PG DAC–March 2023
C-DAC THIRUVANANTHAPURAM
JAVA- LAB 10

1. Write a program to calculate the square value of any number given by the user. Add an exception handling block to check whether the user enter letters instead of numbers.

SqValue.java

```
1  package com.javaassignment101.main;
2  import java.util.InputMismatchException;
3  import java.util.Scanner;
4
5  public class SqValue {
6      public int num;
7       public static void main(String[] args) {
8          Scanner scanner = new Scanner(System.in);
9             System.out.print("Enter a number: ");
10             try {
11                    double num = scanner.nextDouble();
12                    double square = num * num;
13             System.out.println("The square of " + num + " is "
14                          + square);
15      }
16             catch (InputMismatchException e) {
17             System.out.println("Error: Please enter a "
18                    + "valid number.");
19                }
20             }
21 }
22
```

Console

```
<terminated> SqValue [Java Application] D:\Eclipse\eclips
Enter a number: 10
The square of 10.0 is 100.0
```

2. Create an integer array of size n and read the elements from the user. Add an exception handling block to print the value at nth position of the array.

SqValue.java *IntArray.java

```
1  package com.javaassignment102.main;
2  import java.util.Scanner;
3
4  public class IntArray {
5      public static void main(String[] args) {
6          Scanner scanner = new Scanner(System.in);
7            System.out.print("Enter the size of the array: ");
8              int n = scanner.nextInt();
9              int[] arr = new int[n];
10
11 System.out.println("Enter the elements of the array:");
12             for (int i = 0; i < n; i++) {
13             arr[i] = scanner.nextInt();
14     }
15
16 System.out.print("Enter the position of the element to print: ");
17              int position = scanner.nextInt();
18
19        try {
20            System.out.println("Element at position "
21                    + position + " is " + arr[position - 1]);
22        } catch (ArrayIndexOutOfBoundsException e) {
23            System.out.println("Invalid position. The array "
24                 + "size is " + n);
25  }
26         }
27   }
```

Console

```
<terminated> IntArray [Java Application] D:\Eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hc
Enter the size of the array: 10
Enter the elements of the array:
10
20
30
40
50
60
70
80
90
100
Enter the position of the element to print: 9
Element at position 9 is 90
```

3. Write a program to read a string and convert to integer using try catch block.

SqValue.java | IntArray.java | *ConvertInt.java

```
1  package com.javaassignment103.main;
2
3  import java.util.InputMismatchException;
4  import java.util.Scanner;
5
6  public class ConvertInt {
7      public static void main(String[] args) {
8          System.out.print("Enter a string: ");
9          Scanner scanner = new Scanner(System.in);
10           try {
11                 int st = scanner.nextInt();
12                 System.out.print("Converted string value to "
13                         + "int: " +st);
14           }
15          catch (InputMismatchException e) {
16       System.out.println("Please enter a valid .");
17           }
18       }
19 }
20
```

Console

```
<terminated> ConvertInt [Java Application] D:\Eclipse\eclipse\plugins\org
Enter a string: 678
Converted string value to int: 678
```

4. Write a program to split a string containing two words using StringTokenizer without using has MoreTokens() method and call nextToken() method three times. Add an exception handling block if necessary.

SplitString.java

```
1  package com.javaassignment104.main;
2
3  import java.util.NoSuchElementException;
5
6      public class SplitString {
7
8          public static void main(String[] args) {
9               String str = "Monika Srivastava";
10
11     try{
12             StringTokenizer st = new StringTokenizer(str);
13
14         System.out.println("Individual strings in str are: ");
15
16         System.out.println(st.nextToken());
17         System.out.println(st.nextToken());
18         System.out.println(st.nextToken());
19               }
20     catch(NoSuchElementException exc) {
21         System.out.println("call the nextToken() method ");
22                   }
23               }
24     }
```

Console

```
<terminated> SplitString [Java Application] D:\Eclipse\eclipse\plu
Individual strings in str are:
Monika
Srivastava
call the nextToken() method
```

5. Create a class named MarkProcess to process the marks with following members

IllegalMarks.java × MarkProcess.java MarksMain.java

```
1 package com.javaassignment105.main;
2
3 class IllegalMarks extends Exception {
4         public IllegalMarks() {
5             super("Illegal Mark");
6         }
7     }
8
9
```

a. Data Members

regno
marks

b. Function members

Constructor to accept all values
validation()- checking marks < 0 and throwing a user defined exception named IllegalMarkException.
result()- declaring PASS if marks>=40 and FAIL otherwise

Create another user defined checked exception class named IllegalMarkException and handle
with the message 'Illegal Mark'. Write a main() method that will create an object of type MarkProcess and call the methods in it to declare the result.

IllegalMarks.java | MarkProcess.java | MarksMain.java

```java
package com.javaassignment105.main;

class MarkProcess {
    private int regno;
    private int marks;

    public MarkProcess(int regno, int marks) {
        this.regno = regno;
        this.marks = marks;
    }

    public void validation() throws IllegalMarks {
        if (marks < 0) {
            throw new IllegalMarks();
        }
    }
    public String result() {
        if (marks >= 40) {
            return "PASS";
        } else {
            return "FAIL";
        }
    }
}

```

IllegalMarks.java | MarkProcess.java | MarksMain.java

```java
package com.javaassignment105.main;
import java.util.Scanner;

public class MarksMain {
        public static void main(String[] args) {
            Scanner scanner = new Scanner(System.in);
            System.out.print("Enter registration number: ");
            int regno = scanner.nextInt();
            System.out.print("Enter marks: ");
            int marks = scanner.nextInt();
            MarkProcess process = new MarkProcess(regno, marks);
            try {
                process.validation();
                System.out.println("Result: " + process.result());
            } catch (IllegalMarks e) {
                System.out.println("Error: " + e.getMessage());
            }
    }
}

```

Console

```
<terminated> MarksMain [Java Application] D:\Eclipse\eclipse\plu
Enter registration number: 101
Enter marks: 98
Result: PASS
```

6. Write a program to read a binary number and convert it to decimal number. Throw user defined exception named InvalidBinaryException if the number entered is not binary.

InvalidBinary.java | BinaryMain.java

```
1  package com.javaassignment106.main;
2  import java.util.Scanner;
3
4  class InvalidBinary extends Exception {
5          public InvalidBinary() {
6              super("Invalid binary number");
7          }
8  }
9
10
```

InvalidBinary.java | BinaryMain.java

```
1  package com.javaassignment106.main;
2  import java.util.Scanner;
3
4  public class BinaryMain {
5      public static void main(String[] args) {
6          Scanner scanner = new Scanner(System.in);
7          System.out.print("Enter a binary number: ");
8          String binary = scanner.nextLine();
9          int decimal = 0;
10         try {
11             for (int i = 0; i < binary.length(); i++) {
12                 char c = binary.charAt(i);
13                 if (c != '0' && c != '1') {
14                     throw new InvalidBinary();
15                 }
16                 decimal = decimal * 2 + (c - '0');
17             }
18             System.out.println("Decimal equivalent: " + decimal);
19         } catch (InvalidBinary e) {
20             System.out.println("Error: " + e.getMessage());
21         }
22     }
23 }
24
```

Console

```
<terminated> BinaryMain [Java Application] D:\Eclipse\
Enter a binary number: 1101
Decimal equivalent: 13
```