Object Oriented Programming in JAVA

Practical No. :- 8

Q.8] Consider student data consist of fields such as roll number, name, and marks of various subjects. Write a program using inbuilt and user defined exceptions to avoid invalid entry.

Code :-

```
import java.util.Scanner;
class IncorrectRollNumberException extends Exception {
   public IncorrectRollNumberException(String s) {
      super(s);
   }
}
class NameTooShortException extends Exception {
   public NameTooShortException(String s) {
      super(s);
   }
}
class InvalidMarksException extends Exception {
   public InvalidMarksException(String s) {
      super(s);
   }
}
                          //////////////////////
class Student {
   int rollNumber;
   String name;
   int[] marks;
   Student(int rollNumber, String name, int ...marks) throws
         IncorrectRollNumberException, NameTooShortException,
         InvalidMarksException {
      System.out.println("Student("+rollNumber+", "+name+", ...marks)");
      if (rollNumber < 0) {
         throw new IncorrectRollNumberException("Roll number cannot be negative");
      }
      this.rollNumber = rollNumber;
      if (name.length() < 3) {
         throw new NameTooShortException("Name should be at least 3 characters long");
      }
      this.name = name;
      for (int i = 0; i < marks.length; i++) {
         if (marks[i] < 0 || marks[i] > 100) {
            throw new InvalidMarksException("Marks should be between 0 and 100");
         }
      }
      this.marks = marks;
   }
}
                          //////////////////////
public class Main {
   public static void main(String[] args) throws IncorrectRollNumberException,
InvalidMarksException, NameTooShortException {
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter the number of students: ");
      int numberOfStudents = sc.nextInt();
      Student[] students = new Student[numberOfStudents];
      for (int i = 0; i < numberOfStudents; i++) {
         System.out.println("Enter the roll number and name" + (i + 1) + ": ");
         int rollNumber = sc.nextInt();
         String name = sc.nextLine();
         System.out.println("Enter the number of subjects: ");
         int numberOfSubjects = sc.nextInt();
```

```
            int[] marks = new int[numberOfSubjects];
            for (int j = 0; j < numberOfSubjects; j++) {
               System.out.println("Enter the marks of subject " + (j + 1) + ": ");
               marks[j] = sc.nextInt();
            }
            students[i] = new Student(rollNumber, name, marks);
         }
//print the details of the students
         for (Student s: students) {
            System.out.print(s.rollNumber + " " + s.name + " ");
            for (int m: s.marks) {
               System.out.print(m + " ");
            }
            System.out.println();
         }
         sc.close();
      }
}
```

Output:-

```
Enter the number of students:
3
Enter the roll number and name1:
1 abhi
Enter the number of subjects:
2
Enter the marks of subject 1:
100
Enter the marks of subject 2:
99
Student(1,  abhi, ...marks)
Enter the roll number and name2:
2 Kai
Enter the number of subjects:
2
Enter the marks of subject 1:
99
Enter the marks of subject 2:
99
Student(2,  Kai, ...marks)
Enter the roll number and name3:
3 Tyson
Enter the number of subjects:
2
Enter the marks of subject 1:
98
Enter the marks of subject 2:
99
Student(3,  Tyson, ...marks)
1  abhi 100 99
2  Kai 99 99
3  Tyson 98 99
```