# Experiment - 5

**Done By:** Rohit Karunakaran **Roll No:** 58

Write a Java program that shows the usage of try, catch, throws and finally.

**(a)---Try-Finally example**

**Program:**

```
/* File name: TryFinallyExample.java
 *
 *  Done By: Rohit Karunakaran
 * */

public class TryFinallyExample
{
    public static void main(String args[]){
        int a =3;
        int len = args.length;
        try{
            int b = a/len;
        }

        finally{
            System.out.println("In the finally Statement");
            System.out.println("Have a nice Day");
            System.out.println("-------------------------------------\n");
        }
    }
}
```

**Sample Input 1:**

```
*No input*
```

**Sample Output 1:**

```
In the finally Statement
Have a nice Day
-------------------------------------

Exception in thread "main" java.lang.ArithmeticException: / by zero
      at TryFinallyExample.main(TryFinallyExample.java:12)
```

**Sample Input 2:**

```
hello
```

**Sample Output 2:**

```
In the finally Statement
Have a nice Day
-------------------------------------
```

## (b)---Multiple catch example (3 catches for a single try)

## Program:

```
/* File Name : MultipleCatchExample.java
 *
 * Done By: Rohit Karunakaran
 *
 * */
public class MultipleCatchExample{

    public static void main(String args[]){
        //3 catches for a single try
        System.out.println("Example for multiple Catch Statements");
        try
        {
            int len = args.length;
            int i = Integer.parseInt(args[0]);
            int b = Integer.parseInt(args[1]);
            int c = i/b;
        }

        catch(NumberFormatException e)
        {
            System.out.println("In the First Catch");
            System.out.println("An Exception has occurred while parsing the command
line input :"+e);
            System.out.println("Expected an integer");
        }
        catch(ArrayIndexOutOfBoundsException e)
        {
            System.out.println("In the Second Catch");
            System.out.println("Expected more than 1 command line argument");
            System.out.println("Exception occured is : "+e);
        }
        catch(ArithmeticException e)
        {
            System.out.println("In the Third Catch");
            System.out.println("An Exception has occured : "+e);
        }
        finally
        {
            //System.out.println("");
            System.out.println("-------------------------------------");
        }
    }

}
```

**Sample input 1:**

```
*no input*
```

**Sample Output 1**

```
Example for multiple Catch Statements
In the Second Catch
Expected more than 1 command line argument
Exception occured is : java.lang.ArrayIndexOutOfBoundsException: Index 0 out of
bounds for length 0
-------------------------------------
```

**Sample Input 2**

```
2 hi
```

**Sample Output 2**

```
Example for multiple Catch Statements
In the First Catch
An Exception has occurred while parsing the command line
input :java.lang.NumberFormatException: For input string: "hi"
Expected an integer
---------------------------------------
```

**Sample Input 3**

```
2 0
```

**Sample Output 3**

```
Example for multiple Catch Statements
In the Third Catch
An Exception has occured : java.lang.ArithmeticException: / by zero
---------------------------------------
```

## (c)---Nested Try (3 levels of nesting)

## Program:

```
/* File name: NestedTryExample.java
 *
 * Done By: Rohit Karunakaran
 */

public class NestedTryExample
{
    public static void main(String args[]){
        //3 levels of nesting
        int a[] = {1,2,5,32,12};
        System.out.println("\nExample With Nested Try Statements");
        try
        {
            System.out.println("Inside the Outer Most Try Block");
            System.out.println("================================\n");
            int b = a[3];
            try
            {
                System.out.println("Inside the Inner Try Block");
                System.out.println("================================\n");
                int c = 2*a[1]+a[0]-a[2];
                try
                {
                    System.out.println("Inside the Innermost Try Block");
                    System.out.println("================================\n");
                    int e = b/c;
                }

                catch(ArithmeticException e)
                {
                    System.out.println("An Exception has occured in the innerMost
try Block");
                    System.out.println("An Arithmetic expression error occured :
"+e);
                }
```

```
                finally
                {
                    System.out.println("In the final block of the Innermost try
expression");
                    System.out.println("================================\n");
                }
                //System.out.println("After the innermost try bolck Statement");
            }

            finally
            {
                System.out.println("In the final block of the Inner try
expression");
                System.out.println("================================\n");
            }

            int d = a[41]; //Array out of bounds exception

            System.out.println("I assure you that as long as the size of a is less
than 42,");
            System.out.println("This statement will not be excecuted");
        }

        catch(ArrayIndexOutOfBoundsException e)
        {
            System.out.println("Exception :"+e+" \nhas Occured in the outermost try
block");
        }

        finally
        {
            System.out.println("The Final Block of the Outermost try is complete");
            //System.out.println("================================\n");
            System.out.println("------------------------------------\n");
        }
    }
}
```

**Sample input 1:**
*no input*

**Sample output 1:**

```
Example With Nested Try Statements
Inside the Outer Most Try Block
================================

Inside the Inner Try Block
================================

Inside the Innermost Try Block
================================

An Exception has occured in the innerMost try Block
An Arithmetic expression error occured : java.lang.ArithmeticException: / by zero
In the final block of the Innermost try expression
================================

In the final block of the Inner try expression
================================

Exception :java.lang.ArrayIndexOutOfBoundsException: Index 41 out of bounds for
length 5
has Occured in the outermost try block
The Final Block of the Outermost try is complete
------------------------------------
```

**(d)---Throw an exception when there are no sufficient arguments passed into command line as input for adding two numbers.**

## Program:

```
/* File Name: NoSufficientArgument.java
 *
 * Done By: Rohit Karunakaran
 */
public class NoSufficientArgumentForAdding
{
    public static void main(String[] args) //throw Excenption
    {
        try
        {
            if(args.length<2){
                throw new ArrayIndexOutOfBoundsException("Less than 2 command line
arguments found");
            }
            else{
            int a = Integer.parseInt(args[0]);
            int b = Integer.parseInt(args[1]);
            int c = a+b;

            System.out.println("No Exception has occurred. The sum = "+c);
            }
        }
        catch(ArrayIndexOutOfBoundsException e)
        {
            System.out.println(e);
        }
        catch(NumberFormatException e)
        {
            System.out.println("Pass an Integer as a command line argument");
            System.out.println(e);
        }
    }
}
```

**Sample Input 1:**
*no input*
Sample Output 1:
java.lang.ArrayIndexOutOfBoundsException: Less than 2 command line arguments found

**Sample Input 2:**
3

**Sample Output 2:**
java.lang.ArrayIndexOutOfBoundsException: Less than 2 command line arguments found

**Sample Input 3:**
3 4

**Sample Output 3:**
No Exception has occurred. The sum = 7

## (e)---Throws example (for handling two exceptions in a method)

## Program:

```
/*File Name: ThrowsExample.java
 *
 *Done By: Rohit Karunakaran
 */

import java.io.*;

public class ThrowsExample
{

    public static void main(String args[]) throws IOException, ArithmeticException
    {
        try{
            File f = new File("File1.txt");
            FileReader f1 = new FileReader(f);
        }
        catch (IOException ie)
        {
            System.out.println(ie);
        }

        int c = 5/0;

    }

}
```

**Sample Input:**

```
*no input*
```

**Sample Output:**

```
java.io.FileNotFoundException: File1.txt (No such file or directory)
Exception in thread "main" java.lang.ArithmeticException: / by zero
      at Throws.main(Throws.java:22)
```