JAVA PROGRAMMING LAB MANNUAL (NEP-UG)

COURSE CODE: CA67T
SEMESTER: II

COURSE: BCA

Requirements: java software

Type the code in any editor (notepad, wordpad, sublime etc)

Note: 1.Save the file using .java extension.

2. Compile java file using javac followed by filename.

Example: javac welcome.java

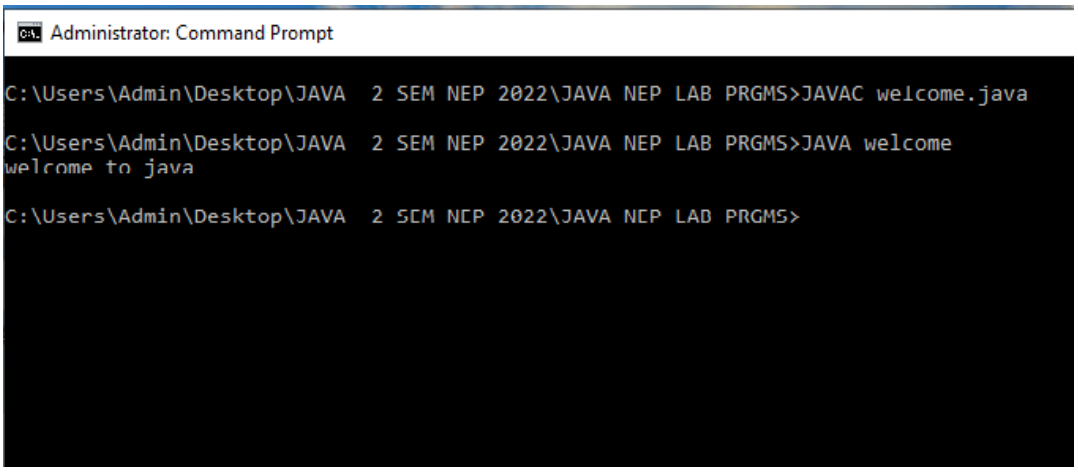
3. Execution using java command

java welcome

1. **Write a simple java application, to print the message, "Welcome to java"**

```
class welcome
{
public static void main(String[] args)
{
System.out.println("welcome to java");
}
}
```

OUTPUT:



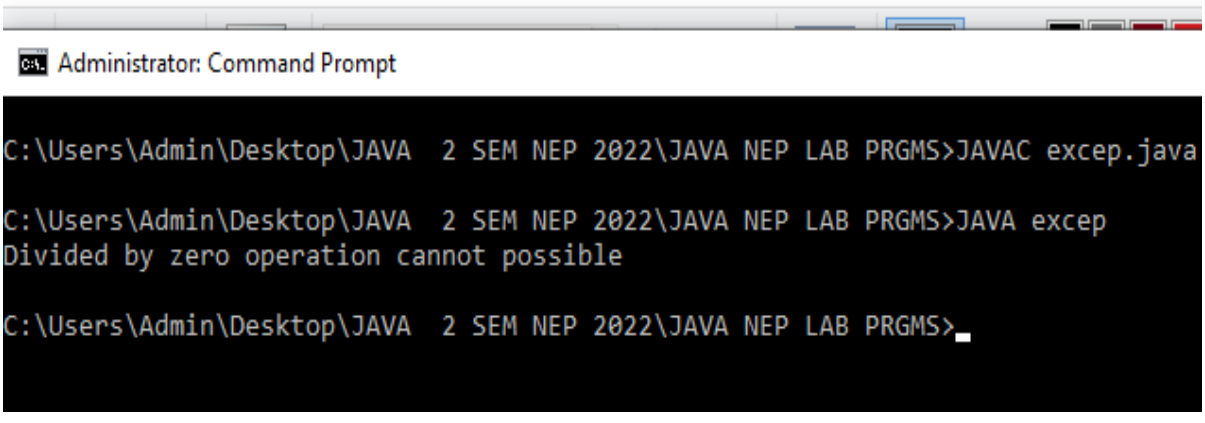
2. **Write a program to display the month of a year. Months of the year should be held in an array**

```
import java.util.Calendar;
public class datedemo
{
public static void main(String args[])
{
Calendar cal=Calendar.getInstance();
String[]
month={"Jauary","February","March","April","May","June","July","August","September
","October","November","December"};
System.out.println("Current month="+month[cal.get(Calendar.MONTH)] );
}
}
```

3. Write a program to demonstrate a division by zero exception

```
public class DBZ
{
public static void main(String [] args)
{
int a=5;
int b=0;
try
{
System.out.println(a/b);
}
catch(ArithmeticException e)
{
System.out.println("Division By Zero is not possible");
}
}
}
```

OUTPUT:



4. Write a program to create a user defined exception say Pay Out of Bounds. .

```
import java.util.*;
class payoutOfBoundsException  extends Exception
{
payoutOfBoundsException(String msg)
{
System.out.println("pay out of bounds exception"+msg);
}
}
public class UDE
{
public static void main(String args[]) throws payoutOfBoundsException
{
System.out.println("Enter the employee salary:");
Scanner sc=new Scanner(System.in);
int pay=sc.nextInt();
if(pay<10000 || pay>50000)
{
throw new payoutOfBoundsException("salary not in a valid range");
}
else
```

```
System.out.println("Employee is eligible for 30% hike");
}
}
```

5. **Write a java program to add two integers and two float numbers. When no arguments are supplied, give a default value to calculate the sum. Use function overloading.**

```
public  class overloading
{
int add()
{
return(10+10);
}
int add(int x,int y)
{
return(x+y);
}
float add(float a,float b)
{
return(a+b);
}
public static void main(String args[])
{
overloading a=new overloading();
System.out.prinln("Using default values sum is:"+a.add());

System.out.println("Using integer values sum is:"+a.add(10,20));
System.out.println("Using float values sum is:"+a.add(10.3f,20.4f));
}
}
```

6. Write a program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the super class. MulDiv should have methods to multiply and divide A main function should access the methods and perform the mathematical operations.

```
class AddSub
{
int n1,n2;
public AddSub(int x,int y)
{
n1=x;
n2=y;
}
public int add()
{
return(n1+n2);
}
public int sub()
{
return(n1-n2);
}
class MulDiv extends AddSub
```

```
{
public MulDiv(int x,int y)
{
super(x,y);
}
public int mul()
{
return(n1*n2);
}
public int div()
{
return(n1/n2);
}
}
public class Airthmeticoperations
{
public static void main(Sting args[])
{
MulDiv ob=new MulDiv(20,10);
System.out.println("sum=:"+ob.add());
System.out.println("Difference=:"+ob.sub());
```

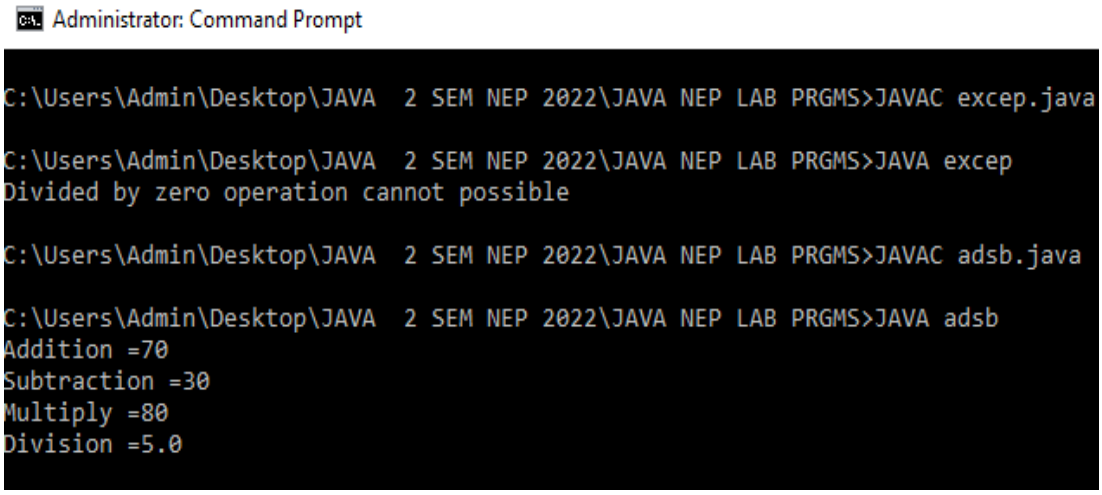
```
System.out.println("Product=:"+ob.mul());

System.out.println("division=:"+ob.div())

}

}
```

OUTPUT:



7. **Write a program with class variable that is available for all instances of a class. Use static variable declaration. Observe the changes that occur in the object's member variable values.**

```
class student

{

static String collegename="PES";

int rollno;

String name;
```

```
student(int rollno,String name)
{
this .rollno=rollno;
this .name=name;
}
void display()
{
System.out.println(collegename+" "+rollno+" "+name);
}
}
public class staticdemo
{
public static void main(String args[])
{
System.out.println("objects sharing static variable: collegename");
student s1=new student(101,"suhas");
student s2=new student(102,"sneha");
s1.display();
s2.display();
System.out.println("static variable chaged by one of the object");
s1.collegename="BMS";
```

```
s1.display();

s2.display();

}

}
```

8. **Write a java program to create a student class with following attributes: Enrollment_id: Name, Mark of sub1, Mark of sub2, mark of sub3, Total Marks. Total of the three marks must be calculated only when the student passes in all three subjects. The pass mark for each subject is 50. If a candidate fails in any one of the subjects his total mark must be declaredas zero. Using this condition write a constructor for this class. Write separate functions for accepting and displaying student details. In the main method create an array of three student objects and display the details.**

```
import java.util.*;
class student
{
 Scanner sc =new Scanner (System.in)
String E_id;
String name;
int s1,s2,s3,total;
student()
{
readstudentinfo();
}
public void readstudentinfo()
{
System.out.println("Enter the student details:");
System.out.println("Enter the Enrollment number:");
E_id=sc.next();
System.out.println("Enter the student name");
name=sc.next();
```

```
System.out.println("Enter the student marks in 3 subjects:");
s1=sc.nextInt();
s2=sc.nextInt();
s3=sc.nextInt();
if(s1 >= 50 && s2 >= 50 && s3>= 50)
total=s1+s2+s3;
else
total=0;
}
public void displayinfo()
{
System.out,println(E_id+ "   "+name+ "    "+total);
}
}
public class studentinfo
{
public static void main(String args[])
 {
 student s[]= new student[3];
    for(int i=0;i<3;i++)
s[i]=new student();
}
System.out.println("Student Details");
System.out.println("Enrollmentno"       "Name "    "     Total);
    for(int i=0;i<3;i++)
    s[i].displayinfo();
}
```

```
    }
}
```

9. Write a Java program to define a class called employee with the name and date of appointment. Create ten employee objects as an array and sort them as per their date of appointment. ie, print them as per their seniority.

```
import java.util.*;

class employee

{

String name;

Date appdate;

public employee(String nm,Date apdt)

{

name=nm;

appdate=apdt;

}

public void display()

{

System.out.println("employee name:"+name+" appoinment date:"+ appdate.getDate()
+"/"

+appdate.getMonth()+"/"+appdate.getYear());
```

```
}
}
class EmployeeDemo
{
public static void main(String as[])
{
employee emp[]=new employee[10];
emp[0]=new employee("shaha PD",new Date(1999,05,22));
emp[1]=new employee("Patil AS",new Date(2000,01,12));
emp[2]=new employee("Phadake PV",new Date(2009,04,25));
emp[3]=new employee("Shinde SS",new Date(2005,02,19));
emp[4]=new employee("Shrivastav RT",new Date(2010,01,01));
emp[5]=new employee("Amitha S",new Date(2005,04,20));
emp[6]=new employee("Bhoomika S",new Date(2000,04,10));
emp[7]=new employee("Karan",new Date(2002,06,5));
emp[8]=new employee("Avinash",new Date(2001,02,9));
emp[9]=new employee("Ravi V",new Date(2010,9,23));
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=0;j<emp.length;j++)
{
if(emp[i].appdate.after(emp[j].appdate))
{
employee t=emp[i];
emp[i]=emp[j];
emp[j]=t;
}
}
}
System.out.println("List of employees seniority wise");
for(int i=0;i<emp.length;i++)
emp[i].display();
}
}
```

10. Create a package' student.Fulltime.BCA' in your current working directory a. Create a default class student in the above package with the following attributes: Name, age, sex. b. Have methods for storing as well as displaying

```
package student.fulltime.bca;
```

```
import java.util.Scanner;
public class BCAstudent
{

String name,sex;

int age;

Scanner sc =new Scanner (System.in);
public void getdata()
{
System.out.println("Student name:");
name=sc.nextLine();
System.out.println("Student  Age:");
Age=sc.nextInt();
System.out.println("Student  sex:");

sex=sc.nextLine();

}

public void display()
{
System.out.println("Student  details are:");
System.out.println("Student name:"+name);
System.out.println("Student  Age:"+age);
System.out.println("Student  sex:"+sex);
}
}
```

Secod class

```
import student.fulltime.bca.BCAstudent;
public class packagedemo
{
```

```
public static void main(String args[])
 {
 BCAstudent std=new BCAstudent();
 std.getdata();
 std.display();
 }
 }
```

11. Write a small program to catch Negative Array Size Exception. This exception is caused when the array is initialized to negative values.

```
public class NASE
{
public static void main(String args[])
{
try
{
int [] array=new int[-1];
}
```

```
Catch(NegativeArraySizeException obj)
{
Obj.printStackTrace();
}
System.out.println("Exception caught and continue execution");
}
}
```

12. Write a program to handle Null Pointer Exception and use the "finally" method to display a messageto the user.

```
Public class NPE
{
public static void main(String args[])
{
String city=null;
try
{
if(city.equals("BANGALORE");
System.out.println("Equal");
else
System.out.println("Not Equal");
```

```
}
catch(NullPointerException e)
{
System.out.println("Null pointer exception caught");
}
finally
{
System.out.println("finally block will be always executed");
}
}
}
```

OUTPUT:

```
C:\Users\Admin\Desktop\JAVA  2 SEM NEP 2022\JAVA NEP LAB PRGMS>JAVAc NAE.java

C:\Users\Admin\Desktop\JAVA  2 SEM NEP 2022\JAVA NEP LAB PRGMS>JAVA NAE
java.lang.NegativeArraySizeException
        at NAE.main(NAE.java:4)
Continuing execution...
Array length: 5
```

13. Write a program which create and displays a message on the window

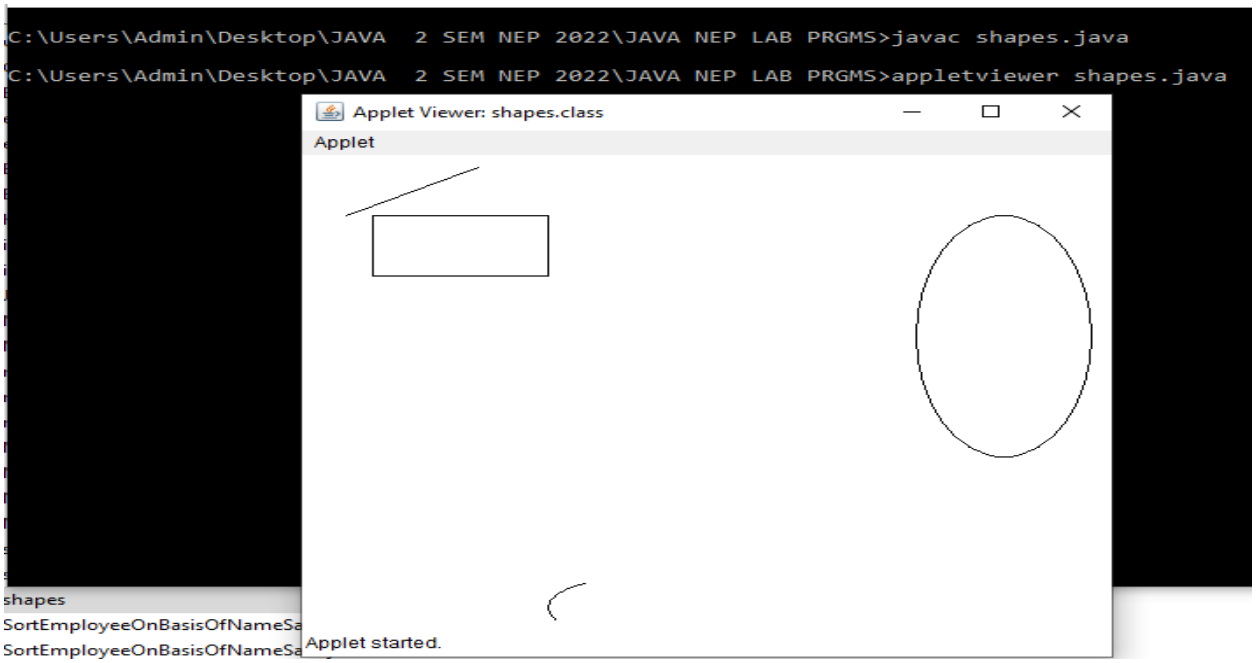
```
import java.applet.Applet;
import java.awt.Graphics;
public class Myapplet extends Applet
{
public void paint(Graphics g)
{
g.drawString("HELLO APPLET",200,200);
}
}
/*<Applet code=Myapplet.class width=400 height=500>
</Applet>
*/
```

14. Write a program to draw several shapes in the created window

```
import java.awt.*;
Public class Drawings extends Canvas
{
Public void paint(Graphics g)
{
```

```
g.drawRect(50,75,100,50);
g.fillRect(50,75,100,50);
g.drawRoundRect(50,150,100,50,15,15);
g.fillRoundRect(50,150,100,50,15,15);
g.drawOval(50,275,100,50);
g.fillOval(50,275,100,50);
g.drawArc(20,350,100,50,25,75);
g.fillArc(20,350,100,50,25,75);
}
Public static void main*String args[]){
Drawings m=new Drawings();
Frame=new Frame("shapes");
f.add(m);
f.setSize(300,450);
f.setVisible(true);
}
}
```

OUTPUT:



15. Write a program to create an applet and draw grid lines

```
import java.awt.*;
import java.applet.*;
public class Grid extends Applet
{
Public void paint(Graphics g)
{
```

```
Int row,column,x,y=20;
for(row=1;row<5;row++)
{
x=20;
for(column=1;column<5;column++)
{
g.drawRect(x,y,40,40);
x=x+20;
}
y=y+20;
}
}
}
/*
    *<applet code="Grid.class" height=500 width=500></applet>
    */
```

16. Write a program to create menu bar and pull-down menus.

```
import java .awt.*;
public class MenuDemo
{
```

```
MenuDemo()
{
Frame fr=new Frame("Menu Demo");
MenuBar mb=new MenuBar();
Menu fileMenu=new MenuItem("New");
Menu editMenu=new MenuItem("Edit");
Menu viewMenu=new MenuItem("View");
mb.add(fileMenu);
mb.add(editMenu);
mb.add(viewMenu);
MenuItem a1=new MenuItem("New");
MenuItem a2=new MenuItem("Open");
MenuItem a3=new MenuItem("Save");
MenuItem b2=new MenuItem("copy");
MenuItem c1=new MenuItem("Find")
MenuItem a1=new MenuItem("Show");
fileMenu.add(a1);
fileMenu.add(a2);
fileMenu.add(a3);
fileMenu.add(b1);
fileMenu.add(b2);
```

```
fileMenu.add(c1);
fe.setMenuBar(mb);
fr.setSize(200,200);
fr.setLayout(null);
fr.setVisible(true);
}
Public static void main(String agrs[])
{
New MenuDemo();
}
}
```

17. Create a frame which displays your personal details with respect to a button clic

```
import java .aet.*;
import java.event.*;
public class personamdetails
{
Public static void main(String args[])
{
Frame f=new Frame("Button Example");
Label l=new Label("Welcome to My page");
```

```
l.setFont(new Font("Callibri",Font.Bold,16));
Label f1=new Label();
Label f2=new Label();
Label f3=new Label();
Label f4=new Label();
Label f5=new Label();
l.setBounds(250,30,600,50);
f1.setBounds(20,120,600,30);
f2.setBounds(20,160,600,30);
f3.setBounds(20,200,600,30);
f4.setBounds(20,240,600,30);
f5.setBounds(20,280,600,30);
Button b=new Button("CLICK HERE FOR MY PERSONAL DETAILS");
b.setFont(new Font("Callibri",Font.Bold,14));
b.setBounds(210,70,320,30);
b.addActionListner(new ActionListner();
f1.setText("FULL NAME:Aishwarya Rao");
f2.setText(" FATHER NAME:ANAND  MOTHER NAME:SUMA  AGE:20");
f3.setText("ROLL NO:123  COLLEGE NAME:AIGS");

f4.setText("NATIONALITY:INDIAN CONTACT NO:98234512083");
```

```
f5.setText("ADDRESS:7th cross ,Maruthinagar,BENGALURU");
}
}
f.add(b);
f.add(l);
f.add(f1);
f.add(f2);
f.add(f3);
f.add(f4);
f.add(f5);
f.setSize(400,400);
f.setLayout(null);
f.setVisible(true);
}
}
```