LAB - 6

```
Package CIE;

import java.util.*;

public class Internals extends Student {
        public int marks[] = new int[5];
    Scanner sinp = new Scanner(System.in);

    public void getData() {
            System.out.println("Name");
        name = sinp.nextLine();
        System.out.println("Sem");
        sem = sinp.nextLine();
        System.out.println("Usn :");
        usn = sinp.nextInt();

        System.out.println("Enter marks of 5
                subjects");

        for (int i=0; i<5; i++) {
                marks[i] = sinp.nextInt(); }

    }
public void Displaydata() {

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

```
System.out.println("\n Enter the
                    marks in: ");

    for (int i = 0; i<marks.length; i++) {
            System.out.println(marks[i]+"\t");

        }
    }

}
```

```
package CIE;

public class Student {
        int usn;
        String name = new String();
        int sem;
    }
```

```
package SEE

import CIE.*;
import java.util.*;

public class External extends Student {

    public int marks[] = new int[5];
    Scanner sc = new Scanner(System.in);
```

```
public void getmarks(){
    System.out.println("Enter SEE marks in 5");
    for(int j=0; j<smarks.length; j++){
        System.out.println("Subject" + (i+j));
        smarks[j] = sminp.nextInt();
    }
}

public void Displaydet(){
    System.out.println("\n SEE marks \n");
    for(int i=0; i<smarks.length; i++){
        System.out.println(smarks[i] + "\n");
    }
}
```

```
package final;

import CIE.*;
import SEE.*;

import java.util.*;
```

```
public class finalmarks { int x[], int y[] };
    int sum[] = new int[5];

    for (int i = 0; i<5; i++) {
            sum[i] = x[i] + (y[i]/2);
    }
system.out.println("Final marks in the course :");

for (int i=0; i<5; i++) {
        system.out.println("course " + (i+1));
    system.out.println (sum[i]);
}
}

public static void main (String[] args) {
            int n;
    Scanner minp = new Scanner(System.in);
System.out.println("Enter the total no. of
                    students ");
n = minp.nextInt();

Internals I[] = new Internals[n];
externals E[] = new Externals[n];
```

```
for(int i=0; i<n; i++) {
        System.out.println("Enter the Data of
                student "+(i+1));

    I[i] = new Internals();
    E[i] = new Externals();

    I[i].getData();
    E[i].getMarks();
}
System.out.println("Displaying Data");

for(int k=0; k<n; k++) {

    System.out.println("Details "+(k+1));

    I[k].Displaydata();
    E[k].Displayee();

    finalmarks(I[k].marks, E[k].fmarks);

}
```

```java
package CIE;

public class Student {
    int usn;
    String name = new String();
    int sem;
}
```

```java
package CIE;

import java.util.*;

public class Internals extends Student{
   public int marks[] = new int[5];

    Scanner sinp = new Scanner(System.in);

   public void getData(){

        System.out.println("Name :");
        name = sinp.nextLine();
        System.out.println("Sem :");
        sem = sinp.nextInt();
        System.out.println("Usn :");
        usn = sinp.nextInt();

        System.out.println("Enter the marks of 5 subjects");

        for (int i = 0; i < 5; i++) {
            System.out.println("Subject "+ (1+i));
            marks[i] = sinp.nextInt();
        }
    }


    public void Displaydata(){
        System.out.println("Name : " + name);
        System.out.println("Sem : "+ sem);
        System.out.println("Usn : "+usn);

        System.out.println("\nINTERNAL marks\n:");
        for (int i = 0; i < marks.length; i++) {
            System.out.print(marks[i]+"\t");
        }
```

```
    }
}
```

```
package SEE;

import CIE.*;

import java.util.*;

public class external extends Student{
  public  int fmarks[] = new int[5];

    Scanner sminp = new Scanner(System.in);

    public void getMarks(){
        System.out.println("Enter SEE marks in all 5 Subjects");

        for (int j = 0; j < fmarks.length; j++) {
            System.out.println("Subject "+(1+j));
            fmarks[j] = sminp.nextInt();
        }

    }

    public void DisplaySee(){
        System.out.println("\nSEE marks\n");
        for (int i = 0; i < fmarks.length; i++) {
            System.out.print(fmarks[i]+"\t");
        }
    }
}
```

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

import java.util.*;



public class finalmarks {

    static void finalmarksss(int x[], int y[]) {
        int sum[] = new int [5];

        for (int i = 0; i < 5; i++) {
            sum[i] = x[i]  + (y[i]/2);
        }

        System.out.println("\nFinal marks in the Course are :");
        for (int i = 0; i <5 ; i++) {
            System.out.println("Course "+(i+1));
            System.out.println(sum[i]);
        }

    }

    public static void main(String[] args) {
        int n;
        Scanner minp = new Scanner(System.in);


        System.out.println("Enter the total no of students");
        n = minp.nextInt();

        Internals I[] = new Internals[n];
        external E[]  = new external[n];

        for (int i = 0; i <n; i++) {
            System.out.println("Enter the Data of Student "+(i+1));
            I[i] = new Internals();
            E[i] = new external();

            I[i].getData();
            E[i].getMarks();
        }

        System.out.println("\n******Displaying the DATA of Students*******");

        for (int k = 0; k < n; k++) {
```

```
            System.out.println("*******DETAILS of STUDENT********"+(k+1));
            System.out.println("Prsonal Details");
            I[k].Displaydata();
            E[k].DisplaySee();
            finalmarksss(I[k].marks, E[k].fmarks);
        }

        minp.close();
    }
}
```

```
*******DETAILS of STUDENT********2
Prsonal Details
Name : sherlock
Sem : 4
Usn : 158

INTERNAL marks
:
45      41      49      46      43
SEE marks

98      100     91      94      96
Final marks in the Course are :
Course 1
94
Course 2
91
Course 3
94
Course 4
93
Course 5
91
```

```
******Displaying the DATA of Students*******
*******DETAILS of STUDENT********1
Prsonal Details
Name : rocky
Sem : 3
Usn : 157

INTERNAL marks
:
50      48      49      43      46
SEE marks

100     95      91      99      97
Final marks in the Course are :
Course 1
100
Course 2
95
Course 3
94
Course 4
92
Course 5
94
```

```
4
Usn :
158
Enter the marks of 5 subjects
Subject 1
45
Subject 2
41
Subject 3
49
Subject 4
46
Subject 5
43
Enter SEE marks in all 5 Subjects
Subject 1
98
Subject 2
100
Subject 3
91
Subject 4
94
Subject 5
96
```

```
Enter the total no of students
2
Enter the Data of Student 1
Name :
rocky
Sem :

3
Usn :
157
Enter the marks of 5 subjects
Subject 1
50
Subject 2
48
Subject 3
49
Subject 4
43
Subject 5
46
Enter SEE marks in all 5 Subjects
Subject 1
100
Subject 2
95
Subject 3
91
Subject 4
99
Subject 5
97
Enter the Data of Student 2
Name :
sherlock
Sem :
4
```

LAB - 7 :

```
import java.util.*;
class Generics <T>{
        T var1;

    void Generics (T gvar){
                var1 = gvar;
            }
    T gdisplay(){
            return var1;
        }
}

public class App{
    public static void main (String args[]){

    Scanner Minp = new Scanner (System.in);

    Generics <Integer> RollNo = new Generics
                                <Integer>();
    Generics <String> Name = new Generics
                             <String>();
System.out.println("Enter Name of student");
    String Sname = Minp.nextLine();
    Name.Generics (Sname);

    System.out.println("Enter USN of Student");
    int Sno = Minp.nextInt();
    RollNo.Generics(Sno);
```

Rocky
Enter USN:
2002

The Student details are displayed:
Name : Rocky
USN : 2002

```java
import java.util.*;

class Genrics<T>{
    T var1;

    void Genirics(T gvar){
        var1 = gvar;
    }

    T Gdisplay(){
        return var1;
    }
}


public class App {
    public static void main(String[] args) throws Exception {
        System.out.println("Hello, World!");

        Scanner Minp = new Scanner(System.in);

        Genrics<Integer> Rollno= new Genrics<Integer>();
        Genrics<String>  Name = new Genrics<String>();

        System.out.println("Enter Name of Student");
        String Sname = Minp.nextLine();
        Name.Genirics(Sname);

        System.out.println("Enter USN of Student");
        int Sno = Minp.nextInt();
        Rollno.Genirics(Sno);

        System.out.println("The student details are :");
        System.out.println("Name : "+ Name.Gdisplay());
        System.out.println("USN  : "+ Rollno.Gdisplay());

        Minp.close();
    }
}
```

LAB - 8.

```
import java.util.*;

class Wrongage extends Exception {

    Wrongage() {
        System.out.println("Age cannot be 0");
    }

Wrongage(int S, int F) {

    System.out.println (S + "Son age cannot be
                        more than father" + F);

    }
}

class Father {
        static int F_age;

    Father (int age) {
        F_age = age;
    }

}

class Son extends Father {
        int S_age;

    Son (int sage, int fage) {

        super (fage);
        S_age = sage;
    }
```

```
void Display() throws Wrongage {
    if (F_age<0){
        throw new Wrongage();
    }
    else if (F_age<S_age){
        throw new Wrongage(S_age, F_age);
    }
    else {
        System.out.println("Fathers Age :"
                + Fage);
        System.out.println("Sons age :" + S_age);
    }
}

public class App {

    public static void main(String[] args)
            throws Exception {

        Scanner inp = new Scanner(System.in);
        System.out.println("Enter Fathers age");
        int F, inp.nextInt();
        System.out.println("Enter Sons age");
        Son S1 = new Son(S, F);
        S1.Display();

    }
}
```

```java
import java.util.*;

class Wrongage extends Exception{

    Wrongage(){
        System.out.println("Age cannot be 0 or null value");
    }

     Wrongage(int S,int F){
        System.out.println(S + " Sons age Cannot be greater than or equal to
 Fathers " + F);
    }
  }

  class Father{
      static int F_age;

      Father(int age) {
          F_age = age;
      }
  }

  class Son extends Father {
      int S_age;

      Son(int sage , int fage) {
          super(fage);
          S_age = sage;
      }

      void Display() throws Wrongage {
          if(F_age<=0){
              throw new Wrongage();
          }
          else if(F_age<S_age){
              throw new Wrongage(S_age, F_age);
          }
          else {
              System.out.println("Fathers Age : " + F_age);
              System.out.println("Sons Age    : " + S_age);
          }
      }
  }

public class App {
    public static void main(String[] args) throws Exception {

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

```
        System.out.println("Enter Fathers age");
        int F = Minp.nextInt();
        System.out.println("Enter Sons age");
        int S = Minp.nextInt();
        Son S1 = new Son(S, F);
        S1.Display();
    }
}
```

```
Enter Fathers age
45
Enter Sons age
84
84 Sons age Cannot be greater than or equal to Fathers 45
Exception in thread "main" Wrongage
        at Son.Display(App.java:35)
        at App.main(App.java:53)
PS D:\clg notes\3rd SEM\OOJava\New pro\exception>
```

```
Enter Fathers age
0
Enter Sons age
45
Age cannot be 0 or null value
Exception in thread "main" Wrongage
        at Son.Display(App.java:32)
        at App.main(App.java:53)
PS D:\clg notes\3rd SEM\OOJava\New pro\exception>
```

```
Enter Fathers age
45
Enter Sons age
15
Fathers Age : 45
Sons Age    : 15
PS D:\clg notes\3rd SEM\OOJava\New pro\exception>
```

LOB - 9. Program.

```
class threaddemo extends Thread {
    public void run () {
        for (int i=0 ; i<1000 ; i++)
        try {
            System.out.println ("BMS college of Engineering");
            Thread.sleep (10000);
        }
        catch (Exception e) {
            System.out.println (e);
        }
    }
}

class threaddemo1 extends Thread {
    public void run () {
        for (int i=0; i<1000 ; i++) {
            try {
                System.out.println ("CSE");
                Thread.sleep (2000);
            }
            catch (Exception e) {
                System.out.println (e);
            }
        }
    }
```

```
class App {
    public static void main (String[] args) {
        MultiThreadDemo t1 = new MultiThreadDemo();
        MultiThreadDemo t2 = new MultiThreadDemo();
        t1.start();
        t2.start();
    }
}
```

★ OUTPUT :↓

```
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
```

```
class threademo extends Thread {
    public void run() {
        for (int i = 0; i < 1000; i++)
            try {

                System.out.println("BMS college of Engineering");
                Thread.sleep(10000);
            } catch (Exception e) {
                System.out.println(e);
            }
    }
}

class threademo1 extends Thread {
    public void run() {
        for (int i = 0; i < 1000; i++)
            try {
                System.out.println("CSE");
                Thread.sleep(2000);
            } catch (Exception e) {
                System.out.println(e);
            }
    }
}


class App{
    public static void main(String[] args) {
        threademo t1 = new threademo();
        threademo1 t2 = new threademo1();
        t1.start();
        t2.start();

    }
}
```

```
BMS college of Engineering
CSE
CSE
CSE
CSE
CSE
BMS college of Engineering
CSE
CSE
CSE
CSE
CSE
BMS college of Engineering
CSE
CSE
CSE
CSE
CSE
BMS college of Engineering
CSE
CSE
CSE
```

LAB - 10

```
import java.util.*;

class table{
    synchronized void printable(int n)
    {
    try{
        System.out.println("Printing table");

    for(int i=1; i<=15; i++){
        System.out.println(n+"x"+i+"="
                           +n*i);
        thread.sleep(2000);
    }

    }catch (InterruptedException e){
            system.out.println("Interupted
                                program");
    }
    System.out.println();

}

class mythread implements Runnable{

    int n;
    table target;
    Thread t;
```

```
newthread (table targ, int num) {
        target = targ;
        n = num;
        t = new Thread (this, "TABLE");
    }

    public void run() {
            target.printable (n);
        }
}

class App {

    public static void main (String args[]) {

        int num1, num2;
        Scanner sc = new Scanner (System.in);
        System.out.println ("Enter the first Number");
        num1 = sc.nextInt();
        System.out.println ("Enter the second
                                number");
        num2 = sc.nextInt();

        table t1 = new table();

        newthread ob1 = newthread (t1, num);
        newthread ob2 = newthread (t1, num2);
```

```
ob1.t.start();
ob2.t.start();

try {
        ob1.t.join();
        ob2.t.join();
}

catch (InterruptedException e) {
        System.out.println("Exception Caught");
}

sc.close;

}
}
```

```
import java.util.*;
class table
{
    synchronized void printable(int n)
    {
        try
        {
            System.out.println("Printing The  Table");
            for(int i=1;i<=10;i++)
            {

                System.out.println(n+"x"+i+"="+n*i);
                Thread.sleep(2000);
            }
        }catch(InterruptedException e){
            System.out.println("Interrupted Program");
        }
        System.out.println();
    }
}
class newthread implements Runnable
{
    int n;
    table target;
    Thread t;
    newthread(table targ,int num)
    {
        target=targ;
        n=num;
        t=new Thread(this,"TABLE");
    }
    public void run()
    {
        target.printable(n);
    }
}
class App
{
    public static void main(String[] args)
    {
        int num1,num2;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the First Number ");
        num1=sc.nextInt();
        System.out.println("Enter the Second Number");
        num2=sc.nextInt();
        table tl=new table();
        newthread ob1=new newthread(tl,num1);
```

```
        newthread ob2=new newthread(t1,num2);
        ob1.t.start();
        ob2.t.start();
        try
        {
            ob1.t.join();
            ob2.t.join();
        }catch(InterruptedException e){
            System.out.println("Exception Caught");
        }

        sc.close();
    }
}
```

```
Enter the First Number
5
Enter the Second Number
100
Printing The  Table
5x1=5
5x2=10
5x3=15
5x4=20
5x5=25
5x6=30
5x7=35
5x8=40
5x9=45
5x10=50

Printing The  Table
100x1=100
100x2=200
100x3=300
100x4=400
100x5=500
100x6=600
100x7=700
100x8=800
100x9=900
100x10=1000

PS D:\clg notes\3rd SEM\OOJava\New pro\multithreadlab01>
```

LAB - 11 (A)

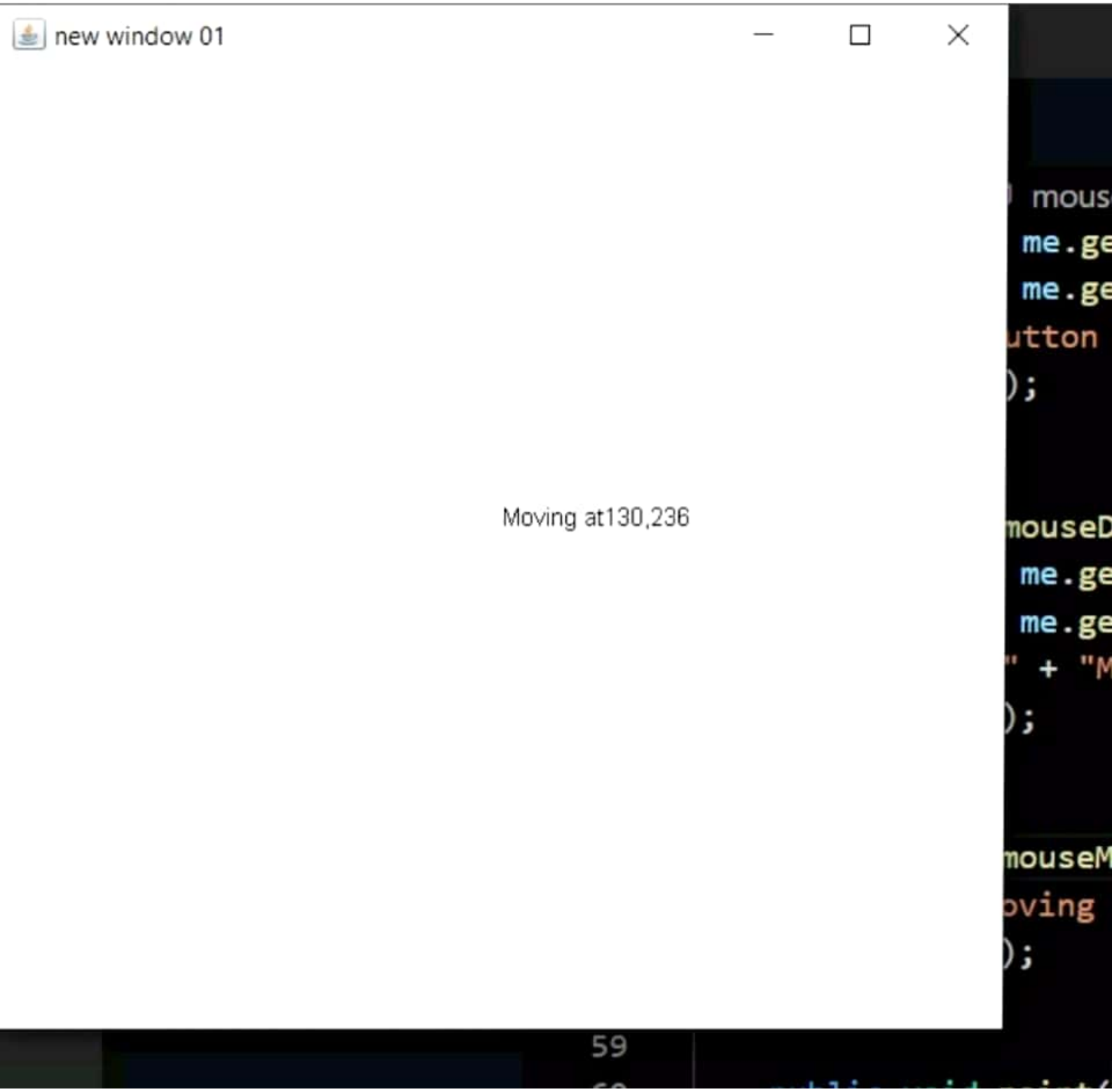
```
import java.awt.*;
import java.awt.event.*;

public class gd extends Frame implements
        MouseListner, MouseMotionListner {

    String msg = " ";
    int mouseX=0; mouseY=0;

public gd() {
        addMouseListner (this);
        addMouseMotionListner (this);
        addWindowListner (new MyWindow
                                Adapter());  }

public void mouseClicked (MouseEvent me) {
        msg = msg + "_ Click Recived ";
        repaint();
    }

public void mouseEntred (MouseEvent me) {
        mouseX = 250;
        mouseY = 250;
        msg = "MOUSE ENTERED";
        repaint();
    }

public void mouseExited (MouseEvent me) {
        mouseX = 300;
        mouseY = 400;
        msg = "mouse Exited";
        repaint(); }
```

```
public void mousePressed (MouseEvent me) {
        mouseX = me.getX();
        mouseY = me.getY();
        msg = "Button down";
        repaint();
    }

public void mouseReleased (MouseEvent me) {
        mouseX = me.getX();
        mouseY = me.getY();
        msg = "Button Released";
        repaint();
    }

public void mouseDragged (MouseEvent me) {
        mouseX = me.getX();
        mouseY = me.getY();
        msg = "+" + "MOUSE AT " +
              mouseX + ", " +
              mouseY;
        repaint();
    }

public void paint (Graphics g) {
        g.drawString (msg, mouseX,
                      mouseY);
    }
```

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

    gd appwin = new gd();
    appwin.setSize(new Dimension(600,600));
    appwin.setTitle("new window 01");
    appwin.setVisible(true);
}

}

class MyWindowAdapter extends WindowAdapter{

    public void windowClosing
                (WindowEvent we){
                    System.exit(0);
                }

}
```

```
import java.awt.*;
import java.awt.event.*;

public class gd extends Frame implements MouseListener, MouseMotionListener {
  String msg = "";
  int mouseX = 0, mouseY = 0;

  public gd() {
    addMouseListener(this);
    addMouseMotionListener(this);
    addWindowListener(new MyWindowAdapter());
  }

  public void mouseClicked(MouseEvent me) {
    msg = msg + "__click recieved";
    repaint();
  }

  public void mouseEntered(MouseEvent me) {
    mouseX = 250;
    mouseY = 250;
    msg = "MOUSE ENTERED .";
    repaint();
  }

  public void mouseExited(MouseEvent me) {
    mouseX = 100;
    mouseY = 100;
    msg = "mouse Exited";
    repaint();
  }

  public void mousePressed(MouseEvent me) {
    mouseX = me.getX();
    mouseY = me.getY();
    msg = "Button Down";
    repaint();
  }

  public void mouseReleased(MouseEvent me) {
    mouseX = me.getX();
    mouseY = me.getY();
    msg = "Button Released";
    repaint();
  }

  public void mouseDragged(MouseEvent me) {
```

```
    mouseX = me.getX();
    mouseY = me.getY();
    msg = "*" + "MOUSE AT" + mouseX + "," + mouseY;
    repaint();
  }

  public void mouseMoved(MouseEvent me) {
    msg = "Moving at" + me.getX() + "," + me.getY();
    repaint();
  }

  public void paint(Graphics g) {
    g.drawString(msg, mouseX, mouseY);

  }

  public static void main(String[] args) {
    gd appwin = new gd();
    appwin.setSize(new Dimension(500, 500));
    appwin.setTitle("new window 01");
    appwin.setVisible(true);
  }

}

class MyWindowAdapter extends WindowAdapter {
  public void windowClosing(WindowEvent we) {
    System.exit(0);
  }
}
```



* LOB 11 [2]

```
import java.awt.*;
import java.awt.event.*;

class Division1 extends Frame implements
        ActionListner {
            Frame f;
        TextField tf1;
        TextField tf2;
        TextField tf3;
        Button b;
        Dialog d1;

    Division1() {
            setSize(300, 200);
            setVisible(true);
            setLayout(null);

    addWindowListner(new WindowAdapter() {
            public void windowClosing(
                    WindowEvent we) {
                        dispose();
                    } });

    tf1 = new TextField("Number 1");
      tf1.setBounds(10, 30, 200, 30);
      add(tf1);

    tf2 = new TextField("Number 2");
      tf2.setBounds(10, 70, 200, 30);
      add(tf2);
```

```
b = new Button("/");
b.setBounds(10, 110, 200, 30);
b.addActionListener(this);
add(b);

tf3 = new TextField("output");
tf3.setBounds(10, 150, 200, 30);
add(tf3);
}

public void actionPerformed(ActionEvent e){
        try{
    String num1 = tf1.getText();
    int nu1 = Integer.parseInt(num1);
String num2 = tf2.getText();

int nu2 = Integer.parseInt(num2);
int result = nu1/nu2;
tf3.setText(Integer.toString
                (result));

}

catch(NumberFormatException e2){
    d1 = new Dialog(f, "error", true);
Label l = new Label("Enter "+e2);
d1.add(l);
d1.setSize(300, 50);
d1.setVisible(true);
}
```

```
catch (ArithmeticException e1) {
        d1 = new Dialog (f, "Error", true);
    Label l = new Label ("", e1);
    d1.add (l);
    d1.setSize (300,50);
    d1.setVisible (true);
    }
  }
}

public class App {
        public static void main
          (String[] args) {

        Division d = new Division ();
    }
}
```

```
import java.awt.*;
import java.awt.event.*;

public class gd extends Frame implements MouseListener, MouseMotionListener {
  String msg = "";
  int mouseX = 0, mouseY = 0;

  public gd() {
    addMouseListener(this);
    addMouseMotionListener(this);
    addWindowListener(new MyWindowAdapter());
  }

  public void mouseClicked(MouseEvent me) {
    msg = msg + "__click recieved";
    repaint();
  }

  public void mouseEntered(MouseEvent me) {
    mouseX = 250;
    mouseY = 250;
    msg = "MOUSE ENTERED .";
    repaint();
  }

  public void mouseExited(MouseEvent me) {
    mouseX = 100;
    mouseY = 100;
    msg = "mouse Exited";
    repaint();
  }

  public void mousePressed(MouseEvent me) {
    mouseX = me.getX();
    mouseY = me.getY();
    msg = "Button Down";
    repaint();
  }

  public void mouseReleased(MouseEvent me) {
    mouseX = me.getX();
    mouseY = me.getY();
    msg = "Button Released";
    repaint();
  }

  public void mouseDragged(MouseEvent me) {
```

```
import java.awt.*;
import java.awt.event.*;
class Division1 extends Frame implements ActionListener{
    Frame f;
    TextField tf1;
    TextField tf2;
    TextField tf3;
    Button b;
    Dialog d1;
    Division1(){
        setSize(300,300);
        setVisible(true);
        setLayout(null);
        //to colse window
        addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent aew){
                dispose();
            }
        });
        //textfield1 initialization
        tf1 = new TextField("Number1");
        tf1.setBounds(10,30,200,30);
        add(tf1);
        //textfield2 initialization
        tf2 = new TextField("Number2");
        tf2.setBounds(10,70,200,30);
        add(tf2);
        //division button creation
        b = new Button("/");
        b.setBounds(10, 110, 200, 30);
        b.addActionListener(this);
        add(b);
        //textfield3 initialization
        tf3 = new TextField("Output");
        tf3.setBounds(10,150,200,30);
        add(tf3);
    }
    public void actionPerformed(ActionEvent e){
        try{
            String num1=tf1.getText();
            int nu1=Integer.parseInt(num1);
            String num2=tf2.getText();
            int nu2=Integer.parseInt(num2);
            int result = nu1/nu2;
            tf3.setText(Integer.toString(result));
        }
        catch(NumberFormatException e2){
            d1 = new Dialog(f,"error",true);
```

```
            Label l = new Label(""+e2);
            d1.add(l);
            d1.setSize(300,50);
            d1.setVisible(true);


        }
        catch(ArithmeticException e1){
            d1 = new Dialog(f,"error",true);
            Label l = new Label(""+e1);
            d1.add(l);
            d1.setSize(300,50);
            d1.setVisible(true);

        }
    }
}
public class App {
    public static void main(String[] args) {
        Division1 d = new Division1();
    }

}
```