

practical-3

a) write a program to implement the concepts of Inheritance and method overriding.

i) program for inheritance -

Code -

(Inherit2.java - Save the program)

```
class Person
{
    int id;
    String name;
    public void display()
    {
        System.out.println("your no:" + id);
        System.out.println("your name:" + name);
    }
}
```

```
class Emp01 extends Person
{
    public Emp01()
    {
        id = 30;
        name = "adil";
    }
}
```

```
System.out.println("this is constructor of class
emp01");
```

```
class Inherit2
```

```
public static void main(String[] args)
{
    Emp01 obj = new Emp01();
    obj.display();
}
```

Output - C:\Java\au> javac Inherit2.java
C:\Java\au> java Inherit2
This is constructor of class Emp01
Your no: 30
Your name: adde

ii) program for method overriding -

Code - (TextSuper2.java ... save program)

```
Class Animal
{
    void eat()
    {
        System.out.println("eating....");
    }
}

Class Dog extends Animal
{
    void eat()
    {
        Super.eat();
        System.out.println("eating bread....");
    }

    void bark()
    {
```

```
System.out.println("banking...");
```

```
class TestSuper2
```

```
{
```

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

```
{
```

```
Dog d = new Dog();
```

```
d.eat();
```

```
d.bank();
```

```
}
```

Output -

```
C:\Java\all>javac TestSuper2.java
```

```
C:\Java\all>java TestSuper2
```

```
eating bread
```

```
eating bread --
```

```
banking.
```

b) write a program to implement the concepts of Abstract classes and methods.

program -

```
abstract class Vehicle
```

```
{
```

```
    abstract void bike();
```

```
}
```

```
class Honda extends Vehicle
```

```
{
```

```
    void bike()
```

```
{
```

```
    System.out.println("Bike is running");
```

```
}
```

```
public class AbstractExample1
```

```
{
```

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

```
{
```

```
    Honda obj = new Honda();
```

```
    obj.bike();
```

```
}
```

Output -

```
C:\java>javac AbstractExample1.java
```

```
C:\java>java AbstractExample1
```

```
Bike is running
```

c) write a program to implement the concept of interface

program -

clay MyShape

```
void displayArea ()
```

```
System.out.println("This is display area  
method of class myshape");  
}
```

interface MyImage

void drawImage();

void InputImage();

interface MyColor

void inputColor();

public class InterfaceTest05 extends MyShape
implements myImage; MyColor

public void drawString()

```
System.out.println ("Now we are overriding the  
drawImage method of interface MyImage");
```

```
public void InputImage()
```

```

System.out.println("Now we are overriding the InputImage
method of interface MyImage");
}

public void inputColor()
{
System.out.println("Now we are overriding the InputColor
method of interface MyColor");
}

public void display()
{
System.out.println("disp function of class InterfaceTest05");
}

public static void main(String[] args)
{
InterfaceTest05 Obj = new InterfaceTest05();
Obj.drawImage();
Obj.InputImage();
Obj.inputColor();
Obj.displayArea();
Obj.display();
}

```

Output - C:\JavaAll>javac InterfaceTest05.java
C:\JavaAll>java InterfaceTest05

Now we are overriding the 'drawImage'
method of interface MyImage

Now we are overriding the InputImage method of interface MyImage

Now we are overriding the InputColor method of interface MyColor

This is display one method of class MyShape
disp function of class InterfaceTest05

practical-4

a) Illustrate exception handling -

Code -

```

class error2 {
    public static void main (String [] args)
    {
        int a=25, b=0, c=20;
        try {
            c=a/b;
        }
        catch(ArithmeticException e)
        {
            System.out.println ("Division by zero error");
            System.out.println ("Type of error "+e);
            System.out.println ("The value of a is "+a);
            System.out.println ("The value of b is "+b);
            System.out.println ("The value of c is "+c);
        }
    }
}

```

Output - C:\java\an>java error2.java

C:\java\an>java error2

Division by zero error

Type of error java.lang.ArithmaticException: / by zero

The value of a is 25

The value of b is 0

The value of c is 0

b) Illustrate exception handling with file handling.

Code -

```
class error3
{
    public static void main(String [] args)
    {
        int a[] = {12, 13, 15, 23, 44};
        int i;
        try
        {
            System.out.println("Content of array elements are as follows");
            for(i=0; i<7; i++)
                System.out.println(a[i]);
        }
        catch(ArrayIndexOutOfBoundsException e)
        {
            System.out.println("Overflow");
            System.out.println("Type of error"+e);
        }
        finally
        {
            System.out.println("I am always there");
        }
    }
}
```

Output - C:\Java\src>javac error3.java

C:\Java\src>java error3

Content of array elements are as follows

12

13

15

23

44

Overflow

Type of error:java.lang.ArrayIndexOutOfBoundsException: 5

I am always there

c) Illustrate multiple catch block

code-

```

import java.util.Scanner;
class errors
{
    public static void main(String [] args)
    {
        int a[] = {12, 13, 15, 23, 44};
        int i;
        int b,c,d;
        try
        {
            Scanner s = new Scanner(System.in);
            System.out.println("Enter two numbers");
            c = s.nextInt();
            d = s.nextInt();
            b = c/d;
            System.out.println("Content of array elements are
                               as follows");
            for(i=0; i<5; i++)
                System.out.println(a[i]);
        }
        catch(ArithmeticException e)
        {
            System.out.println("Division by zero error");
            System.out.println("Type of error "+e);
        }
    }
}

```

```

        catch(ArrayIndexOutOfBoundsException e)
    {
        System.out.println("Overflow");
        System.out.println("Type of error "+e);
    }
    catch(ArrayIndexOutOfBoundsException e)
    finally
    {
        System.out.println("I am always there");
    }
}

```

Output - ①

```

C:\Java\au>javac errors.java
C:\Java\au>java errors
Enter two numbers: 10 / 0
Division by zero error!
Type of error: java.lang.ArithmeticException! / by zero
I am always there

```

Output - ②

```

C:\Java\au>javac errors.java
C:\Java\au>java errors
Enter two numbers: 12 13
Content of array elements are as follow
12
13
18
23
44

```

Overflow

Type of error: java.lang.ArrayIndexOutOfBoundsException
 I am always there.

practical-5

a) Create a thread by extending thread class.

Code -

```

class MyThread() implements Runnable
{
    public void run()
    {
        System.out.println("Concurrent Thread Started
                           running");
    }
}

class Demo
{
    public static void main(String[] args)
    {
        MyThread mt = new MyThread();
        Thread t = new Thread(mt);
        t.start();
    }
}

```

Output - C:\java an> java Demo
C:\java an> java Demo
concurrent thread started running.

b) Create a thread by implement runnable interface

Code-

```
class MyThread extends Thread  
{  
    public void run()  
    {  
        System.out.println("Concurrent thread started running");  
    }  
}  
  
class MyThreadDemo  
{  
    public static void main(String [] args)  
    {  
        MyThread mt = new MyThread();  
        mt.start();  
    }  
}
```

Output-

```
C:\Java\an>javac MyThreadDemo.java  
C:\Java\an>jarq MyThreadDemo  
Concurrent thread started running
```

c) package -

Code -

Arm.java - (Save program)

package first;

public class arm extends java.util.Scanner

public int x=152;

public int r, temp, q=0;

public void test()

temp = x;

while (x>0)

{

x=x/10;

q=q+(r*r*r);

x=x/10;

}

if (temp == q)

{

System.out.println("This is Armstrong number");

}

else

{

System.out.println("This is not Armstrong number");

}

}

}

pack1.java — (Save program)

```
import first.*;
class pack1
{
    public static void main (String [] args)
    {
        arm s = new arm();
        s.test();
    }
}
```

java all → first → arm.java

java all → pack1.java ←

Output - C:\Java all\first>javac arm.java
C:\Java all\first>cd..

C:\Java all>javac pack1.java

C:\Java all>java pack1

This is not Armstrong number

d)

Create a user-defined package with the name StudentData in which you have a class with the name detail which consists of student name, roll no, marks of three subjects and average as 9 data member whose value will be accepted by using scanner class inside the function with the name accept which will be accept the value of the data member and the same value will be displayed in the function whose will be show.

Code - File - New - Java Class - "detail.java" - (Save program)

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

public class detail {
    public float avg;
    public int m1, m2, m3;
    public String sname;
    public void accept() {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter your name and roll number");
        sname = s.nextLine();
        mno = s.nextInt();
    }
}
```

Scanner s = new Scanner(System.in);

System.out.println("Enter your name and roll number");

sname = s.nextLine();

mno = s.nextInt();

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

```
m1 = s.nextInt();
```

```
m2 = s.nextInt();
```

```
m3 = s.nextInt();
```

```
public void average()
```

$$avg = (float)(m1 + m2 + m3) / 3;$$

```
public void show()
```

```
System.out.println("Student name: " + sname + " | Roll Number: " + rollno + " | Marks: " + m1 + ", " + m2 + ", " + m3 + " | Average: " + avg);
```

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

```
details student = new details();
```

```
student.accept();
```

```
student.average();
```

```
student.show();
```

```
}
```

```
student.accept();
```

```
student.average();
```

```
student.show();
```

```
}
```

pack2.java - (Save program)

```

import studentdata.*;
class pack2
{
    public static void main(String[] args)
    {
        details d = new details();
        d.accept();
        d.average();
        d.show();
    }
}

```

Java all → Student data → details.java

Java all → pack2.java,

Output-

```

C:\java all\Studentdata>javac details.java
C:\java all\Studentdata>cd..

```

C:\java all>javac pack2.java

C:\java all>java pack2

Enter your name and roll number

Akhilesh 54

Enter the marks of three subjects

95

85

90

Student name: Akhilesh Roll Number: 54 Marks: 95, 85, 90

Average: 90.0

practical-6

a) write a program to implement the JDBC with components for arithmetic operation.

program -

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

```
public class TextFieldExample implements ActionListener {  
    JTextField tf1, tf2, tf3;  
    JButton b1, b2, b3, b4, b5;
```

TextFieldExample () {

```
Iframe f = new Iframe();
```

```
tf1 = new JTextField();
```

```
tf1.setBoundary(50, 50, 150, 20);
```

```
tf2 = new JTextField();
```

```
tf2.setBoundary(50, 100, 150, 20);
```

```
tf3 = new JTextField();
```

```
tf3.setBoundary(50, 150, 150, 20);
```

```
tf3.setEditable(false);
```

```
b1 = new JButton("+");
```

```
b1.setBoundary(50, 200, 50, 50);
```

```
b2 = new JButton("-");
```

```
b2.setBoundary(120, 200, 50, 50);
```

```
b3 = new JButton("*");
```

```
b3.setBoundary(80, 260, 50, 50);
```

```
b4 = new JButton("/");
```

```
b4.setBoundary(120, 260, 50, 50);
```

```
b5 = new JButton("y.");
b5. SetBounds (50,320, 50,50);
b1. addActionListener (this);
b2. addActionListener (this);
b3. addActionListener (this);
b4. addActionListener (this);
b5. addActionListener (this);
```

```
f.add(tf1);
f.add(tf2);
f.add(tf3);
f.add(b1);
f.add(b2);
f.add(b3);
f.add(b4);
f.add(b5);
f.setSize(300,400);
f.setLayout(null);
f.setVisible(true);
```

```
public void actionPerformed(ActionEvent e) {
    try {
        String s1 = tf1.getText();
        String s2 = tf2.getText();
        int a = Integer.parseInt(s1);
        int b = Integer.parseInt(s2);
        int c = 0;
```

```

if(e.getSource() == b1) {
    c = a+b;
}

else if(e.getSource() == b2) {
    c = a-b;
}

elseif(e.getSource() == b3) {
    c = a*b;
}

else if(e.getSource() == b4) {
    if(b1==0) {
        c = a/b;
    } else {
        tf3.setText("Error : Div by 0");
        return;
    }
}

elseif(e.getSource() == b5) {
    if(b1==0) {
        c = a%b;
    } else {
        tf3.setText("Error : Div by 0");
        return;
    }
}

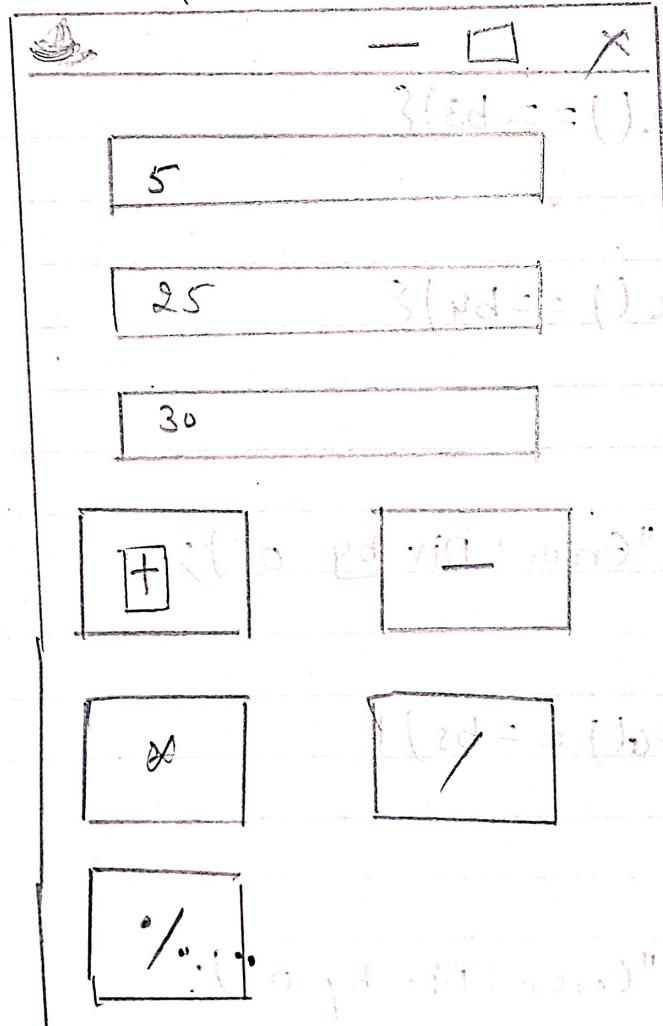
String result = String.valueOf(c);
tf3.setText(result);

} catch(NumberFormatException ex) {
    tf3.setText("Invalid input");
}

```

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

Output -



b) Count the number of words and the number of characters from the textarea.

Code -

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

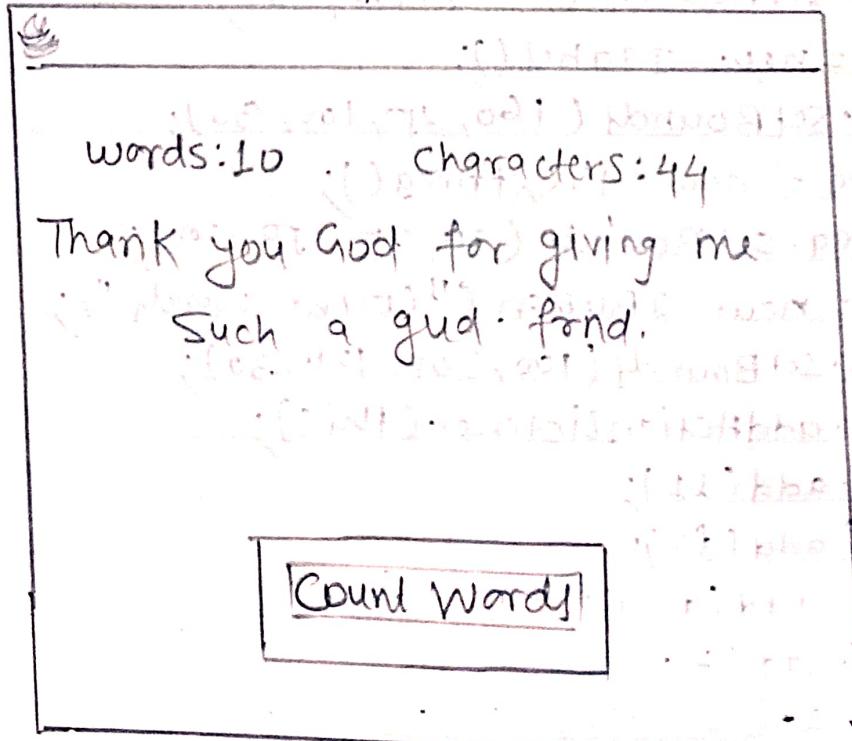
```
public class TextfreqExample implements ActionListener  
{  
    JLabel l1, l2;  
    JTextArea area;  
    JButton b;  
    TextfreqExample () {  
        JFrame f = new JFrame ();  
        l1 = new JLabel ();  
        l1.setBounds (80, 25, 100, 30);  
        l2 = new JLabel ();  
        l2.setBounds (160, 25, 100, 30);  
        area = new JTextArea ();  
        area.setBounds (20, 75, 250, 200);  
        b = new JButton ("Count words");  
        b.setBounds (100, 300, 120, 30);  
        b.addActionListener (this);  
        f.add (l1);  
        f.add (l2);  
        f.add (area);  
        f.add (b);  
        f.setSize (450, 450);  
        f.setLayout (null);  
        f.setVisible (true);  
    }  
}
```

```
public void actionPerformed(ActionEvent e) {  
    String text = area.getText();  
    String words[] = text.split(" \t\n");  
    l1.setText("words:" + words.length);  
    l2.setText("characters:" + text.length());  
}
```

```
public static void main(String[] args) {  
    new TextAreaExample();  
}
```

(:) sample - 3 word
c:\java\an> jarac.TextAreaExample;java,
c:\java\an> java.TextAreaExample

Output -



c) Create a notepad with menu by using swing component.

Code -

```

import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
import java.io.*;

public class NotepadExample {
    private JFrame frame;
    private JTextArea textArea;
    private boolean wordWrap = true;

    public NotepadExample() {
        frame = new JFrame("Notepad");
        textArea = new JTextArea();
        textArea.setFont(new Font("Arial", Font.PLAIN, 14));
        textArea.setLineWrap(wordWrap);
        textArea.setWrapStyleWord(true);

        JScrollPane scrollPane = new JScrollPane(textArea);

        JMenuBar menuBar = new JMenuBar();
        JMenu fileMenu = new JMenu("File");
        JMenu editMenu = new JMenu("Edit");
        JMenu viewMenu = new JMenu("View");
    }
}

```

// Create menu items for file

```
JMenuItem newfile = new JMenuItem("New");
JMenuItem openfile = new JMenuItem("Open");
JMenuItem savefile = new JMenuItem("Save");
JMenuItem saveAsfile = new JMenuItem("Save As");
JMenuItem pageSetupItem = new JMenuItem("Page Setup");
JMenuItem printItem = new JMenuItem("Print");
JMenuItem exitItem = new JMenuItem("Exit");
// Create menu items for Edit
JMenuItem undoItem = new JMenuItem("Undo");
JMenuItem cutItem = new JMenuItem("Cut");
JMenuItem copyItem = new JMenuItem("Copy");
JMenuItem pasteItem = new JMenuItem("Paste");
JMenuItem deleteItem = new JMenuItem("Delete");
JMenuItem findItem = new JMenuItem("Find");
JMenuItem findNextItem = new JMenuItem("Find Next");
JMenuItem findPrevItem = new JMenuItem("Find Previous");
JMenuItem replaceItem = new JMenuItem("Replace");
JMenuItem goToItem = new JMenuItem("Go To");
JMenuItem selectAllItem = new JMenuItem("Select All");
JMenuItem timeDateItem = new JMenuItem("Time/Date");
```

// Create menu items for View

```
JCheckBoxMenuItem zoomItem = new JCheckBoxMenuItem("Zoom");
JCheckBoxMenuItem statusBarItem = new JCheckBoxMenuItem("Status Bar");
JCheckBoxMenuItem wordWrapItem = new JCheckBoxMenuItem("Word Wrap", true);
newfile.addActionListener(e->TextArea1.setText(""));
openfile.addActionListener(e->{
    JFileChooser fileChooser = new JFileChooser();
    int result = fileChooser.showSaveDialog(frame);});
```

```

if(result == fileChooser.APPROVE_OPTION) {
    File file = fileChooser.getSelectedFile();
    try (BufferedWriter writer = new BufferedWriter(new FileWriter(file))) {
        textArea.write(writer);
    } catch (IOException ex) {
        JOptionPane.showMessageDialog(frame, "Error saving file", "Error", JOptionPane.ERROR_MESSAGE);
    }
}
}

saveAsFile.addActionListener(e -> {
    JFileChooser fileChooser = new JFileChooser();
    int result = fileChooser.showSaveDialog(frame);
    if(result == JFileChooser.APPROVE_OPTION) {
        File file = fileChooser.getSelectedFile();
        try (BufferedWriter writer = new BufferedWriter(new FileWriter(file))) {
            textArea.write(writer);
        } catch (IOException ex) {
            JOptionPane.showMessageDialog(frame, "Error saving file", "Error", JOptionPane.ERROR_MESSAGE);
        }
    }
});

pageSetupItem.addActionListener(e -> JOptionPane.showMessageDialog(frame, "Page setup clicked."));
printItem.addActionListener(e -> JOptionPane.showMessageDialog(frame, "Print clicked"));
exitItem.addActionListener(e -> System.exit(0));

```

```
cutItem.addActionListener(e-> textArea.cut());  
copyItem.addActionListener(e-> textArea.copy());  
pasteItem.addActionListener(e-> textArea.paste());  
deleteItem.addActionListener(e-> textArea.replaceSelection(" "));  
findItem.addActionListener(e-> JOptionPane.showMessageDialog  
    (frame, "Find clicked"));  
findNextItem.addActionListener(e-> JOptionPane.showMessage  
    Dialog(frame, "Find Next clicked"));  
findPrevItem.addActionListener(e-> JOptionPane.showMessage  
    Dialog(frame, "Find previous clicked"));  
replaceItem.addActionListener(e-> JOptionPane.showMessage  
    Dialog(frame, "Replace clicked"));  
goToItem.addActionListener(e-> JOptionPane.showMessage  
    Dialog(frame, "Go To clicked"));  
selectAllItem.addActionListener(e-> textArea.selectAll());  
timeDateItem.addActionListener(e-> {  
    textArea.insert(new Date().toLocaleString());  
    textArea.setCaretPosition();  
});  
zoomItem.addActionListener(e-> JOptionPane.showMessage  
    Dialog(frame, "Zoom clicked"));  
statusBarItem.addActionListener(e-> JOptionPane.show  
    message Dialog(frame, "Status Bar clicked"));  
wordWrapItem.addActionListener(e-> {  
    wordWrap = ! wordWrap;  
    textArea.setLineWrap(wordWrap);  
    textArea.setWrapStyleWord(wordWrap);  
});
```

```
fileMenu.add(newFile);
fileMenu.add(openFile);
fileMenu.add(saveFile);
fileMenu.add(saveAsFile);
fileMenu.add(pageSetupItem);
fileMenu.add(printItem);
fileMenu.addSeparator();
fileMenu.add(exitItem);
```

```
editMenu.add(undoItem);
editMenu.add(cutItem);
editMenu.add(copyItem);
editMenu.add(pasteItem);
editMenu.add(deleteItem);
editMenu.add(findItem);
editMenu.add(findNextItem);
editMenu.add(findPrevItem);
editMenu.add(replaceItem);
editMenu.add(gotoItem);
editMenu.add(selectAllItem);
editMenu.add(timeDateItem);
```

```
viewMenu.add(zoomItem);
viewMenu.add(statusBarItem);
viewMenu.add(wordWrapItem);
```

```
menuBar.add(fileMenu);
menuBar.add(editMenu);
menuBar.add(viewMenu);
```

```

frame.setJMenuBar(menuBar);
frame.getContentPane().add(scrollPane);
frame.setSize(600, 400);
frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
frame.setVisible(true);
}

public static void main(String[] args) {
    new NotepadExample1();
}
}

```

Output -

```

C:\Java\an>javac NotepadExample1.java
C:\Java\an>java NotepadExample1

```

