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Experiment No – 11

AIM: To implement exceptions in Java (CO5)

THEORY:

In Java, an exception is an event that disrupts the normal flow of the program. It is an object which is thrown at runtime. The core advantage of exception handling is to maintain the normal flow of the application. An exception normally disrupts the normal flow of the application; that is why we need to handle exceptions. The java.lang. Throwable class is the root class of Java Exception hierarchy inherited by two subclasses: Exception and Error. Java Exception Handling in which we are using a try-catch statement to handle the exception.

CODE (i): Write a Java Program to input the data through command Line and Find out total valid and in-valid integers. (Hint: use exception handling)

args.java

```
Exp11 > args.java > ...
2   public class args{
        Run | Debug
3       public static void main(String[] args){
4           try {
5               System.out.println(x: "Prerna Sunil Jadhav - 60004220127\n");
6               for (int i = 0; i < args.length; i++) {
7                   int number = Integer.parseInt(args[i]);
8                   System.out.println("You entered: "+number);
9               }
10          }
11          catch (NumberFormatException e) {
12              System.out.println(x: "NumberFormatException occurred");
13          }
14      }
15  }
```

Output:

```
C:\Users\Jadhav\Java\jdk1.8.0_291\bin>javac args.java

C:\Users\Jadhav\Java\jdk1.8.0_291\bin>java args 56 5t
Prerna Sunil Jadhav - 60004220127

You entered: 56
NumberFormatException occurred
```

Theory:

In Java, we can create our own exceptions that are derived classes of the Exception class. Steps to create custom Exception Handling : Create a new class whose name should end with an Exception like MarksOutOfBoundsException .This is a convention to differentiate an exception class from regular ones. Make the class extends one of the exceptions which are subtypes of the java.lang.Exception class. Generally, a custom exception class always extends directly from the Exception class. Create a constructor with a String parameter which is the detailed message of the exception. In this constructor, simply call the super constructor and pass the message

CODE (ii): Write a Java Program to calculate the Result. Result should consist of name, seatno, date, center number and marks of semester three exam. Create a User Defined Exception class MarksOutOfBoundsException, If Entered marks of any subject is greater than 100 or less than 0, and then program should create a user defined Exception of type MarksOutOfBoundsException and must have a provision to handle it.

Code1_MarksException.java 9

Exp11 > Code1_MarksException.java > Code1_MarksException > main(String[])

```
1   package Exp11;
2   import java.util.*;
3
4   class MarksOutOfBoundException extends Exception {
5       MarksOutOfBoundException(String err) {
6           System.out.println(err);
7       }
8   }
9
10  public class Code1_MarksException {
        Run | Debug
11      public static void main(String args[]) {
12          System.out.println(x: "Prerna Jadhav - 60004220127\n");
13          Scanner input = new Scanner(System.in);
14          int choice = 1;
15          while (choice == 1) {
16              try {
17                  int m, m2, m3, seatNo, centerNum;
18                  String name, date;
19                  System.out.println(x: "Enter the Seat Number : ");
20                  seatNo = input.nextInt();
21                  String str1 = input.nextLine();
22                  System.out.println(x: "Enter Name of Student : ");
23                  name = input.nextLine();
24                  System.out.println(x: "Enter the Center Number : ");
25                  centerNum = input.nextInt();
26                  String str = input.nextLine();
27                  System.out.println(x: "Enter Date : ");
28                  date = input.nextLine();
29                  System.out.println(x: "Enter the Marks in Maths : ");
30                  m = input.nextInt();
```

Code1_MarksException.java 9

Exp11 > Code1_MarksException.java > Code1_MarksException > main(String[])

```
31                  System.out.println(x: "Enter the Marks in Chemistry : ");
32                  m2 = input.nextInt();
33                  System.out.println(x: "Enter the Marks in Physics : ");
34                  m3 = input.nextInt();
35              } catch (Exception e) {
36                  System.out.println(e);
37              }
38              System.out.println(x: "\nEnter your choice : \n1.Enter more Student data \n2.Exit ");
39              choice = input.nextInt();
40          }
41          input.close();
42      }
43      public static void main(int seatNo, int centerNo, String date, String name, int marks, int marks2, ir
44              throws MarksOutOfBoundException {
45          if (marks >= 100 || marks <= 0) {
46              throw new MarksOutOfBoundException(
47                      err: "Input marks of all subjects should be greater than 0 and less than 100");
48          } else if (marks2 >= 100 || marks2 <= 0) {
49              throw new MarksOutOfBoundException(
50                      err: "Input marks of all subjects should be greater than 0 and less than 100");
51          } else if (marks3 >= 100 || marks3 <= 0) {
52              throw new MarksOutOfBoundException(
53                      err: "Input marks of all subjects should be greater than 0 and less than 100");
54          } else {
55              System.out.println("\nStudent Details :\nName : " + name + "\nSeat Number: " + seatNo + "\nCe
56                      + centerNo + "\nDate : " + date);
57              System.out.println(
58                      "Marks inMaths : " + marks + "\nMarks in physics : " + marks2 + "\nMarks in chemistry
59          }
60      }
61  }
```

OUTPUT:

```
Prerna Jadhav - 60004220127

Enter the Seat Number :
9800
Enter Name of Student :
Prerna
Enter the Center Number :
32op
java.util.InputMismatchException

Enter your choice :
1.Enter more Student data
2.Exit
Exception in thread "main" java.util.InputMismatchException
        at java.base/java.util.Scanner.throwFor(Scanner.java:939)
        at java.base/java.util.Scanner.next(Scanner.java:1594)
        at java.base/java.util.Scanner.nextInt(Scanner.java:2258)
        at java.base/java.util.Scanner.nextInt(Scanner.java:2212)
        at Exp11.Code1_MarksException.main(Code1_MarksException.java:39)
```

CONCLUSION: Hereby, implemented exceptions in Java.