CIE-2 LAB RECORD

LAB PROGRAM NOS: 6-10

LAB INSTRUCTOR: Nandini Vineeth Madam

COURSE NAME: Object Oriented Java Programming

COURSE CODE: 19CS3PCOOJ

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SEM: 3RD

LAB PROGRAMS(6-10):

6)

Create a package CIE which has two classes- Student and Internals. The class Personal has members like usn, name, sem. The class internals has an array that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import the two packages in a file that declares the final marks of n students in all five courses.

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② Creak a package CIE which has two classes - Student and Internals. Import the two package in a file that declares final marks of n studen in all 5 courses.

code: Student.java

```
package CIE;
import java.util.Scanner;
public class student
{
public String usn,name;
public int sem;
public void accept()
{
Scanner sc=new Scanner(System.in);
System.out.println("Please enter your USN");
usn = sc.nextLine();
System.out.println("Please enter your name:");
name = sc.nextLine();
System.out.println("Please enter your semsete:
sem=sc.nextint();
}
}
```

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Internals.java

```
import java.util.Scanner;
public class Internals extends CIE.Student
{
public int[] int_marks=new int[5];
Scanner sc=new Scanner(System.in);
public void input()
 {
 for(int i=0;i<5;i++)
 {
 System.out.println("Please enter your cie marks
in cocue:");
int_marks[i]=sc.nextInt();
}}}
```

SEE Package :-

External.java

```
package SEE;
import CIE.*;
import java.util.Scanner;
public class External extends Student
 {
 public int see_marks[]=new int[5];
 public void input1()
 {
 Scanner sc=new Scanner(System.in);
 for(int i=0;i<5;i++)
 {
 System.out.println("Please enter SEE marks
}}} see_marks[i]=sc.nextInt(); course "+(i+1)+":");
```

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In folder:—

Result.java

```
import CIE.*;
import SEE.*;
import java.util.Scanner;
public class Result
{
public static void main(String args[])
 {
 int n;
  Scanner sc = new Scanner(System.in);
System.out.println("Please enter the number of
students whose final marks are to computed");
n = sc.nextInt();
CIE.Student s[] = new CIE.Student[n];
CIE.Internals c[] = new CIE.Internals[n];
SEE.External e[] = new SEE.External[n];
for (int i=0; i<n; i++)
 {
 System.out.println("Please enter details of
   Student"+(i+1)+":");
s[i] = new CIE.Student();
s[i] = accept();
c[i] = new CIE.Internals();
c[i].input();
e[i] = new SEE.External();
e[i].input();
System.out.println("Final mark for student"+
   (i+1));
for (int j=0; j<5; j++)
 {System.out.println("Mark in course"+(j+1)+":"
+(c[i].int_marks[j]+(e[i].see_marks[j]
}}}
```

Scanned with CamScanner

OUTPUT:

```
C:\Users\admin\Documents\Lab_program_6>javac CIE\Internals.java

C:\Users\admin\Documents\Lab_program_6>javac CIE\Student.java

C:\Users\admin\Documents\Lab_program_6>javac SEE\External.java

C:\Users\admin\Documents\Lab_program_6>javac Result.java

C:\Users\admin\Documents\Lab_program_6>java Result
Please enter the number of Students whose final marks are to be calcul
1
Please enter the details of Student1:
Please enter your USN:
1BM19CS074
Please enter your name:
Sharat
Please enter your semester:
3
Please enter your cie marks in course:
45
Please enter your cie marks in course:
44
Please enter your cie marks in course:
43
Please enter your cie marks in course:
46
Please enter your cie marks in course:
47
Please enter your SEE marks in course1:
98
Please enter your SEE marks in course2:
90
Please enter your SEE marks in course3:
86
Please enter your SEE marks in course4:
84
Please enter your SEE marks in course5:
82
Final Marks for student:1
marks in course:1:94
marks in course:2:89
marks in course:3:86
```

```
Final Marks for student:1
marks in course:1:94
marks in course:2:89
marks in course:3:86
marks in course:4:88
marks in course:5:88
```

7)

Write a program to demonstrate generics with multiple object parameters.

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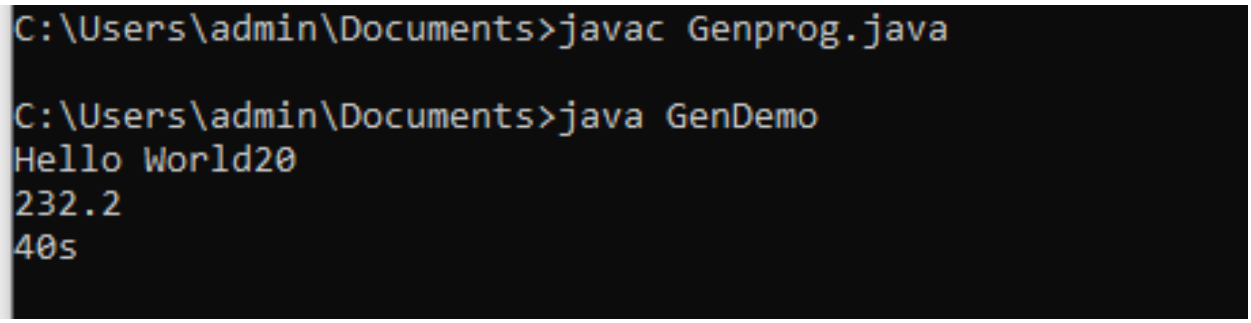
Q. Write a program to demonstrate generics with multiple object parameters.

Code:

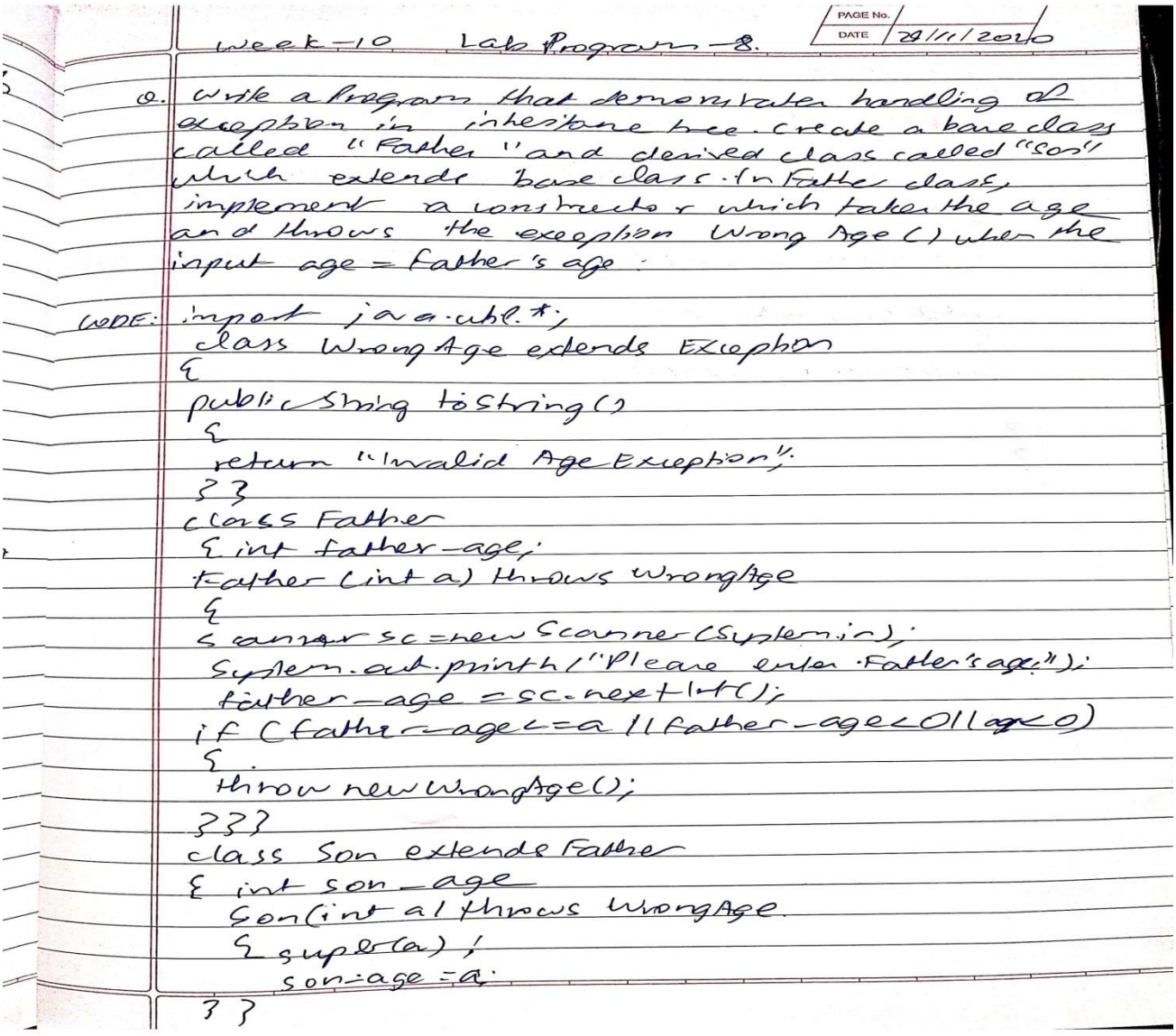
```
class Genprog <T1, T2>
 {
   Genprog(T1 ob1, T2 ob2)
    {
     System.out.println(ob1 + " " + ob2);
    }
 }
class GenDemo
 {
 public static void main(String Args[])
  {
   Genprog t1=new Genprog<String, Integer>("Hello
                                    world",20);
   Genprog t2=new Genprog<Integer, Float>(23.4);
   Genprog t3=new Genprog<Integer, Character>
                                    (44,'s');
  }
 }
```

OUTPUT:


C:\Users\admin\Documents>javac Genprog.java
C:\Users\admin\Documents>java GenDemo
Hello World20
232.2
40s

8)

Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called "Father" and derived class called "Son" which extends the base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge( ) when the input age<0. In Son class, implement a constructor that cases both father and son's age and throws an exception if son's age is >=father's age.



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Q. Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called "Father" and derived class called "Son" which extends base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge() when the input age < Father's age.

CODE:

```
import java.util.*;
class WrongAge extends Exception
{
public String toString()
 {
  return "Invalid Age Exception";
 }}
class Father
 { int father_age;
 Father(int a) throws WrongAge
 {
 Scanner sc=new Scanner(System.in);
  System.out.println("Please enter Father's age:");
  father_age=sc.nextInt();
 if (father_age<=a || father_age<0||age<0)
 {
  throw new WrongAge();
 }}}
class Son extends Father
{ int son_age
   Son(int a) throws WrongAge
    { super(a);
      son_age=a;
 }}
```

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```
class Main
{
public static void main(String Args[])
 {
  System.out.println("Please enter the son's age");
try
{
Son s1=new Son(new Scanner(System.in).nextInt());
}
catch(wrongAge e)
 {
System.out.println(e);
}
}
}
```

OUTPUT:

```
C:\Users\admin\Documents>javac WrongAge.java

C:\Users\admin\Documents>java Main
Please enter the son's age:
20
Please enter the Father's age:
11
Invalid Age Exception

C:\Users\admin\Documents>java Main
Please enter the son's age:
-12
Please enter the Father's age:
-100
Invalid Age Exception
```

9)

Write a program which creates two threads, one thread displaying "BMS College of Engineering" once every ten seconds and another displaying "CSE" once every two seconds.

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Q. Write a program which creates two threads one display "BMS college of engineering" once every 10 seconds and one displaying "CSE" every two seconds.

Ans:

```
class NewThread implements Runnable
{
 Thread t;
 String name;
 long time;
 NewThread (String thname, long time2)
 {
  time = time2;
  name = thname;
  t = new Thread (this, name);
  t.start();
 }
 public void run()
{
 try
 {
  for (int i=10; i>0; i--)
  {
   System.out.println(t.getName());
   Thread.sleep(time);
  }
 }
catch (InterruptedException ie)
 {
 System.out.println("Child Thread Interrupted");
 }
```

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```
System.out.println("Child Thread exiting");
}
}
class ThreadDemo
{
public static void main(String args[])
{
NewThread n1 = new NewThread("BMS COLLEGE OF ENGINEERING", 1000);
NewThread n2 = new NewThread("CSE", 2000);
}}
```

OUTPUT:

```
C:\Users\admin\Documents>java ThreadDemo
BMS COLLEGE OF ENGINEERING
CSE
CSE
CSE
CSE
CSE
BMS COLLEGE OF ENGINEERING
CSE
CSE
CSE
CSE
CSE
BMS COLLEGE OF ENGINEERING
Child Thread quitting
```

10)

Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

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Q. Write a Program that creates a user interface to perform integer divisions. The user enters two numbers in the textfield, Num1 and Num2. The division of Num1 and Num2 is displayed in Result field when the Divide Button is clicked. If Num1 and Num2 aren't integer throw NumberFormatException. If Num2 were zero throw ArithmeticException display in the message dialog box.

```
import java.awt.*;
import java.awt.event.*;
class Dialog1 extends Dialog implements ActionListener
{
IntDiv id;
Dialog1(Frame parent, String title)
 {
 super(parent, title, false);
 id=(IntDiv) parent;
 setLayout(new FlowLayout());
 setSize(300,200);
 add(new Label(id.msg));
 Button b;
 add(b = new Button("OK"));
 b.addActionListener(this);
}
public void actionPerformed(ActionEvent ae)
 {
  dispose();
 }
}
```

```
public class IntDiv extends Frame implements
 Action Listener
{
Textfield n1,n2,res;
string msg="";
Label ln1,ln2,lres;
Button b;
public IntDiv()
 {
setLayout(new FlowLayout());
 label ln1=new Label("Number 1"; Label.RIGHT
Label ln2 = new Label("Number 2", Label.RIGHT
 Label lres=new Label("RESULT", Label.RIGHT);
  n1=new TextField(12);
  n2 = new TextField(8);
  res = new TextField(10);
  b=new Button("DIVIDE");
add(ln1);
add(n1);
add(ln2);
add(n2);
add(b);
add(lres);
add(res);
  b.addActionListener(this);
add WindowListener(new WindowAdapter());
}
public void actionPerformed(ActionEvent ae)
  {
   if(ae.getSource()==b)
     {
       try {
```

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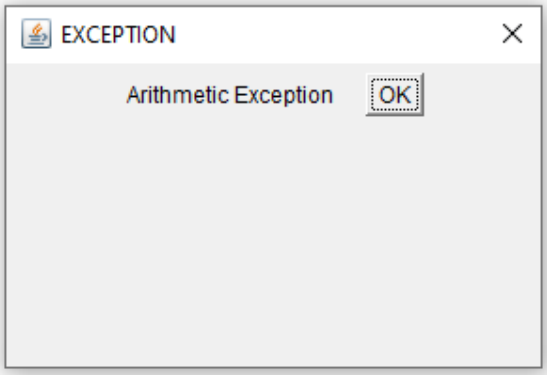
```
int num1 = Integer.parseInt(n1.getText());
int num2 = Integer.parseInt(n2.getText());
int num3 = num1/num2;
res.setText(String.valueOf(num3));
}
catch(NumberFormatException ne)
{
msg = "NumberFormat Exception";
dialog1 d = new Dialog(this, "EXCEPTION");
d.setVisible(true);
}
}}
public static void main(String args[])
{
IntDiv i = new IntDiv();
i.setSize(new Dimension(400,400));
i.setTitle("INTEGER DIVISION OF TWO NUMBERS");
i.setVisible(true)
}
class WindowAdapter1 extends WindowAdapter
{
public void windowClosing(WindowEvent we)
{
System.exit(0);
}
}
}
```

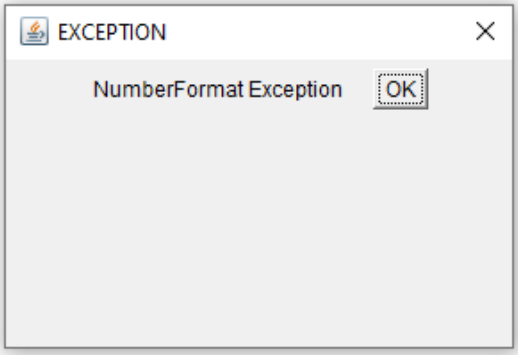
OUTPUT:

1. Normal result

2. Arithmetic Exception



3. NumberFormat Exception



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