Program1: program to display largest of 2 numbers

```
import java.io.*;
public class Lab1
{
	public static void main (String []args) throws IOException
	{
		int x,y;
		DataInputStream ds = new DataInputStream(System.in);
		System.out.println("Enter  X and Y value");
		x = Integer.parseInt(ds.readLine());
		y = Integer.parseInt(ds.readLine());
		if(x > y)
			System.out.println(" Largest is  X with value "+x);
		If(y>x)
			System.out.println(" Largest is  Y with value "+y);
	}
}
```

2. Program to find and display factorial of numbers between 1 to 10 using while loop

```
import java.io.*;
public class Lab2
{
	public static void main(String []args) throws IOException
	{
		int ans, i, j;
		for( i=1; i<=10; i++)
		{
			System.out.print("Factorial of "+i+":");
			ans=1;
			j=i;
			while(j>=1)
			{
				ans = ans * j;
```

```
                        if(j!=1)
                                System.out.print(j+"*");
                        else
                                System.out.print(j);
                        j--;
                }
                System.out.println("= "+ans);
        }
    }
}
```

3. Program to add 2 inter numbers and 2 floating point numbers with default values by using method overloading

```
import java.io.*;
public class Lab3
{
    void add(int x, int y)
    {
        int sum = x + y;
        System.out.println("Addition of two integer numbers "+x+" and "+y+" is
"+sum);
    }
    void add(double x, double y)
    {
        double sum = x + y;
        System.out.println("Addition of two floating point numbers "+x+" and
"+y+" is "+sum);
    }
    public static void main(String []args) throws IOException
    {
        Lab3 ob = new Lab3();
        ob.add(10,20);
        ob.add(15.7, 18.6);
    }
}
```

4. Program to perform Mathematical operations using Classes and Objects

```
import java.io.*;
public class AddSub
{
	int add, sub;
	public void add(int x, int y)
	{
		add = x + y;
		System.out.println("Addition of 2 numbers ="+add);
	}
	public void sub(int x, int y)
	{
		sub = x - y;
		System.out.println("Subtraction of 2 numbers ="+sub);
	}
}
 class MulDiv extends AddSub
{
	int mul;
	double div;
	public void mul(int x, int y)
	{
		mul = x*y;
		System.out.println("Multiplication of 2 numbers ="+add);
	}
	public void div(double x, double y)
	{
		if(y==0)
			System.out.println("Division is not possible");
		else
		{
		div = x / y;
		System.out.println("Division of 2 numbers ="+div);
		}
	}
}
```

```
public class Lab4
{
	public static void main(String []args) throws IOException
	{
		int a,b;
		MulDiv ob = new MulDiv();
		System.out.println("Enter two integer numbers");
		DataInputStream ds = new DataInputStream(System.in);
		a=Integer.parseInt(ds.readLine());
		b=Integer.parseInt(ds.readLine());
		ob.add(a,b);
		ob.sub(a,b);
		ob.mul(a,b);
		ob.div(a,b);
	}
}
```

5. Program to demonstrate differences between Instance variable & Static variable

```
import java.io.*;
public class Xyz
{
	static int a;
	public void accept() throws IOException
	{
		DataInputStream ds = new DataInputStream(System.in);
		a= Integer.parseInt(ds.readLine());
	}
	public void display()
	{
		System.out.println("a="+a);
	}
}
```

```
public class Lab5
{
	public static void main(String []args) throws IOException
	{
		Xyz ob1 = new Xyz();
		Xyz ob2 = new Xyz();
		Xyz ob3 = new Xyz();
		System.out.println("accept object1 'a' value:");
		ob1.accept();
		System.out.println("Object1 ");
		ob1.display();
		System.out.print("accept object2 'a' value:");
		ob2.accept();
		System.out.print("Object2 ");
		ob2.display();
		System.out.print("accept object3 'a' value:");
		ob3.accept();
		System.out.print("Object3 ");
		ob3.display();
		System.out.print("Object1 'a' value:");
		ob1.display();
		System.out.print("Object2 'a' value:");
		ob2.display();
		System.out.print("Object3 'a' value:");
		ob3.display();
	}
}
```

6. Program to find area & circumference of a circle by accepting the radius from the user

```
import java.io.*;
public class Radius
{
	public static void main(String []args) throws IOException
	{
		int r;
```

```
        float area = 0.0f, circum;
        DataInputStream ds = new DataInputStream(System.in);
        System.out.println("Enter the radius:");
        r = Integer.parseInt(ds.readLine());
        area = (3.142f * r * r);
        circum = (2 * 3.142f * r * r);
        System.out.println(" Area of the circle = "+area);
        System.out.println("Circumference of the circle = "+circum);
    }
}
```

7. Program to accept a number and find whether the number is Prime or not

```
import java.io.*;
public class Prime
{
    public static void main(String []args) throws IOException
    {
        int n,i,flag=0;
        DataInputStream ds = new DataInputStream(System.in);
        System.out.println("Enter a number:");
        n = Integer.parseInt(ds.readLine());
        for(i=2;i<n;i++)
        {
            If(n%i==0)
            {
                flag=1;
                break;
            }
        }
        if(flag==1)
            System.out.println("Given number is not a prime number");
        else
            System.out.println("Given number is a prime number");
    }
}
```

8. Program to create a student class with following attributes: Enrollment no, Name, subject marks1, marks2, marks3, total. Calculate total only if student pass in all 3 subjects. The pass marks is 50. If a candidate fail in any one subject, the total must be zero. Using this requirement write constructor for this class. Write separate functions for accepting and displaying student detils. In the main method create an array of three student objects and display the details.

```
import java.io.*;
class Student
{
	int eno, sub1, sub2, sub3, total;
	String name;
	Student (int s1, int s2, int s3)
	{
		sub1=s1;
		sub2=s2;
		sub3=s3;
		if(sub1>=50 && sub2 >=50 && sub3>=50)
			total = sub1 + sub2 + sub3;
		else
			total = 0;
	}
	void accept() throws IOException
	{
		DataInputStream ds = new DataInputStream(System.in);
		System.out.println("Enter Student enrolment number & name");
		eno = Integer.parseInt(ds.readLine());
		name = ds.readLine();
	}
	void display()
	{
		System.out.println("Total Marks= "+total);
	}
}
public  class Lab8
{
	public static void main(String []args) throws IOException
```

```
    {
        Student obj[] = new Student[3];
        obj[0]= new Student(70,80,60);
        obj[1]= new Student(40,60,80);
        obj[2]= new Student(70,80,46);
        System.out.println("Student 1 details");
        obj[0].accept();
        obj[0].display();
        System.out.println("Student 2 details");
        obj[1].accept();
        obj[1].display();
        System.out.println("Student 3 details");
        obj[2].accept();
        obj[2].display();
    }
}
```

9. Define a class called first year with above attributes and define a suitable constructor. Also write a method called best Student() which process a first year object and return the student with the highest total mark. In the main method define a first-year object and find the best student of the year.

```
import java.util.*;
import java.io.*;
class FirstYear
{
    String coursename, teachername;
    int stdcount=3;
    String stdnames[]={"arun", "ajay", "priya"};
    int stdmarks[] = new int[50];
    FirstYear() throws IOException
    {
        accept();
    }
```

```
        void accept() throws IOException
        {
                DataInputStream ds = new DataInputStream(System.in);
                System.out.println("Enter course name");
                coursename = ds.readLine();
                System.out.println("Enter Teacher name");
                teachername = ds.readLine();
                System.out.println("Enter the marks of all 3 students");
                for (int i=0; i<stdcount; i++)
                        stdmarks[i] =  Interger.parseInt(ds.readLine());
        }
        void beststudent()
        {
                int best=0, k=-1;
                for (int i=0; i<stdcount; i++)
                {
                        if(stdmarks[i]>best)
                        {
                                best = stdmarks[i];
                                k=i;
                        }
                }
                System.out.println("Best student is "+stdnames[k]);
        }
}
public class Lab9
{
        public static void main(String []args)
        {
                FirstYear obj = new FirstYear();
                obj.beststudent();
        }
}
```

10. Program to define a class called employee with the name and date of appointment. Create 10 employee object as an array and sort them as per their date of appointment.

```
import java.util.*;
import java.io.*;
class Employee
{
        String name;
        Date appdate;
        public Employee( String nm, Date apdt)
        {
                name = nm;
                appdate = apdt;
        }
        public void display()
        {
                System.out.println("Employee name:b"+name+" appointment date:
"+appdate.getDate()+"/"+appdate.getMonth()+"/"+appdate.getYear());
        }
}
public class Lab10
{
        public static void main(String[]args)
        {
                Employee emp[] = new Employee[5];
                emp[0] = new Employee("sahana", new Date(2005,6,21);
                emp[1] = new Employee("Patil", new Date(2003,8,2);
                emp[2] = new Employee("Rao", new Date(2006,4,29);
                emp[3] = new Employee("Shinde", new Date(2001,5,15);
                emp[4] = new Employee("sahana", new Date(2004,3,21);
                System.out.println("List of Employees");
                for(int i=0; i<emp.Length;i++)
                        Emp[i].display();
                for(int i=0; i<emp.Length;i++)
                        for(int j=i+1; j<emp.Length;j++)
                                if(emp[i].appdate.after(emp[j].aappdate)
```

```
                    {
                        Employee t = emp[i];
                        emp[i]= emp[j];
                        emp[j]= t;
                    }

        System.out.println("*****************************************");
            System.out.println("List of Employees");
            for(int i=0; i<emp.Length;i++)
                emp[i].display();
        }
}
```

Java Lab Programs –PART - B

1.Program to catch Negative array size Exception. This exception is caused when an array is initialized to negative values

```
public class Program11
{
	public static void main(String []args)
	{
		try
		{
			int []a = new int[-5];
		}
		catch(NegativeArraySizeException e)
		{
			System.out.println(e);
			System.out.println("Array size cannot be negative");
		}
	}
}
```

2. program to handle Null Pointer Exception and use the "finally" method to display a message to the user.

```
public class Program12
{
	public static void main(String []args)
	{
		try
		{
			String s = null;
			int l = s.length();
			System.out.println("Length of the string is "+l);
		}
		catch(NullPointerException e)
		{
			System.out.println(e);
		}
		finally
```

```
            {
                System.out.println("String value has been assigned null");
            }
        }
}
```

3. Program which create and display a message on the window

```
import java.applet.Applet;
import java.awt.Graphics;
public class Program13 extends Applet
{
        public void paint(Graphics g)
        {
                g.drawString("welcome to applet",200,200);
        }
}
```

//program13.html

```
<html>
        <head>
                <title>First Applet</title>
        </head>
        <body>
                <applet code="Program13.class" width=400 height=400>
                </applet>
        </body>\
</html>
```

4**. Create a Simple applet which reveals the personal information of yours.**

```
import java.applet.Applet;
import java.awt.Graphics;
public class Program14 extends Applet
{
	public void paint(Graphics g)
	{
		g.drawString("Name	:VIVIAN",100,100);
		g.drawString("Course	:BCA",100,130);
	}
}
```

lab14.html

```
<html>
	<head>
		<title>Personnel Information</title>
	</head>
	<body>
		<applet code="Program14.class" width=400 height=400>
		</applet>
	</body>\
</html>
```

5. Program to draw several shapes in the created window

```
import java.applet.*;
import java.awt.*;
public class Program15 extends Applet
{
	public void paint(Graphics g)
	{
		int x[]={100,150,200,350,175,280};
		int y[]={100,180,300,450,350,200};
		g.drawLine(350,50,150,150);
```

```
            g.drawRect(450,100,550,150);
            g.drawRoundRect(450,300,500,350,35,35);
            g.drawOval(400,400,100,100);
            g.drawOval(500,400,200,50);
            g.drawArc(50,500,45,90,150,180);
            g.drawPolygon(x,y,x.length);
        }
}
```

lab15.html

```
<html>
    <head>
        <title>Shapes applet</title>
    </head>
    <body>
        <applet code=Program15.class Width=800 height=800>
        </applet>
    </body>
</html>
```

6. Program to create applet and draw grid lines

```
import java.applet.*;
import java.awt.*;
public class Program16 extends Applet
{
    public void paint(Graphics g)
    {
        int row, col, x=20, y=20;
        for (row=1; row<=8;row++)
        {
            x=20;
            for(col=1; col<=8; col++)
            {
                g.drawRect(x,y,20,20);
                x=x+20;
```

```
                }
                y=y+20;
            }
        }
}
```

lab16.html

```
<html>
    <head>
        <title>Grid</title>
    </head>
    <body>
        <applet code=Program16.class Width=800 height=800>
        </applet>
    </body>
</html>
```

7. Create a frame with two buttons father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother also appear

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

class Program17 extends Frame implements ActionListener
{
    Frame f;
    Button father, mother;
    TextArea info;
    public Program17()
    {
        //addMouseListener(this);
        f = new Frame();
        f.setSize(500,500);
        f.setVisible(true);
        f.setLayout(new FlowLayout());
```

```
            father = new Button("FATHER DETAILS");
            mother = new Button("MOTHER DETAILS");
            f.add(father);
            f.add(mother);
            info = new TextArea(20,25);

            f.add(info);
            father.addActionListener(this);
            mother.addActionListener(this);
        }
        public void actionPerformed(ActionEvent e)
        {
        if (e.getSource() == father)
                    info.setText("Father Name: Srinivasa\n Age:45 \n Designation=
Police");
        else if(e.getSource() == mother)
            info.setText("Mother Name: Padmavathi\n Age:40 \n Designation= Home
Maker");
        }
        public static void main(String []args)
        {
            Program17 obj = new Program17();
        }
}
```

8. Create a frame which displays your personal details with respect to a button click

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

class Program18 extends Frame implements ActionListener
{
        Frame f;
        Button b;
        TextArea info;
```

```
    public Program18()
    {
        //addMouseListener(this);
        f = new JFrame();
        f.setSize(500,500);
        f.setVisible(true);
        f.setLayout(new FlowLayout());
        b = new Button("CLICK FOR PERSONNEL DETAILS");
        f.add(b);
        info = new TextArea(20,25);
        f.add(info);
        b.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e)
    {
        info.setText("Name: Vidya\n Course:BCA \n Contact No= 0123456789");
    }
    public static void main(String []args)
    {
        Program18 obj = new Program18();
    }
}
```

9. Program to create a window when we press M or m the window displays Good Morning, A or a, the window displays Good Afternoon, E or e window displays Good Evening, N or n the window displays Good Night.

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

public class Program19 extends Frame implements KeyListener
{
```

```
Frame f;
char ch;
String str = "";
Label l;
public Program19()
{
        f= new Frame();
        f.setSize(500,500);
        f.setVisible(true);
        l= new Label();
        l.setBounds(100, 100, 200, 40);
        f.add(l);
        f.addKeyListener(this);

}
public void keyTyped(KeyEvent e)
{
        ch=e.getKeyChar();
        switch(ch)
        {
                case 'M':
                case 'm': l.setText("GOOD MORNING");break;
                case 'A':
                case 'a': l.setText("GOOD AFTERNOON");break;
                case 'E':
                case 'e': l.setText("GOOD EVENING");break;
                case 'N':
```

```
                    case 'n': l.setText("GOOD NIGHT");

                }
        }
        public void keyPressed(KeyEvent e)
        {
        }
        public void keyReleased(KeyEvent e)
        {
        }
        public static void main(String[]args)
        {
                new Program19();
        }
}
```

10: Demonstrate the various mouse handling events with suitable example

```
import java.awt.*;
import java.awt.event.*;
public class Program20a implements MouseListener,ActionListener
{
   static Frame f;
   static TextField text;
   public static void main(String[] args)
   {
                f=new Frame("Mouse Event");
                 f.setSize(500,500);
```

```
                f.setLayout(null);
               text=new TextField();
                text.setBounds(100,50,300,50);
                f.add(text);
               Button exit=new Button("Exit");
               exit.setBounds(220,235,60,30);
               f.add(exit);
               Program20a obj=new Program20a();
                f.addMouseListener(obj);
               exit.addActionListener(obj);
               f.setVisible(true);
    }
@Override
    public void actionPerformed(ActionEvent e)
    {
          f.dispose();
    }
@Override
    public void mouseEntered(MouseEvent e)
    {
           text.setText("");
          text.setText("Mouse Entered the frame ");
     }
@Override
     public void mouseExited(MouseEvent e)
    {
          text.setText("");
```

```
        text.setText("Mouse Exited the frame");
    }
@Override
   public void mouseReleased(MouseEvent e)
   {
        text.setText("");
         String button="Right";
        if(e.getButton()==MouseEvent.BUTTON1)
                button="Left";
         text.setText(button+" Button Released");
     }
  @Override
   public void mousePressed(MouseEvent e)
   {
        text.setText("");
        String button="Right";
        if(e.getButton()==MouseEvent.BUTTON1)
                button="Left";
         text.setText(button+" Button Pressed");
   }
@Override
  public void mouseClicked(MouseEvent e)
   {
         text.setText("");
         String button="Right";
        if(e.getButton()==MouseEvent.BUTTON1)
                button="Left";
```

```
        text.setText(button+" Button Clicked");
    }
}
```

11. Program to create menu bar and pull down menus

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
public class Program21 implements ActionListener
{
         static JLabel text;
        public static void main(String args[])
        {
                JFrame f = new JFrame("Menu");
                f.setSize(500,500);
                f.setLayout(new FlowLayout());
                f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                Program21 obj = new Program21();
                JMenu menu = new JMenu("Select Here");
                JMenuItem item[] = new JMenuItem[5];
                for(int i=0;i<5;i++)
                {
                        item[i]=new JMenuItem("Item "+(i+1));
                        item[i].addActionListener(obj);
                         menu.add(item[i]);
                }
                JMenuBar mb=new JMenuBar();
```

```
            mb.add(menu);
            f.setJMenuBar(mb);
            text = new JLabel();
            f.add(text);
            f.setVisible(true);
    }
    public void actionPerformed(ActionEvent e)
    {
        text.setText("Menu Item Selected : "+e.getActionCommand());
    }
}
```