

Subject: OBJECT ORIENTED PROGRAMMING

PAPER CODE:CS594D

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**ASSIGNMENT 4:Programme - 1**

**Problem Definition** : Create a **user defined exception** named *CheckedArgument* to check the **number of arguments** passed through command line. If the number of arguments is **less than 5**, throw the *CheckedArgument* exception else print the **summation of all the five numbers**.

**Program Code** :

**class** CheckArgumentException **extends** Exception{

CheckArgumentException(String s){

**super**(s);

}

}

**public** **class** TestCheckArgumentException {

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

**try**{

**if**(args.length<5)

**throw** **new** CheckArgumentException("Number of Argument less than 5");

**else** **if**(args.length>5)

**throw** **new** CheckArgumentException("Number of Argument greater than 5");

**else**{

**int** sum=0;

**for**(**int** i=0;i<5;i++)

sum+=Integer.*parseInt*(args[i]);

System.*out*.println(sum);

}

}

**catch**(Exception e){

e.printStackTrace();

}

}

}

**Output:**

Microsoft Windows [Version 10.0.10240]

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C:\Users\dell>cd Desktop/java

C:\Users\dell\Desktop\java>javac -d classes src/TestCheckArgumentException.java

C:\Users\dell\Desktop\java>java -classpath classes TestCheckArgumentException

CheckArgumentException: Number of Argument less than 5

at TestCheckArgumentException.main(TestCheckArgumentException.java:10)

C:\Users\dell\Desktop\java>java -classpath classes TestCheckArgumentException 1 2 3 4 5

15

C:\Users\dell\Desktop\java>java -classpath classes TestCheckArgumentException 1 2 3 4 5 6

CheckArgumentException: Number of Argument greater than 5

at TestCheckArgumentException.main(TestCheckArgumentException.java:12)

C:\Users\dell\Desktop\java>

**ASSIGNMENT 4:Programme - 2**

**Problem Definition** : Consider a **student examination database system** that prints the **mark sheet** of students, Input the following:

1. *Student’s name*
2. *Marks in 6 subjects*

The marks should be between 0-50. If the marks are not in the specific range, raise a *RangeException* else find **total marks** of **students.**

**Program Code** :

**package** assignment4;

**import** java.util.\*;

**class** RangeException **extends** Exception{

RangeException(String s){

**super**(s);

}

}

**public** **class** TestRangeException {

**static** **void** check(String name,**int** marks[])**throws** RangeException{

**int** sum=0;

**boolean** exception=**false**;

**for**(**int** i=0;i<marks.length;i++){

**if**(marks[i]>=0&&marks[i]<=50)

sum+=marks[i];

**else**{

exception=**true**;

**throw** **new** RangeException("Invalid marks");

}

}

**if**(!exception){

System.*out*.println("Marks obtained by the Student : "+name+" is : "+sum);

System.*out*.println("And the percentae is : "+(sum/6.0));

}

}

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

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

System.*out*.println("Enter name of the Student : ");

String name = sc.nextLine();

System.*out*.println("Enter marks of each Subject :");

**int** marks[]=**new** **int**[6];

**for**(**int** i=0;i<6;i++)

marks[i]=sc.nextInt();

**try**{

*check*(name,marks);

}

**catch**(Exception e){

e.printStackTrace();

}

}

}

**Output**

Enter name of the Student :

Suman Sana

Enter marks of each Subject :

40 43 45 -40 46 42

assignment4.RangeException: Invalid marks

at assignment4.TestRangeException.check(TestRangeException.java:17)

at assignment4.TestRangeException.main(TestRangeException.java:35)

**ASSIGNMENT 4:Programme - 3**

**Problem Definition** :Write a program to generate and catch an *ArrayIndexOutOfBoundsException.*

**Program Code** :

**package** assignment4;

**public** **class** TestArrayIndexOutOfBoundsException {

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

**try**{

**int** a[]=**new** **int**[5];

a[5]=9;

}

**catch**(ArrayIndexOutOfBoundsException e){

e.printStackTrace();

}

}

}

**Output**

java.lang.ArrayIndexOutOfBoundsException: 5

at assignment4.TestArrayIndexOutOfBoundsException.main(TestArrayIndexOutOfBoundsException.java:8)

**ASSIGNMENT 4:Programme - 4**

**Problem Definition** : Define an **object reference** and initialyse it to **null.** Try to call a method through this reference. Now rap the code in *try-catch* clause to catch the exception.

**Program Code** :

**package** assignment4;

**public** **class** TestNullPointerException {

**void** fun(){

System.*out*.println("Welcome");

}

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

**try**{

TestNullPointerException obj = **null**;

obj.fun();

}

**catch**(NullPointerException e){

e.printStackTrace();

}

}

}

**Output**

java.lang.NullPointerException

at assignment4.TestNullPointerException.main(TestNullPointerException.java:10)

**ASSIGNMENT 4:Programme - 5**

**Problem Definition** : Consider a **Class** that represent an **account** in bank.let the minimum balance for account be 1000/-. Write a program that **throws an exception** when a withdrawal results in the balance decreasing to value less than 1000/-.

**Program Code** :

**package** assignment4;

**class** FirstException **extends** Exception{

FirstException(String s){

**super**(s);

}

}

**class** SecondException **extends** Exception{

SecondException(String s){

**super**(s);

}

}

**public** **class** TestDifferentException {

**void** first() **throws** FirstException{

**try**{

second();

}

**catch**(SecondException e){

e.printStackTrace();

**throw** **new** FirstException("FirstException");

}

}

**void** second() **throws** SecondException{

**throw** **new** SecondException("Second Exception");

}

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

TestDifferentException obj = **new** TestDifferentException();

**try**{

obj.first();

}

**catch**(Exception e){

e.printStackTrace();

}

}

}

**Output**

The amount of balance 3000.0 withdrawn succesfully

Availlable balance is : 2000.0

assignment4.BankException: There has not enough balance to withdraw this amount of money 1500.0

at assignment4.Account.withdraw(Account.java:18)

at assignment4.Account.main(Account.java:24)

**ASSIGNMENT 4:Programme - 6**

**Problem Definition** : Create **your own exception class** using *extends* keyword. Write a **constructor** for the class that takes a *String* argument and store it inside object with a *String* reference. Write a method that **prints out** the stored *String*. Create a *try-catch* clause to exercise your new exception.

**Program Code** :

**package** assignment4;

**class** AgeException **extends** Exception{

AgeException(String s){

**super**(s);

}

}

**public** **class** TestOwnException {

**public** **static** **void** validate(**int** age) **throws** AgeException{

**if**(age<18)

**throw** **new** AgeException("Not eligible for vote");

**else**

System.*out*.println("Eligible for Vote");

}

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

**try**{

*validate*(14);

}

**catch**(AgeException e){

e.printStackTrace();

}

}

}

**Output**

assignment4.AgeException: Not eligible for vote

at assignment4.TestOwnException.validate(TestOwnException.java:10)

at assignment4.TestOwnException.main(TestOwnException.java:16)

**ASSIGNMENT 4:Programme - 7**

**Problem Definition** : Create a **class** with method *first*() and *second*(). Each method *throws* an exception of a new type that you have defined. In *first*(), call *second*(), catch its **exception** and in the catch clause, throw a different exception. In *main*() call the *first*() method.

**Program Code** :

**package** assignment4;

**class** FirstException **extends** Exception{

FirstException(String s){

**super**(s);

}

}

**class** SecondException **extends** Exception{

SecondException(String s){

**super**(s);

}

}

**public** **class** TestDifferentException {

**void** first() **throws** FirstException{

**try**{

second();

}

**catch**(SecondException e){

e.printStackTrace();

**throw** **new** FirstException("FirstException");

}

}

**void** second() **throws** SecondException{

**throw** **new** SecondException("Second Exception");

}

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

TestDifferentException obj = **new** TestDifferentException();

**try**{

obj.first();

}

**catch**(Exception e){

e.printStackTrace();

}

}

}

**Output**

assignment4.SecondException: Second Exception

at assignment4.TestDifferentException.second(TestDifferentException.java:23)

at assignment4.TestDifferentException.first(TestDifferentException.java:15)

at assignment4.TestDifferentException.main(TestDifferentException.java:28)

assignment4.FirstException: FirstException

at assignment4.TestDifferentException.first(TestDifferentException.java:19)

at assignment4.TestDifferentException.main(TestDifferentException.java:28)

**ASSIGNMENT 4:Programme - 8**

**Problem Definition** : Create 3 new types of exceptions. Write a class with method that throws **all 3**. In *main*(), call the **method** but only use **a single catch clause** that will catch all 3 types of exception.

**Programming Code :**

**import** java.util.\*;

**class** FirstException **extends** Exception{

FirstException(String s){

**super**(s);

}

}

**class** SecondException **extends** Exception{

SecondException(String s){

**super**(s);

}

}

**class** ThirdException **extends** Exception{

ThirdException(String s){

**super**(s);

}

}

**public** **class** TestException {

**public** **static** **void** check(String str) **throws** FirstException, SecondException, ThirdException{

**if**(str.equals("First"))

**throw** **new** FirstException("First Exception");

**else** **if**(str.equals("Second"))

**throw** **new** SecondException("Second Exception");

**else**

**throw** **new** ThirdException("Thirs Exception");

}

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

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

System.*out*.println("Enter number of test cases :");

**int** t=sc.nextInt();

sc.nextLine();

**while**(t--!=0){

**try**{

System.*out*.println("Enter the type of exception to be

thrown : ");

String s=sc.nextLine();

*check*(s);

}

**catch**(Exception e){

System.*out*.println(e);

}

}

}

}

**Output**

Enter number of test cases :

3

Enter the type of exception to be thrown :

First

FirstException: First Exception

Enter the type of exception to be thrown :

Second

SecondException: Second Exception

Enter the type of exception to be thrown :

Third

ThirdException: Thirs Exception

**ASSIGNMENT 4:Programme - 9**

**Problem Definition** : Write a **class** Student with attributes *roll no, name , age*, and *course*. Initialize **values** through **parameterized constructor**. If age of student is not in between 15 and 21 then generate **user defined exception** ”*Age not within Range*”. If name contains numbers or **special symbols**, raise exception “*Name not Valid”.*

**Program Code** :

**package** assignment4;

**import** java.util.\*;

**class** StudentException **extends** Exception{

StudentException(String s){

**super**(s);

}

}

**class** Student2{

**int** roll;

String name;

**int** age;

String course;

Student2(**int** roll,String name,**int** age,String course) **throws** StudentException{

**boolean** success=**true**;

**for**(**int** i=0;i<name.length();i++){

**char** ch=name.charAt(i);

**if**(!((ch>='a'&&ch<='z')||(ch>='A'&&ch<='Z')||ch==' ')){

success=**false**;

**throw** **new** StudentException("Name is not valid");

}

}

**if**(age<15||age>21){

success=**false**;

**throw** **new** StudentException("Age is not within the range");

}

**if**(success){

**this**.roll=roll;

**this**.name=name;

**this**.age=age;

**this**.course=course;

System.*out*.println("Succefully inserted all the field of Student");

}

}

}

**public** **class** TestStudentException {

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

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

System.*out*.println("Enter the no. of test cases :");

**int** t=sc.nextInt();

**while**(t--!=0){

System.*out*.println("Enter roll of the Student:");

**int** roll=sc.nextInt();

sc.nextLine();

System.*out*.println("Enter name of the Student:");

String name=sc.nextLine();

System.*out*.println("Enter age of the Student:");

**int** age=sc.nextInt();

sc.nextLine();

System.*out*.println("Enter course of the Student:");

String course=sc.nextLine();

**try** {

Student2 obj = **new** Student2(roll,name,age,course);

} **catch** (StudentException e) {

System.*out*.println(e);

}

}

}

}

**Output**

Enter the no. of test cases :

3

Enter roll of the Student:

13

Enter name of the Student:

Suman #$

Enter age of the Student:

19

Enter course of the Student:

CSE

assignment4.StudentException: Name is not valid

Enter roll of the Student:

13

Enter name of the Student:

Suman Sana

Enter age of the Student:

14

Enter course of the Student:

CSE

assignment4.StudentException: Age is not within the range

Enter roll of the Student:

13

Enter name of the Student:

Suman Sana

Enter age of the Student:

19

Enter course of the Student:

CSE

Succefully inserted all the field of Student

**ASSIGNMENT 4:Programme - 10**

**Problem Definition** : Write a java program to find **exception** “*Marks out of Bounds*”. Create a class Student. If mark is greater than 100, it must generate user defined exception called “*Marks out of Bounds*” and **throw** it.

**Program Code** :

**package** assignment4;

**import** java.util.\*;

**class** MarksOutOfBoundsException **extends** Exception{

MarksOutOfBoundsException(String s){

**super**(s);

}

}

**public** **class** Student{

**public** **static** **void** validateMarks(**int** marks[]) **throws** MarksOutOfBoundsException{

**boolean** exception=**false**;

**for**(**int** i=0;i<marks.length;i++){

**if**(marks[i]>100){

exception=**true**;

**throw** **new** MarksOutOfBoundsException("Marks Out Of Bounds Exception");

}

}

**if**(!exception)

System.*out*.println("All marks are valid");

}

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

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

System.*out*.println("Enter the number of subject :");

**int** n = sc.nextInt();

**int** marks[]=**new** **int**[n];

System.*out*.println("Enter the marks in each subject :");

**for**(**int** i=0;i<marks.length;i++)

marks[i]=sc.nextInt();

**try**{

*validateMarks*(marks);

}

**catch**(MarksOutOfBoundsException e){

e.printStackTrace();

}

}

}

**Output**

Enter the number of subject :

5

Enter the marks in each subject :

89 90 98 94 105

assignment4.MarksOutOfBoundsException: Marks Out Of Bounds Exception

at assignment4.Student.validateMarks(Student.java:15)

at assignment4.Student.main(Student.java:30)

**ASSIGNMENT 4:Programme - 11**

**Problem Definition** : Write a java program to check if entered data is **alphabet** or **digit**. If it is **alphabet**, the print if its **capital** or **small** case. If digit is entered throw user **defined exception** “*digit not allowed*”

**Program Code** :

**package assignment4;**

**import java.util.\*;**

**import java.lang.\*;**

**class DigitNotAllowedException extends Exception{**

**DigitNotAllowedException(String s){**

**super(s);**

**}**

**}**

**public class TestDigitNotAllowedException {**

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

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

**try{**

**System.out.println("Enter the no. of data you want to entered : ");**

**int n=sc.nextInt();**

**sc.nextLine();**

**char array[]=new char[n];**

**for(int i=0;i<array.length;i++){**

**System.out.println("Enter data :");**

**array[i]=sc.next().charAt(0);**

**if(Character.isLetter(array[i])){**

**if(Character.isUpperCase(array[i]))**

**System.out.println("Capital");**

**else if(Character.isLowerCase(array[i]))**

**System.out.println("Small case");**

**}**

**else if(Character.isDigit(array[i]))**

**throw new DigitNotAllowedException("digit not**

**allowed");**

**}**

**}**

**catch(DigitNotAllowedException e){**

**e.printStackTrace();**

**}**

**}**

**}**

**Output**

Enter the no. of data you want to entered :

3

Enter data :

S

Capital

Enter data :

s

Small case

Enter data :

9

assignment4.DigitNotAllowedException: digit not allowed

at assignment4.TestDigitNotAllowedException.main(TestDigitNotAllowedException.java:29)

**ASSIGNMENT 4:Programme - 12**

**Problem Definition** : Write a java program to implement the following:

1. Find the length of *String*.
2. Find the length of *String* except **whitespaces**.
3. Converts a **double** value to *String*.
4. Check whether *String* contains **characters** or **digits** or **both**.
5. Input 2 *Strings*- check whether 2nd *String* is reverse of first one or not.
6. Compute 2 *Strings* and find if they are equal or not.
7. Remove the 6th to 8th characters from a *String*.
8. Convert a *String* to **lowercase** and **uppercase**.
9. Reverse a *String*.

**Program Code** :

**//**

**Output**

//