**Batch: B2 Roll No.: 1611103**

**Experiment / assignment / tutorial No.05**

**Grade: AA / AB / BB / BC / CC / CD /DD**

**Signature of the Staff In-charge with date**

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| --- |
| **TITLE :User Defined Exception** |

**AIM :** Write a program which accepts marks of a student (between 0 to 100) and checks whether it is within the range or not. If it is within the range then it displays “marks entered successfully”, if not then it throws the exception of user defined class “MarksOutOfRangeException”. The class should contain appropriate toString method to describe object the class with the out of range marks entered by the user.

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**Expected OUTCOME of Experiment:**

**CO4:**Demonstrate programs on interface, exceptions, multithreading and applets. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Books/ Journals/ Websites referred:**

1.Ralph Bravaco , Shai Simoson , “Java Programing From the Group Up” Tata McGraw-Hill.

2.Grady Booch, Object Oriented Analysis and Design .

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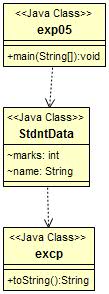
**Pre Lab/ Prior Concepts:**

**PRIORITY QUEUE :**

Explain how to create a user define exception and explicitly throwing exception in program with simple example.

**Ans. First create a class which extends Exception class and create a function which overrides the toString function.**

**Class Diagram:**

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**Algorithm:**

**Start**

**Input name as String and marks as integer.**

**If marks are less than 0 or greater than hundred then throw exception by going to step 5.**

**Else print marks entered successfully and go to step 6.**

**Print error occurred! Java.lang.MarksOutOfRange Marks entered and the entered marks.**

**Stop.**

**Implementation details:** (printout of code)

**import java.util.Scanner;**

**class excp extends Exception**

**{**

**public String toString() //commenting this function returns the class name to catch block**

**{**

**return "java.lang.MarksOutOfRange ";**

**}**

**}**

**class StdntData**

**{**

**int marks;**

**String name;**

**StdntData(String b, int a)**

**{**

**name = b;**

**try**

**{**

**marks = a;**

**if(marks<0 || marks>100)**

**throw new excp(); //Throws default constructor to catch block //no parameters allowed**

**display();**

**}**

**catch(excp m) //catch(Exception m) ---> prints class name whenever m is called**

**{**

**System.out.println("Error occured: " + m + "Marks entered : " + marks);**

**}**

**}**

**void display()**

**{**

**System.out.println("Marks entered succesfully!!.");**

**}**

**}**

**class exp05**

**{**

**public static void main(String args[])**

**{**

**Scanner scn = new Scanner(System.in);**

**StdntData stdnt = new StdntData(scn.next(),scn.nextInt() ); //calling parameterized constructor**

**}**

**}**

**/\***

**OUTPUT 1:**

**Dhruvil**

**500**

**Error occured! java.lang.MarksOutOfRange Marks entered : 500**

**OUTPUT 2:**

**Dhruvil**

**99**

**Marks entered succesfully!!**

**\*/**

**Conclusion**

**Hence defining and working of programmer defined exceptions is studied and implemented**

**Date: \_\_\_\_\_\_\_\_\_\_\_ Signature of faculty in-charge**

**Post Lab Descriptive Questions (Add questions from examination point view)**

**1. compare throw and throws.**

The throw keyword in Java is used to explicitly throw an exception from a method or any block of code. General form of **throw** is as shown below:

throw Instance

But this exception i.e, Instance must be of type **Throwable** or a subclass of **Throwable**. For example Exception is a sub-class of Throwable and [user defined exceptions typically extend Exception class](http://www.geeksforgeeks.org/g-fact-32-user-defined-custom-exception-in-java/). Unlike C++, data types such as int, char, floats or non-throwable classes cannot be used as exceptions.

The flow of execution of the program stops immediately after the throw statement is executed and the nearest enclosing **try** block is checked to see if it has a **catch** statement that matches the type of exception. If it finds a match, controlled is transferred to that statement otherwise next enclosing **try** block is checked and so on. If no matching **catch**is found then the default exception handler will halt the program.

throws is a keyword in Java which is used in the signature of method to indicate that this method might throw one of the listed type exceptions. The caller to these methods has to handle the exception using a try-catch block.

Below is the general form of a method which includes a **throws** clause:

type method\_name(parameters) throws exception\_list

Here, the exception\_list is a comma separated list of all the exceptions which a method might throw.