ArrayIndexOutOfTheBoundsException:Index 6 out of bounds for length 5
Error: Index is out of bounds. Please check the array size.
```

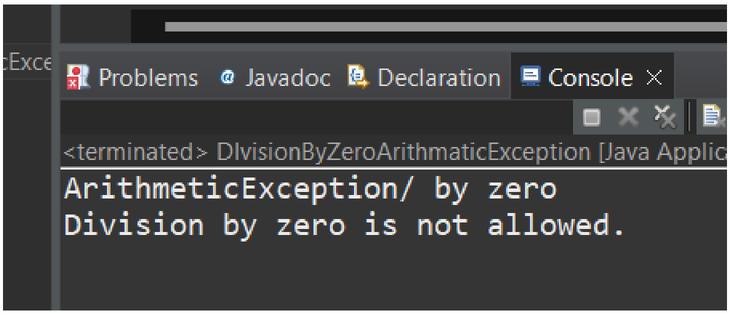
2. Write a program that attempts to divide a number by zero and handles the ArithmeticException by printing a message that division by zero is not allowed.

Code:

```
package lab7;
```

```
public class DIvisionByZeroArithmaticException {


    public static void main(String[] args) {
        // TODO Auto-generated method stub
        int a=10,b=0;
        try {
            int c=a/b;
            System.out.println(c);
        }
        catch(ArithmeticException e){
            System.out.println("ArithmeticException"+e.getMessage());
            System.out.println("Division by zero is not allowed.");
        }
    }


}
```

Output:



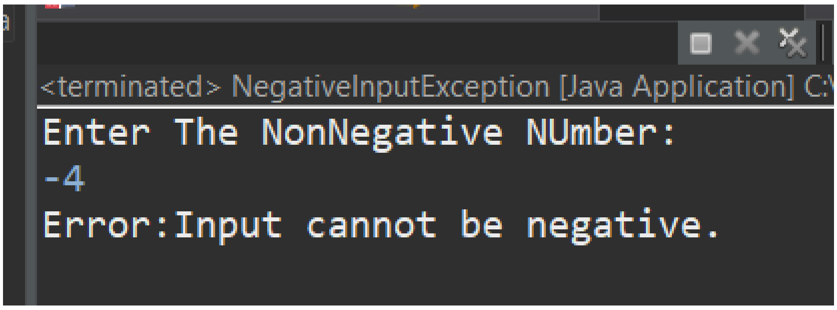
```
<terminated> DIvisionByZeroArithmaticException [Java Applic
ArithmeticException/ by zero
Division by zero is not allowed.
```

3. Write a Java program that reads an integer input from the user and throws an IllegalArgumentException if the input is negative. Display an appropriate message when the exception is caught.

Code:

```
package lab7;
import java.util.Scanner;
public class NegativeInputException {


    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner n=new Scanner(System.in);
        try {
                System.out.println("Enter The NonNegative NUmber:");
                int a=n.nextInt();
                if(a<0) {
                        throw new IllegalArgumentException("Input cannot be negative.");
                }

        }catch(IllegalArgumentException e) {
                System.out.println("Error:"+e.getMessage());
        }
    }

}
```

Output:



```
<terminated> NegativeInputException [Java Application] C:\
Enter The NonNegative NUmber:
-4
Error:Input cannot be negative.
```

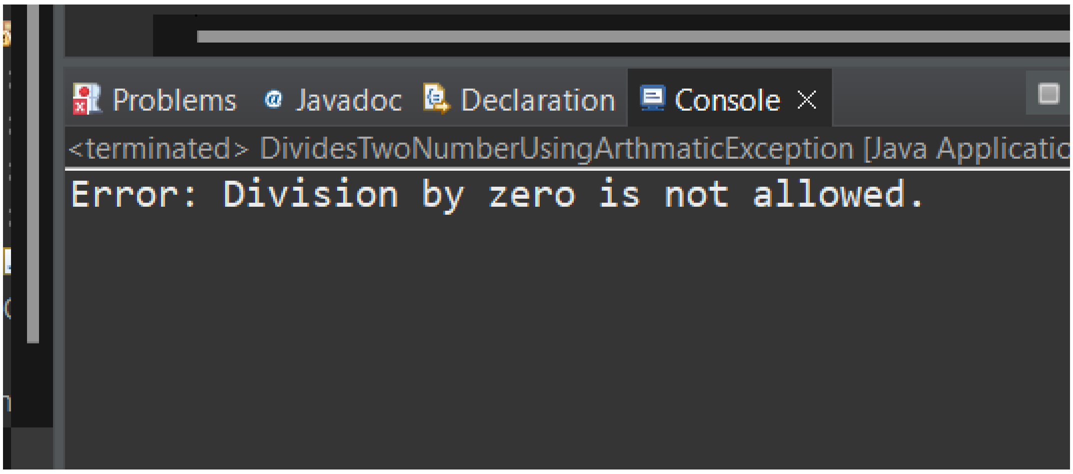
4. Create a Java method that divides two numbers and declares that it throws an ArithmeticException. Handle the exception in the main method.

Code:

```
package lab7;


public class DividesTwoNumberUsingArthmaticException {
    public static int divide(int dividend, int divisor) throws ArithmeticException {
            return dividend / divisor;
    }
    public static void main(String[] args) {
            int numerator = 10;
            int denominator = 0;
            try {
                    int result = divide(numerator, denominator);
                    System.out.println("Result: " + result);
```

```
                } catch (ArithmeticException e) {

                        System.out.println("Error: Division by zero is not allowed.");

                }

        }

}
```

Output:



```
<terminated> DividesTwoNumberUsingArthmaticException [Java Applicatic
Error: Division by zero is not allowed.
```

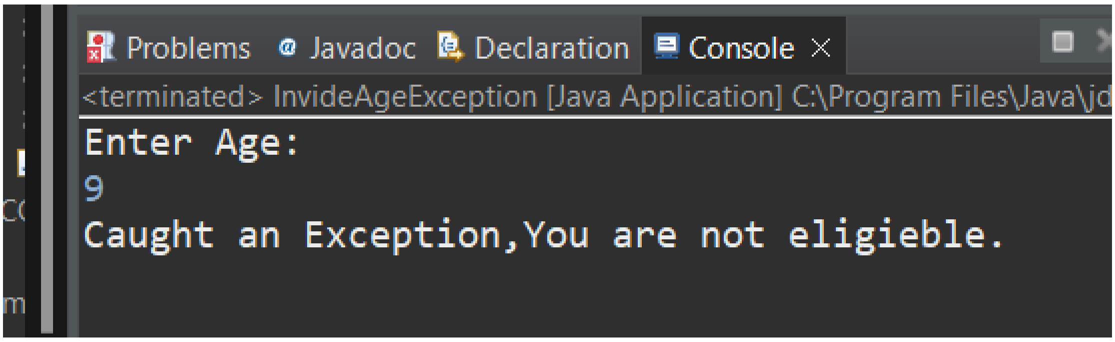
5. Define a custom exception called InvalidAgeException. Write a Java program that throws this exception if the age provided is less than 18. Handle the exception and display an appropriate message.

Code:

```
package lab7;

import java.util.*;

class AgeException extends Exception{

        AgeException(String message){

                super(message);

        }

}

//main class

public class InvideAgeException {


        public static void main(String[] args) {

                // TODO Auto-generated method stub

                Scanner scanner=new Scanner(System.in);

                int age;

                try {

                        System.out.println("Enter Age:");

                        age=scanner.nextInt();
```

```
            if(age<18) {
                throw new AgeException("You are not eligieble.");
            }else {
                System.out.println("You are eligible for vote.");
            }
        }catch(AgeException e) {
            System.out.println("Caught an Exception,"+e.getMessage());
        }
    }

}
```

Output:



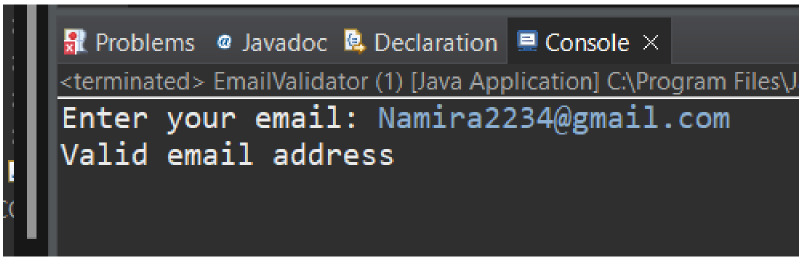
```
<terminated> InvideAgeException [Java Application] C:\Program Files\Java\jd
Enter Age:
9
Caught an Exception,You are not eligieble.
```

6. Write a Java program that has a method to validate a user's email address. The method should throw a custom exception InvalidEmailException if the email does not contain @ and .. Handle the exception in the main method.

Code:

```
package lab7;
import java.util.Scanner;
class InvalidEmailException extends Exception {
    public InvalidEmailException(String message) {
        super(message);
    }
}

public class EmailValidator {
    public static void validateEmail(String email) throws InvalidEmailException {
        if (!email.contains("@") || !email.contains(".")) {
            throw new InvalidEmailException("Invalid email format");
        }
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter your email: ");
        String email = scanner.nextLine();
        try {
            validateEmail(email);
            System.out.println("Valid email address");
        } catch (InvalidEmailException e) {
            System.out.println("Error: " + e.getMessage());
        }
    }
}
```

Output:



```
<terminated> EmailValidator (1) [Java Application] C:\Program Files\J
Enter your email: Namira2234@gmail.com
Valid email address
```