Lab Number:	11
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Title:

1. Write a program injava if a number is less than 0 and greater than 10 it generates the user-defined exception "out of range". Else it displays the square of the number.

2. Write a program in java to enter the number. If the first and second number is not entered it will generate the exception. Also, divide the first number with the second number and generate the arithmetic exception.

Learning Objective:

Students will be able to implement user-defined exceptions

Learning Outcome:

Understanding the exception handling concept and making the programming interface error-free.

Course Outcome:

ECL304.3	Articulate exception handling methods.

Theory:

- What is exception handling and how is it achieved in JAVA?
  The Exception Handling in Java is one of the powerful mechanism to handle the runtime errors so that the normal flow of the application can be maintained. In this tutorial, we will learn about Java exceptions, it's types, and the difference between checked and unchecked exceptions.
- Explain user defined exceptions in java?
  User Defined Exception or custom exception is creating your own exception class and throws that exception using 'throw' keyword. ... There is no need to override any of the above methods available in the Exception class, in your derived class.

Algorithm :	1. Start
	2. Create Outofrange class.
	3. Create the main class to take input of data and perform the operation.
	4. Write the exception cases i.e. the try

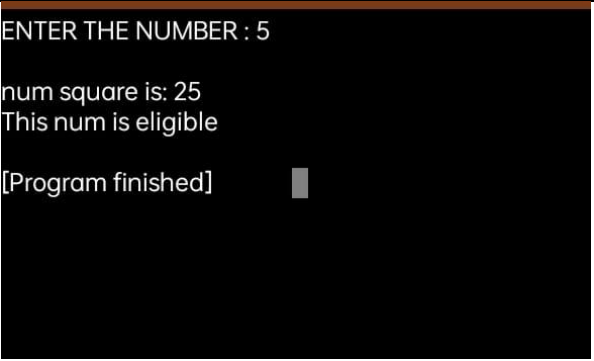|	
	catch function **5. End**

Program:	class OutOfRange extends Exception{
	
	    int num;
	
	    OutOfRange(int a){
	
	        num = a;
	
	    }
	
	    public String toString()
	
	    {
	
	        return ("num is out of range: "+ num);
	
	    }
	
	}
	
	class Main{
	
	    void test(int num)
	
	    {
	
	        try{
	
	            if(num<0||num>10)
	
	                throw new OutOfRange(num);
	
	            System.out.println();
	
	            System.out.print("num square is: ");
	
	            System.out.println(num*num);
	
	        }

| | ```java
catch(OutOfRange u)
{
    System.out.println("Out of range ");
    u.printStackTrace();
    System.out.println("This num is not eligible");
    System.exit(0);
}
    System.out.println("This num is eligible ");
  }


  public static void main(String args[])
  {
    int num;

    Scanner sc = new Scanner(System.in);

    System.out.print("Enter the number: ");
    num = sc.nextInt();

    Main e = new Main();
    e.test(num);
  }
}
``` |
| **Input given:** | 5 |

Output Screenshot:	
	ENTER THE NUMBER : 5 num square is: 25 This num is eligible [Program finished]

Algorithm :	1. Start
	2. Create Isnum class.
	3. Create the main class to take input of data and perform the operation.
	4. Write the exception cases i.e. the try catch function
	5. End
| Program: | ```java
import java.util.Scanner;
class IsNum extends Exception{

    public String toString()
    {
        return ("number is not valid it should be an integer : ");
    }


}


class Main{

    void test(int num1,int num2)
``` |

```java
{
  try{


    int res=num1/num2;
    System.out.println();
    System.out.print("      num1/num2 is: ");
    System.out.println(res);
  }
  catch(ArithmeticException e)
  {
    System.out.println(" can't divide by zero "+e);
  }


}

public static void main(String args[])
{
  int num1=0,num2=0;


  Scanner sc = new Scanner(System.in);


  System.out.print("ENTER THE NUMBERS : ");
  try
  {
    if(sc.hasNextInt())
    {
```

```java
            num1=sc.nextInt();
      }
      else
      {
         throw new IsNum();
      }
      if(sc.hasNextInt())
      {
         num2=sc.nextInt();
      }
      else
      {
         throw new IsNum();
      }
   }

   catch(IsNum u)
   {
      System.out.println(" INVALID ");
      u.printStackTrace();
      System.out.println("his number is
not entered");
      System.exit(0);
   }


   System.out.println("numbers are
entered ");
   Main e = new Main();
   e.test(num1,num2);
```

	}
	}
Input given:	5
	7
Output Screenshot:	ENTER THE NUMBERS : 5 7 numbers are entered num1/num2 is: 0 [Program finished]

Faculty: Ms. Deepali Kayande