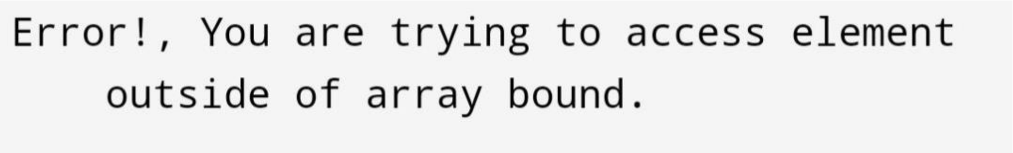
## 1.Write a program that tries to access an element outside the bounds of an array and handles the ArrayIndexOutOfBoundsException by printing a user-friendly message.

**Code:-**

```
package MyPackage;
public class ArrayBoundExcep
{
  Public static void main (String[] args) {
    //declaring an array of integers
    Int[] array = {1, 2, 3, 4, 5};


    Try {
      Int element = array[5]; // Trying to access an element outside the
array bounds
       System.out.println(“Element at index 5: “ + element);
    } catch(ArrayIndexOutOfBoundsException e) {
       //Handles exception by user friendly message
      System.out.println(“Error!, You are trying to access element outside
of array bound.”);
    }
  }
}
```

Output:-



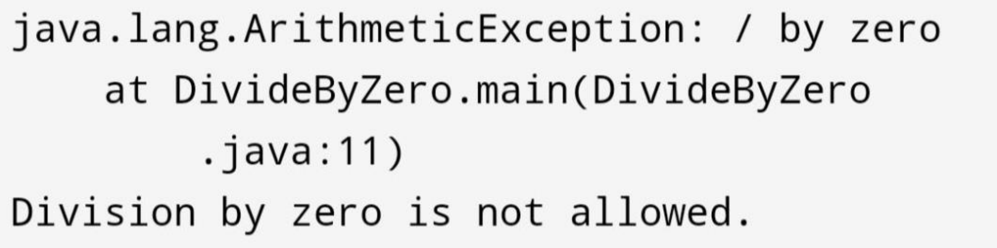
```
Error!, You are trying to access element
    outside of array bound.
```

## 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 MyPackage;
import java.lang.Exception;
public class DivideByZero
{
  Public static void main (String[] args)
  {
    //declaring 2 integers
    Int num1 = 10;
    Int num2 = 0;

    Try {
      Int result = num1 / num2; //trying to divide number by zero
      System.out.println(“Result : “ + result);
    } catch (ArithmeticException e) {
      //handling the exception
      e.printStackTrace();
      System.out.println(“Division by zero is not allowed.”);
    }
    }
  }
```

Output:-



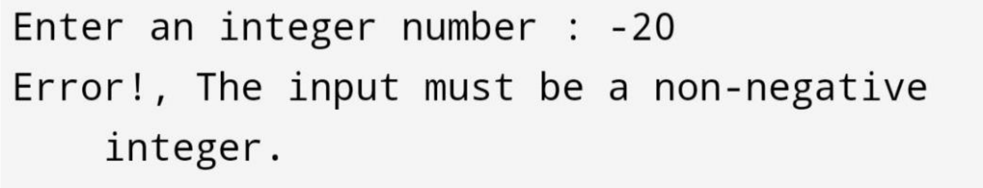
```
java.lang.ArithmeticException: / by zero
    at DivideByZero.main(DivideByZero
        .java:11)
Division by zero is not allowed.
```

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 MyPackage;
import java.util.Scanner;
public class IllArguExcep
{
  Public static void main (String[] args)
  {
    //creating object of scanner class
    Scanner sc = new Scanner(System.in);
    System.out.print(“Enter an integer number : “); //taking number from
user as input and storing it
    Int number = sc.nextInt();

    Try {
      //checks if number is negative
      If (number < 0) {
        Throw new IllegalArgumentException(“The input must be a non-
negative integer.”);
      }
      //prints number if positive
      System.out.println(“The number is : “ + number);
    } catch (IllegalArgumentException e) {
      //handles exception
      System.out.println(“Error!, “ + e.getMessage());
    }
  }
}
```

Output:-



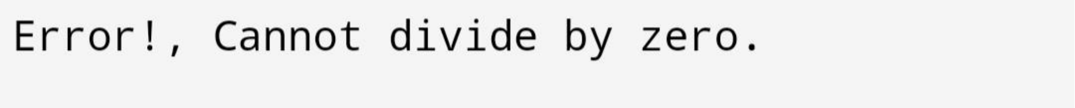
```
Enter an integer number : -20
Error!, The input must be a non-negative
    integer.
```

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 MyPackage;
public class ArithExcep
{
  //defining mathod to throw exception
  Public static void display(int num1, int num2) throws ArithmeticException
{

    If (num2 == 0) {
      Throw new ArithmeticException(“Cannot divide by zero.”);
    }
    Int result = num1/num2;
    System.out.println(result);
  }

  Public static void main (String[] args)
  {
    //declaring 2 integers
    Int num1 = 10;
    Int num2 = 0;

    Try {
      Display(num1, num2); //calls method
      System.out.println(“Result : “);

    } catch (ArithmeticException e) {
      //handle exception
      System.out.println(“Error!, “ + e.getMessage());
    }
  }
}
```

Output:-



```
Error!, Cannot divide by zero.
```

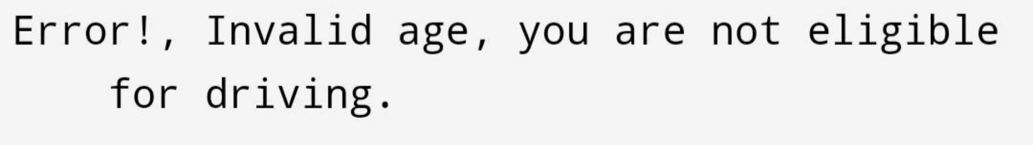
5.Define a custom exception called InvalidAgeException. Write a Java program that throws this exception if the age provided is less than 18. Handle the exception and display an appropriate message.

Code:-

```
package MyPackage;
public class InvalidAgeExcep
{
  //defining custom exception
  Public static class InvalidAgeException extends Exception {
    Public InvalidAgeException(String message) {
      Super(message);
    }
```

```
 }

 //creating method to throw custom exception
 Public static void checkAge(int age) throws InvalidAgeException {
  If (age < 18) {
   Throw new InvalidAgeException (“Invalid age, you are not eligible for
driving.”);
  } else {
   System.out.println(“You are eligible for driving.”);
  }
 }

 Public static void main (String[] args)
 {
  //declaring integer age
  Int age = 17;
  Try {
   checkAge(age); //calls method
  } catch(InvalidAgeException e) {
   //handles exception
   System.out.println(“Error!, “ + e.getMessage());
  }
 }
}
```

Output:-



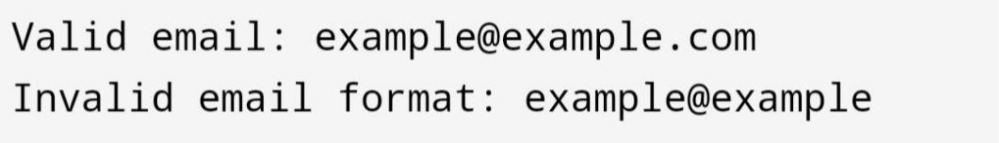
```
Error!, Invalid age, you are not eligible
    for driving.
```

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 MyPackage;
public class EmailValidator {
 //defining custom exception
 Public static class InvalidEmailException extends Exception {
  Public InvalidEmailException(String message) {
   Super(message);
  }
 }

 //creating method to throw custom exception
 Public static void validateEmail(String email) throws
InvalidEmailException {
  If (!email.contains(“@”) || !email.contains(“.”)) {
   Throw new InvalidEmailException(“Invalid email format: “ + email);
  }
 }

 Public static void main(String[] args)
 {
   //declaring input emails
    String email1 = example@example.com;
    String email2 = “example@example”;


    Try {
      validateEmail(email1); //calls method
      System.out.println(“Valid email: “ + email1);
    } catch (InvalidEmailException e) {
      //handle exception if thrown
      System.out.println(e.getMessage());
    }

    Try {
      validateEmail(email2); //calls method
      System.out.println(“Valid email: “ + email2);
    } catch (InvalidEmailException e) {
      //handles exception
      System.out.println(e.getMessage());
    }
  }
}
```

Output:-



```
Valid email: example@example.com
Invalid email format: example@example
```