

Lab 6:

CLASSMATE

Date _____

Page _____

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 5 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 5 courses of the current sem of one student. Import the two packages in a file that declares the final marks of n students.

package CIE;

• student

```
import java.util.Scanner;
```

```
public class Student
```

```
{
```

```
    String name, usn;
```

```
    int sem;
```

```
    Scanner xx=new Scanner (System.in);
```

```
    public void accept()
```

```
    public void accept()
```

```
{
```

```
System.out.println("Enter Name : ");
name = xx.nextLine();
System.out.println("Enter USN : ");
usn = xx.nextLine();
System.out.println("Enter Semester : ");
Sem = xx.nextLine();
```

3

```
public void display()
```

```
{  
    System.out.println("Name : "+name);  
    System.out.println("Usn : "+usn);  
    System.out.println("Semester : "+Sem);
```

3

3

```
package CIE;
import java.util.Scanner;
public class Internals extends CIE.Student
```

```
{  
    public int ciem[] = new int[5];  
    Scanner xx = new Scanner(System.in);
```

```
    public void accept()  
{
```

```
        for (int i=0; i<5; i++)  
    {
```

```
            System.out.println("Enter the cie marks of  
            subject "+(i+1)+" out of 50");
```

{

ciem[i] = sr.nextInt();

}

{

{

package SEE;

import CIE.*;

import java.util.Scanner;

public class External extends CIE.Student

{

public int sem[] = new int[5];

Scanner sr = new Scanner(System.in);

public void accept()

{

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

{

System.out.println("Enter the see marks of
subject " + (i+1) + " out of 100");

{

sem[i] = sr.nextInt();

{

{

{

{

```
import CIE.*;
import SGE.*;
import java.util.*;
```

```
class Totalmarks
{
```

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

```
        int i, j, n;
```

```
        int total[] = new int [5];
```

```
        Scanner sc = new Scanner (System.in);
        System.out.println ("Enter one number of
                           students");
```

```
        n = sc.nextInt();
```

```
        CIE.Student st[] = new CIE.Student [n];
```

```
        CIE.Internal s[] = new CIE.Internal [n];
```

```
        SGE.External se[] = new SGE.External [n];
```

```
        for (i=0; i < n; i++)
{
```

```
            System.out.println ("Enter Student " + (i+1) +
                               " details");
            st[i] = new CIE.Student();
            st[i].accept();
```

```
            s[i] = new CIE.Internal();
            s[i].accept();
```

```
            se[i] = new SGE.External();
            se[i].accept();
```

```
        }
```

3

```
        for (i=0; i < n; i++)
{
```

8

```
System.out.println("Details of Student"
+ (i + 1));

```

```
s[i].display();

```

```
for (j = 0; j < s; j++)

```

```
total[j] = c[i].csem[j] + (s[i].semin[j]);

```

```
System.out.println("Total marks in subject");

```

```
(j + 1) " is " total[j];

```

3

3

3

3

Internals - Notepad

File Edit Format View Help

```
package CIE;
import java.util.Scanner;
public class Internals extends CIE.Student
{
    public int ciem[] = new int[5];
    Scanner xx = new Scanner (System.in);
    public void accept()
    {
        for(int i=0;i<5;i++)
        {
            System.out.println("Enter the cie marks of subject"+(i+1)+" out of 50");
            {
                ciem[i]=xx.nextInt();
            }
        }
    }
}
```

Student - Notepad

File Edit Format View Help

```
package CIE;
import java.util.Scanner;

public class Student
{
    String name,usn;
    int sem;
    Scanner xx=new Scanner(System.in);
    public void accept()
    {
        System.out.println("Enter name:");
        name=xx.nextLine();
        System.out.println("Enter usn:");
        usn=xx.next();
        System.out.println("Enter sem:");
        sem=xx.nextInt();
    }
    public void display()
    {
        System.out.println("Name :" +name);
        System.out.println("Usn :" +usn);
        System.out.println("Sem :" +sem);
    }
}
```

Externals - Notepad

File Edit Format View Help

```
package SEE;
import CIE.*;
import java.util.Scanner;

public class Externals extends CIE.Student
{
    public int seem[] = new int[5];
    Scanner xx = new Scanner (System.in);
    public void accept()
    {
        for(int i=0;i<5;i++)
        {
            System.out.println("Enter the see marks of subject"+(i+1)+" out of 100");
            {
                seem[i]=xx.nextInt();
            }
        }
    }
}
```

TotalMarks - Notepad

File Edit Format View Help

```
import CIE.*;
import SEE.*;
import java.util.*;

class TotalMarks
{
    public static void main(String sss[])
    {
        int i,j,n;
        int total[]=new int[5];
        Scanner xx=new Scanner(System.in);
        System.out.println("Enter the number of students");
        n=xx.nextInt();
        CIE.Student s[]=new CIE.Student[n];
        CIE.Internals ci[]= new CIE.Internals[n];
        SEE.Externals se[]=new SEE.Externals[n];
        for(i=0;i<n;i++)
        {
            System.out.println("ENTER STUDENT"+(i+1)+" DETAILS");
            s[i]=new CIE.Student();
            s[i].accept();
            ci[i]=new CIE.Internals();
            ci[i].accept();
            se[i]=new SEE.Externals();
            se[i].accept();
        }
        for(i=0;i<n;i++)
        {
            System.out.println("DETAILS OF STUDENT "+(i+1));
            s[i].display();
            for(j=0;j<5;j++)
            {
                total[j]=ci[i].ciem[j]+(se[i].seem[j]/2);
                System.out.println("Total marks in subject"+(j+1)+" is "+total[j]);
            }
        }
    }
}
```

Command Prompt

Microsoft Windows [Version 10.0.19042.685]

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C:\Users\eshan>d:

D:\>cd oojlab

D:\oojlab>java TotalMarks

Enter the number of students

2

ENTER STUDENT1 DETAILS

Enter name:

eshan

Enter usn:

1bm18cs131

Enter sem:

3

Enter the cie marks of subject1 out of 50

45

Enter the cie marks of subject2 out of 50

40

Enter the cie marks of subject3 out of 50

35

Enter the cie marks of subject4 out of 50

42

Enter the cie marks of subject5 out of 50

46

Enter the see marks of subject1 out of 100

35

Enter the see marks of subject2 out of 100

78

Enter the see marks of subject3 out of 100

79

Enter the see marks of subject4 out of 100

65

Enter the see marks of subject5 out of 100

66

ENTER STUDENT2 DETAILS

Enter name:

yash

Enter usn:

94478

Command Prompt

66

ENTER STUDENT2 DETAILS

Enter name:

yash

Enter usn:

94478

Enter sem:

3

Enter the cie marks of subject1 out of 50

45

Enter the cie marks of subject2 out of 50

40

Enter the cie marks of subject3 out of 50

25

Enter the cie marks of subject4 out of 50

32

Enter the cie marks of subject5 out of 50

43

Enter the see marks of subject1 out of 100

35

Enter the see marks of subject2 out of 100

67

Enter the see marks of subject3 out of 100

85

Enter the see marks of subject4 out of 100

48

Enter the see marks of subject5 out of 100

68

DETAILS OF STUDENT 1

Name :eshan

Usn :1bm18cs131

Sem :3

Total marks in subject1 is 62

Total marks in subject2 is 79

Total marks in subject3 is 74

Total marks in subject4 is 74

Total marks in subject5 is 79

DETAILS OF STUDENT 2

Name :yash

Usn :94478

Sem :3

Total marks in subject1 is 62

DETAILS OF STUDENT 1

Name :eshan

Usn :1bm18cs131

Sem :3

Total marks in subject1 is 62

Total marks in subject2 is 79

Total marks in subject3 is 74

Total marks in subject4 is 74

Total marks in subject5 is 79

DETAILS OF STUDENT 2

Name :yash

Usn :94478

Sem :3

Total marks in subject1 is 62

Total marks in subject2 is 73

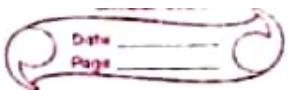
Total marks in subject3 is 67

Total marks in subject4 is 56

Total marks in subject5 is 77

D:\ooj1ab>|

lab7: write a program to demonstrate generics w/m multiple object parameters.



class GENERICSCLF,S>

{

F object1;
S object2;

GENERICSCLF O1, S O2)

{

object1 = O1;
object2 = O2;
}

void printname()

{

System.out.println("Type of object 1 is "+
object1.getClass().getName());
System.out.println("Type of object 2 is "+
object2.getClass().getName());

}

F getobj1()

{

return object1;

}

S getobj2()

{

return object2;

}

```
public class DGenerics  
{
```

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

```
        GENERICS<Float, String> G1 = new GENERICS<  
            Float, String > (10F, "CGPA");
```

```
        G1.printname();
```

```
        float FL = G1.getob1();
```

```
        System.out.println("The number given to obj  
        1 is " + FL);
```

```
        String ST = G1.getob2();
```

```
        System.out.println("The detail given to obj  
        2 is " + ST);
```

3

3

Main2 - Notepad

```
File Edit Format View Help
import java.util.Scanner;
class multiple<T, V>
{
    T ob1;
    V ob2;

    multiple(T o1, V o2)
    {
        ob1 = o1;
        ob2 = o2;
    }

    void showTypes()
    {
        System.out.println("Type of first: " +ob1.getClass().getName());
        System.out.println("Type of second: " +ob2.getClass().getName());
    }

    T getob1()
    {
        return ob1;
    }

    V getob2()
    {
        return ob2;
    }
}

class Main2 {
    public static void main(String args[])
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any string: ");
        String s = scan.nextLine();
        System.out.println("Enter any integer: ");
        int i = scan.nextInt();

        System.out.println();

        System.out.println("Enter any string: ");
        String st = scan.next();
        System.out.println("Enter any double: ");
        double d = scan.nextDouble();
    }
}
```

Main2 - Notepad

File Edit Format View Help

```
v getob2()
{
    return ob2;
}

class Main2 {
    public static void main(String args[]) {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter any string: ");
        String s = scan.nextLine();
        System.out.println("Enter any integer: ");
        int i = scan.nextInt();

        System.out.println();

        System.out.println("Enter any string: ");
        String st = scan.next();
        System.out.println("Enter any double: ");
        double d = scan.nextDouble();

        multiple<String, Integer> tgObj = new multiple<String, Integer>(s, i);
        tgObj.showTypes();

        String str = tgObj.getob1();
        System.out.println("value of set 1: " + str);
        int v = tgObj.getob2();
        System.out.println("value of set 1: " + v);

        System.out.println();

        multiple<String, Double> tObj = new multiple<String, Double>(st, d);
        tObj.showTypes();

        String strn = tObj.getob1();
        System.out.println("value of set 2: " + strn);
        double vd = tObj.getob2();
        System.out.println("value of set 2: " + vd);
    }
}
```

Command Prompt
Microsoft Windows [Version 10.0.19042.685]
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C:\Users\eshan>d:
D:\>cd java
D:\java>java Main2
Enter any string:
1
Enter any integer:
6
Enter any string:
2
Enter any double:
66
Type of first: java.lang.String
Type of second: java.lang.Integer
value of set 1: 1
value of set 1: 6

Type of first: java.lang.String
Type of second: java.lang.Double
value of set 2: 2
value of set 2: 66.0
D:\java>

Quesno 8 : WAP that demonstrates handing of exceptions in inheritance tree. Create a base class called Father and derived class "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.

class Father

{

 Static void acceptNameF(int inputAge) throws
 ArithmaticException.

}

 try

 if (inputAge < 0)

 throw new ArithmaticException("Wrong Age");

 }

 catch (ArithmaticException e) {

 System.out.println("Caught " + e);

 }

 }

 }

 class Son extends Father.

}

 Static void checkAge(int S_Age, int F_Age)

throws ArithmeticException

{

try {

if (S_Age >= F_Age)

throw new ArithmeticException ("Son's age
should be smaller than father's age,
wrong age");System.out.println ("Son's age is " + S_Age);
"Father's age is " + F_Age);

}

catch (ArithmeticException e) {

System.out.println ("FCaught " + e);

}

}

}

public class ExceptionHandling {

public static void main (String args []) {

Farmer.acceptNameF (-1);

Son.CheckSFage (40, 20);

}

}

Main3 - Notepad

```
File Edit Format View Help
import java.util.Scanner;
class fatherAgeException extends Exception
{
    public String toString()
    {
        return("Wrong Age!! Father's age is less than 0");
    }
}

class sonAgeException extends Exception
{
    int a, b;
    sonAgeException (int sage, int fage)
    {
        a = sage;
        b = fage;
    }
    public String toString()
    {
        if(a==b)
            return("Wrong Age!! Son's age is equal to father's age");
        /* if(a<0)
            return("Wrong Age!! Son's age is less than 0");
        else
            return("Wrong Age!! Son's age is more than father's age");
    }
}

class Father
{
    public int age1;
    Scanner scan = new Scanner(System.in);
    int age1;
    Father()
    {
        System.out.print("Enter father's age: ");
        age1 = scan.nextInt();
    }
    void ex1() throws fatherAgeException
    {
        if (age1 < 0)
            throw new fatherAgeException();
    }
}
```



Main3 - Notepad

File Edit Format View Help

```
void ex1() throws fatherAgeException
{
    if (age1 < 0)
        throw new fatherAgeException();
}

class Son extends Father
{
    public int age2;
    Son()
    {
        System.out.print("Enter son's age: ");
        age2 = scan.nextInt();
    }
    void ex2() throws sonAgeException
    {
        if(age2 < 0 || age2>=age1)
            throw new sonAgeException (age2, age1);
    }
}

class Main3
{
    public static void main(String [] args){
        Son s = new Son();
        try{
            s.ex1();
        }
        catch(fatherAgeException e)
        {
            System.out.println(e);
        }
        try
        {
            s.ex2();
        }
        catch (sonAgeException e)
        {
            System.out.println(e);
        }
    }
}
```

Command Prompt

Microsoft Windows [Version 10.0.19042.685]
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C:\Users\eshan>d:

D:\>cd java

D:\java>java Main3

Enter father's age: -46

Enter son's age: 20

Wrong Age!! Father's age is less than 0

Wrong Age!! Son's age is more than father's age

D:\java>

ThreadMain - Notepad

File Edit Format View Help

```
class NewThread implements Runnable
{
    Thread t;
    NewThread()
    {
        t=new Thread(this,"New Thread");
        System.out.println("CT:"+t);
        t.start();
    }
    public void run()
    {
        int sum=0,i;
        try
        {
            for(i=1;i<=100;i++)
            {
                if(i%2==1)
                {
                    sum=sum+i;
                }
            }
            System.out.println("Sum of odd numbers "+sum);
            Thread.sleep(1000);
        }
        catch(InterruptedException ie)
        {
            System.out.println("Child Thread Interrupted");
        }
    }
}
class ThreadMain
{
    public static void main(String args[])
    {
        int sum=0,i;
        NewThread n1=new NewThread();
        try
        {
            for(i=1;i<=100;i++)
            {
                if(i%2==0)
                {
                    sum=sum+i;
                }
            }
        }
    }
}
```

ThreadMain - Notepad

File Edit Format View Help

```
{  
    int sum=0,i;  
    try  
    {  
        for(i=1;i<=100;i++)  
        {  
            if(i%2==1)  
            {  
                sum=sum+i;  
            }  
        }  
        System.out.println("Sum of odd numbers "+sum);  
        Thread.sleep(1000);  
    }  
    catch(InterruptedException ie)  
    {  
        System.out.println("Child Thread Interrupted");  
    }  
}  
}  
class ThreadMain  
{  
    public static void main(String args[])  
    {  
        int sum=0,i;  
        NewThread n1=new NewThread();  
        try  
        {  
            for(i=1;i<=100;i++)  
            {  
                if(i%2==0)  
                {  
                    sum=sum+i;  
                }  
            }  
            Thread.sleep(2000);  
            System.out.println("Sum of even numbers "+sum);  
        }  
        catch(InterruptedException ie)  
        {  
            System.out.println("Child Thread Interrupted");  
        }  
    }  
}
```

Command Prompt
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C:\Users\eshan>d:

D:\>cd java

D:\java>java ThreadMain
CT:Thread[New Thread,5,main]
Sum of odd numbers 2500
Sum of even numbers 2550

D:\java>

Week11Lab - Notepad

File Edit Format View Help

```
class NewThread implements Runnable
{ Thread t;
  NewThread()
  {
    t = new Thread(this, "NThread");
    t.start();
  }

  public void run()
  {
    try
    {
      for(int n=100;n>0;n--)
      {
        System.out.println("CSE");
        Thread.sleep(2000);
      }
    }
    catch(InterruptedException ie)
    {
      System.out.println("Child Thread Interrupted");
    }
  }
}

class Week11Lab
{
  public static void main(String ss[])
  {
    NewThread n1=new NewThread();
    //n1.t.start();

    try
    {
      for(int n=5;n>0;n--)
      {
        System.out.println("BMS College of Engineering");
        Thread.sleep(10000);
      }
    }
    catch(InterruptedException ie)
    {
```

Week11Lab - Notepad

File Edit Format View Help

```
t.start();  
}  
  
public void run()  
{  
    try  
    {  
        for(int n=100;n>0;n--)  
        {  
            System.out.println("CSE");  
            Thread.sleep(2000);  
        }  
    }  
    catch(InterruptedException ie)  
    {  
        System.out.println("Child Thread Interrupted");  
    }  
}  
}  
  
class Week11Lab  
{  
    public static void main(String ss[])  
    {  
        NewThread n1=new NewThread();  
        //n1.t.start();  
  
        try  
        {  
            for(int n=5;n>0;n--)  
            {  
                System.out.println("BMS College of Engineering");  
                Thread.sleep(10000);  
            }  
        }  
        catch(InterruptedException ie)  
        {  
            System.out.println("Main Thread interrupted");  
        }  
    }  
}
```

Command Prompt

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C:\Users\eshan>d:

D:\>cd java

D:\java>java Week11Lab

CT:Thread[New Thread,5,main]

BMS College of Engineering

Sum of odd numbers 2500

BMS College of Engineering

BMS College of Engineering

BMS College of Engineering

BMS College of Engineering

D:\java>