

# AMITY UNIVERSITY, MAHARASHTRA



## Java Programming Lab

Master in Computer Application

SEMESTER 1

Submitted to:

Ms. Roshani Mali

Professor

Submitted By:

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MCA (AIIT)

Name: Debesh Das

Enroll No: A710145022009

Program: MCA Sem 1

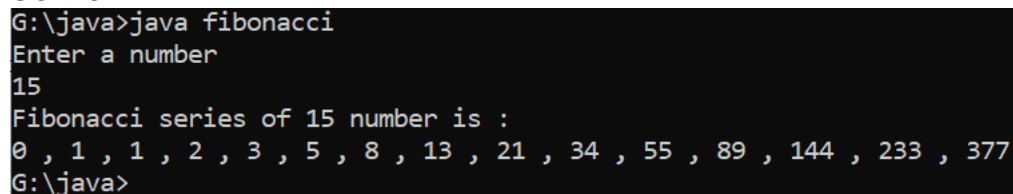
<b>Sr. No.</b>	<b>Title</b>
1	<ul style="list-style-type: none"> <li>a. WAP to find fibonacci upto given number using for loop.</li> <li>b. WAP to print prime numbers using while loop.</li> <li>c. WAP whether a given string is palindrome or not?</li> <li>d. WAP to perform arithmetic operations(menu driven).</li> </ul>
2	<ul style="list-style-type: none"> <li>a. WAP to sort the elements of array in ascending order.</li> <li>b. WAP for calculating Matrix multiplication operation.</li> <li>c. WAP for sorting given list of names in ascending order.</li> </ul>
3	<ul style="list-style-type: none"> <li>a. WAP to demonstrate the working of banking- system where we deposit and withdraw amount from our account.</li> <li>b. WAP using class and object for calculating area of circle, rectangle, triangle using menu driven.</li> <li>c. WAP to create a room class, the attributes of this class is roomno, roomtype, roomarea, and acmachine. In this class the member functions are setdata and displaydata.</li> </ul>
4	<ul style="list-style-type: none"> <li>a. WAP for employee class using constructors.</li> <li>b. WAP to illustrate constructor overloading using "this" keyword.</li> </ul>
5	<ul style="list-style-type: none"> <li>a. WAP to calculate total salary of faculty of college including hra, da, bonus using multilevel inheritance.</li> <li>b. WAP to illustrate use of hierarchical inheritance.</li> <li>c. WAP to illustrate use of super keyword.</li> </ul>
6	<ul style="list-style-type: none"> <li>a. WAP to illustrate use of abstract class that has abstract and non abstract methods.</li> <li>b. WAP to illustrate use of interface.</li> </ul>
7	WAP for null pointer exception and illustrate finally block and throws keyword.
8	<ul style="list-style-type: none"> <li>a. WAP to read text from text file.</li> <li>b. WAP to write text in text file.</li> </ul>
9	Write a java program for calculator operation using AWT controls
10	Write a java program for student registration using swing
11	<ul style="list-style-type: none"> <li>a. WAP to demonstrate LinkedList and it's methods.</li> <li>b. WAP to demonstrate HashSet and it's methods.</li> </ul>

## Practical 1

Program1:- Write a java program to find Fibonacci series up to given number using for loop

```
import java.util.*;
import java.io.*;
class fibonacci
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter a number ");
        int k=sc.nextInt();
        int n1=0,n2=1;
        int n3=0;
        System.out.println("Fibonacci series of "+k+" number is :");
        System.out.print(n1 + " , " +n2);
        for(int i=2;i<k;i++)
        {
            n3=n2+n1;
            System.out.print(" , " +n3);
            n1=n2;
            n2=n3;
        }
    }
}
```

OUTPUT: -



```
G:\java>java fibonacci
Enter a number
15
Fibonacci series of 15 number is :
0 , 1 , 1 , 2 , 3 , 5 , 8 , 13 , 21 , 34 , 55 , 89 , 144 , 233 , 377
G:\java>
```

Program 2: - Write a java program to print prime numbers using while loop

```
import java.util.*;
import java.io.*;
class primeno
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println( "Enter a number ");
        int k=sc.nextInt();
        int i =2,n,j;
        while(i<=k){
            j=2;
            n=0;
            while(j<=(i/2)){
                if(i%j==0){
```

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```

        n=1;
    }
    j++;
}
if(n==0){
    System.out.print(i+", ");
    i++;
}
}
}
}

```

OUTPUT: -

```

C:\Windows\System32\cmd.exe
D:\java>java primeno
Enter a number
100
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97,
D:\java>

```

**Program 3: - Write a java program whether a given string is palindrome or not**

```

import java.util.*;
import java.io.*;
class palindrome
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println( "Enter a String ");
        String k=sc.nextLine();
        int l = k.length();
        System.out.println( "Length of string is "+l);
        String k2="";
        for(int i=0;i<l;i++)
        {
            k2=k.charAt(i)+k2;
        }
        System.out.println(k2);
        if(k2.equals(k))
            System.out.println("String is Palindrome ");
        else
            System.out.println("String is not Palindrome");
    }
}

```

OUTPUT: -

C:\Windows\System32\cmd.exe

```
D:\java>java palindrome
Enter a String
ratan
Length of string is 5
natar
String is not Palindrome

D:\java>java palindrome
Enter a String
naman
Length of string is 5
naman
String is Palindrome

D:\java>
```

#### Program 4: - Write a java program to perform arithmetic operations (MENU DRIVEN)

```
import java.util.*;
import java.io.*;
class arith
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("MENU \n 1.Addition\n2.Subtract\n3.Multiply\n4.Divide");
        System.out.print("Enter your choice :- ");
        int n=sc.nextInt();
        int a,b;
        switch(n)
        {
            case 1:
                System.out.println("Enter first number");
                a=sc.nextInt();
                System.out.println("Enter second Number");
                b=sc.nextInt();
                System.out.println("Sum of two number is "+(a+b));
                break;
            case 2:
                System.out.println("Enter first number");
                a=sc.nextInt();
                System.out.println("Enter second Number");
                b=sc.nextInt();
                System.out.println("Subtraction of two number is "+(a-b));
                break;
            case 3:
                System.out.println("Enter first number");
                a=sc.nextInt();
                System.out.println("Enter second Number");
```

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```

        b=sc.nextInt();
        System.out.println("Multiplication of two number is "+(a*b));
        break;
    case 4:
        System.out.println("Enter first number");
        a=sc.nextInt();
        System.out.println("Enter second Number");
        b=sc.nextInt();
        System.out.println("Division of two number is "+(a/b));
        break;
    default:
        System.out.println("Invalid Choice");
    }
}
}

```

OUTPUT: -

The image displays three separate command prompt windows, each showing the execution of a Java program named 'arith'. The program presents a menu with four options: 1.Addition, 2.Subtract, 3.Multiply, and 4.Divide. In the first window, the user selects option 4, enters 100 as the first number and 25 as the second number, and the program outputs 'Division of two number is 4'. In the second window, the user selects option 2, enters 100 as the first number and 25 as the second number, and the program outputs 'Subtraction of two number is 75'. In the third window, the user selects option 5, which is not in the menu, and the program outputs 'Invalid Choice'.

```

C:\Windows\System32\cmd.exe
D:\java>java arith
MENU
 1.Addition
 2.Subtract
 3.Multiply
 4.Divide
Enter your choice :- 4
Enter first number
100
Enter second Number
25
Division of two number is 4

C:\Windows\System32\cmd.exe
D:\java>java arith
MENU
 1.Addition
 2.Subtract
 3.Multiply
 4.Divide
Enter your choice :- 2
Enter first number
100
Enter second Number
25
Subtraction of two number is 75

C:\Windows\System32\cmd.exe
D:\java>java arith
MENU
 1.Addition
 2.Subtract
 3.Multiply
 4.Divide
Enter your choice :- 5
Invalid Choice

D:\java>

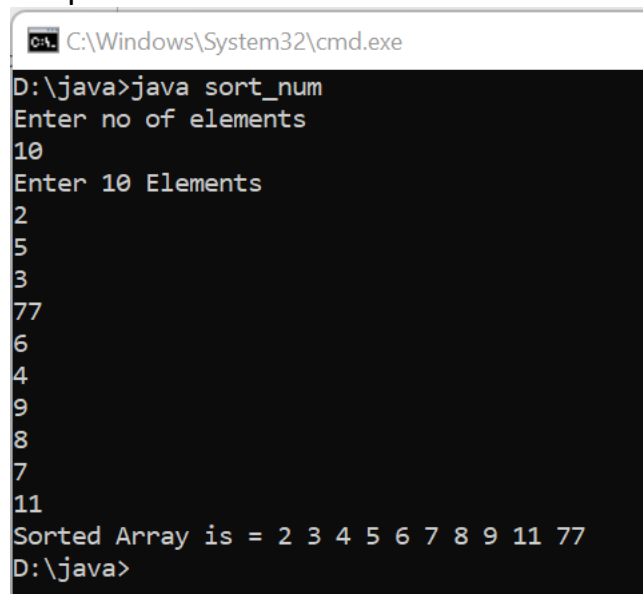
```

## Practical 2

Program 5: - Write a java program to sort the element of an array in ascending order

```
import java.util.*;
import java.io.*;
class sort_num
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner (System.in);
        int n;
        int i,j;
        System.out.println("Enter no of elements ");
        n=sc.nextInt();
        int a[]=new int[n];
        System.out.println("Enter "+n+" Elements");
        for(i=0;i<n;i++)
            a[i]=sc.nextInt();
        int t;
        for(i=0;i<n;i++)
        {
            for(j=i+1;j<n;j++)
            {
                if(a[i]>a[j])
                {
                    t=a[j];
                    a[j]=a[i];
                    a[i]=t;
                }
            }
        }
        System.out.print("Sorted Array is = ");
        for(i=0;i<n;i++)
            System.out.print(a[i]+" ");
    }
}
```

Output:-



```
C:\Windows\System32\cmd.exe
D:\java>java sort_num
Enter no of elements
10
Enter 10 Elements
2
5
3
77
6
4
9
8
7
11
Sorted Array is = 2 3 4 5 6 7 8 9 11 77
D:\java>
```

Program 6: Write a java program for calculating matrix multiplication operation

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```

import java.util.*;
import java.io.*;
class matrix
{
    public static void main(String args[])
    {
        int i,j,k;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter size of first matrix");
        int a1n1=sc.nextInt();
        int a1n2=sc.nextInt();
        int a1[][]=new int[a1n1][a1n2];
        System.out.println("Enter elements of first matrix");
        for(i=0;i<a1n1;i++)
            for(j=0;j<a1n2;j++)
                a1[i][j]=sc.nextInt();
        System.out.println("Enter size of matrix");
        int a2n1=sc.nextInt();
        int a2n2=sc.nextInt();
        int a2[][]=new int[a2n1][a2n2];
        System.out.println("Enter elements of first matrix");
        for(i=0;i<a2n1;i++)
            for(j=0;j<a2n2;j++)
                a2[i][j]=sc.nextInt();
        int r[][]=new int[a1n1][a2n2];

        for(i=0;i<a1n1;i++)
        {
            for(j=0;j<a2n2;j++)
            {
                for(k=0;k<a1n2;k++)
                {
                    r[i][j]+=a1[i][k]*a2[k][j];
                }
            }
        }
        System.out.println("Matrix 1 =");
        for(i=0;i<a1n1;i++){
            for(j=0;j<a1n2;j++)
                System.out.print(a1[i][j]+" ");
            System.out.println();
        }
        System.out.println("Result ");
        for(i=0;i<a2n1;i++){
            for(j=0;j<a2n2;j++)
                System.out.print(a2[i][j]+" ");
            System.out.println();
        }
        System.out.println("Result ");
        for(i=0;i<a1n1;i++){
            for(j=0;j<a2n2;j++)
                System.out.print(r[i][j]+" ");
            System.out.println();
        }
    }
}

```

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Program: MCA Sem 1



Output:

```
C:\Windows\System32\cmd.exe
D:\java>java matrix
Enter size of first matrix
3
2
Enter elements of first matrix
4
5
6
3
4
5
Enter size of second matrix
3
2
Enter elements of second matrix
4
5
32
6
7
5
Matrix 1 =
4 5
6 3
4 5
Matrix 2 =
4 5
32 6
7 5
Multiplication is not possible
```

```
D:\java>java matrix
Enter size of first matrix
3
2
Enter elements of first matrix
1
2
3
4
5
6
Enter size of second matrix
2
3
Enter elements of second matrix
1
2
3
4
5
6
Matrix 1 =
1 2
3 4
5 6
Matrix 2 =
1 2 3
4 5 6
Result
9 12 15
19 26 33
29 40 51
```

Program 7: Write a program for sorting a given list of names in ascending order

```
import java.util.*;
import java.io.*;
class sort_string
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner (System.in);
        int i,j;
        String t;
        System.out.println("Enter no of elements");
        int n=sc.nextInt();
        String name[]=new String[n];
        System.out.println("Enter "+n+" names");
        for(i=0;i<name.length;i++)
        {
            name[i]=sc.next();
        }
    }
}
```

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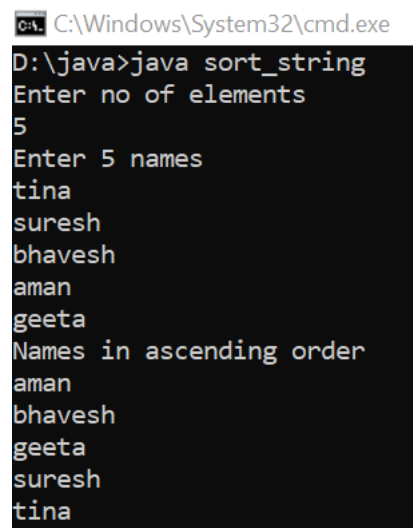
Program: MCA Sem 1

```

        for(i=0;i<n;i++)
        {
            for(j=i+1;j<n;j++)
            {
                if(name[i].compareTo(name[j])>0)
                {
                    t=name[j];
                    name[j]=name[i];
                    name[i]=t;
                }
            }
        }
        System.out.println("Names in ascending order");
        for(i=0;i<n;i++)
        {
            System.out.println(name[i]);
        }
    }
}

```

Output:



```

C:\Windows\System32\cmd.exe
D:\java>java sort_string
Enter no of elements
5
Enter 5 names
tina
suresh
bhavesh
aman
geeta
Names in ascending order
aman
bhavesh
geeta
suresh
tina

```

## Practical 3

Program 8 : Write a program to demonstrate the working of a banking system where we deposit and withdraw amount from our account.

```
import java.util.*;
import java.io.*;
class bank
{
    int accno[]={33401,33402,33405,33406,33407};
    String name[]{"Debesh","Tina","Karan","Suresh","Danish"};
    int amount[]={200,250,100,1000,555};
    int d;

    public void deposit(int n)
    {
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter the amount to be deposit");
        d=sc.nextInt();
        amount[n]+=d;
        System.out.println("Balance after desposit = "+amount[n]);
    }
    public void withdraw(int n)
    {
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter the amount to be Withdraw");
        d=sc.nextInt();
        if(d<amount[n]){

            amount[n]-=d;
            System.out.println("Balance after withdraw= "+amount[n]);
        }
        else
            System.out.println("Insufficient Balance");
    }
}
class banking
{
    public static void main(String args[])
    {
        int o=0;
        bank bk=new bank();
        Scanner sc= new Scanner(System.in);
        do
        {
            int i,ko=0;
            for(i=0;i<5;i++)
```

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Program: MCA Sem 1

```

        System.out.println(bk.accno[i]+" "+bk.name[i]+" Balance=
"+bk.amount[i]);
        System.out.print("Enter account number ");
        int no=sc.nextInt();

        for(i=0;i<5;i++)
        {
            if(bk.accno[i]==no)
                ko=i;
        }
        System.out.println("Account number "+bk.accno[ko]+" is selected\nHello
"+bk.name[ko]+" Welcome to Internet Banking");
        System.out.println("Balance = "+bk.amount[ko]);
        System.out.println("1.Deposit\n2.Withdraw\nEnter one option");
        int op=sc.nextInt();
        switch (op)
        {
            case 1:

                bk.deposit(ko);

                break;
            case 2:

                bk.withdraw(ko);

                break;
            default:
                System.out.println("Enter a valid option");
        }
        System.out.println("Press 1 to continue internet banking or press 0");
        o=sc.nextInt();
    }while(o==1);
}
}

```

Output:

```
C:\Windows\System32\cmd.exe
D:\java>java banking
33401  Debesh   Balance= 200
33402  Tina    Balance= 250
33405  Karan    Balance= 100
33406  Suresh   Balance= 1000
33407  Danish   Balance= 555
Enter account number 33405
Account number 33405 is selected
Hello Karan Welcome to Internet Banking
Balance = 100
1.Deposit
2.Withdraw
Enter one option
1
Enter the amount to be deposit
1233
Balance after desposit = 1333
Press 1 to continue internet banking or press 0
1
33401  Debesh   Balance= 200
33402  Tina    Balance= 250
33405  Karan    Balance= 1333
33406  Suresh   Balance= 1000
33407  Danish   Balance= 555
Enter account number 33406
Account number 33406 is selected
Hello Suresh Welcome to Internet Banking
Balance = 1000
1.Deposit
2.Withdraw
Enter one option
2
Enter the amount to be Withdraw
300
Balance after withdraw= 700
Press 1 to continue internet banking or press 0
1
33401  Debesh   Balance= 200
33402  Tina    Balance= 250
33405  Karan    Balance= 1333
33406  Suresh   Balance= 700
33407  Danish   Balance= 555
Enter account number 33406
Account number 33406 is selected
Hello Suresh Welcome to Internet Banking
Balance = 700
1.Deposit
2.Withdraw
Enter one option
2
Enter the amount to be Withdraw
800
Insufficient Balance
Press 1 to continue internet banking or press 0
0
```

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Program 9: Write a java program using class and object for calculating area of circle, rectangle, area of triangle using menu driven

```
import java.util.*;
import java.io.*;
class areaobject
{
    final double pi=3.14;
    public double circle(double pi,int r)
    {
        return (pi*r*r);
    }
    public int rectangle(int a,int b)
    {
        return (a*b);
    }
    public double triangle(int h,int b)
    {
        return (h*(double)b/2.0);
    }
    public double square(int a)
    {
        return (a*a);
    }
    public static void main(String args[])
    {
        int op;
        areaobject ao=new areaobject();
        Scanner sc=new Scanner(System.in);
        System.out.println("1.Area of Circle\n2.Area of Rectangle\n3. Area of
triangle\n4. Area of Square");
        System.out.println("Choose an option");
        op=sc.nextInt();
        switch (op)
        {
            case 1:
                System.out.println("Enter the radius of circle ");
                int r=sc.nextInt();
                System.out.println("Area of circle is = "+ao.circle(ao.pi,r));
                break;
            case 2:
                System.out.println("Enter the length and breath of the rectangle ");
                int l=sc.nextInt();
                int h=sc.nextInt();
                System.out.println("Area of rectangle is = "+ao.rectangle(l,h));
                break;
            case 3:
                System.out.println("Enter the base and height of the triangle");
```

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```

        l=sc.nextInt();
        h=sc.nextInt();
        System.out.println("Area of rectangle is = "+ao.triangle(l,h));
        break;
        case 4:
        System.out.println("Enter the side of sqaure");
        l=sc.nextInt();
        System.out.println("Area of sqaure is = "+ao.square(l));
        break;
        default:
        System.out.println("Enter a valid option");
    }
}
}

```

Output:

```

G:\java>java areaobject
1.Area of Circle
2.Area of Rectangle
3. Area of triangle
4. Area of Square
Choose an option
2
Enter the length and breath of the rectangle
12
10
Area of rectangle is = 120

```

```

G:\java>java areaobject
1.Area of Circle
2.Area of Rectangle
3. Area of triangle
4. Area of Square
Choose an option
1
Enter the radius of circle
18
Area of circle is = 1017.36

```

```

G:\java>java areaobject
1.Area of Circle
2.Area of Rectangle
3. Area of triangle
4. Area of Square
Choose an option
3
Enter the base and height of the triangle
12
10
Area of rectangle is = 60.0

```

```

G:\java>java areaobject
1.Area of Circle
2.Area of Rectangle
3. Area of triangle
4. Area of Square
Choose an option
4
Enter the side of sqaure
5
Area of sqaure is = 25.0

```

Program 10: Write a java program to create a room class , the attributes of this class is roomno , roomtype , roomarea and ac machine. In this class the member functions are set data and display data.

```
import java.io.*;
import java.util.*;
class room
{
    int roomno;
    String roomtype,acmachine;
    double roomarea;

    room()
    {
        roomno=0;
        roomtype="";
        acmachine="";
        roomarea=0.0;
    }
    public void setdata()
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the details of the room :-");
        System.out.print("Room No: - ");
        roomno=sc.nextInt();
        System.out.print("Room type: - ");
        roomtype=sc.next();
        System.out.print("Do room have AC (Yes/No) : - ");
        acmachine=sc.next();
        System.out.print("Room Area in sq.metre - ");
        roomarea=sc.nextDouble();
    }
    public void displaydata()
    {
        System.out.println("Room Number= "+roomno);
        System.out.println("Room Type= "+roomtype);
        System.out.println("Availability of AC = "+acmachine);
        System.out.println("Room Area= "+roomarea+" square metre");
    }
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        room r=new room();
        int i=0;
        do{
            System.out.println("* * * * *");
            System.out.println("1.Set Data\n2.Display Data");
            System.out.println("Enter the option");

            int ch=sc.nextInt();
            System.out.println("* * * * *");
            switch(ch)
```

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```

        {
            case 1:
                r.setdata();
                break;
            case 2:
                r.displaydata();
                break;
            default:
                System.out.println("Enter the correct option");
                break;
        }
        System.out.println("*****");
        System.out.println("Do you want to exit\n1.Yes\n2.No");
        i=sc.nextInt();

    }while(i==2);
}
}

```

Output :

```

G:\java>java room
*****
1.Set Data
2.Display Data
Enter the option
1
Enter the details of the room :-
Room No: - 12
Room type: - Exwcutive
Do room have AC (Yes/No) : - No
Room Area in sq.metre - 1221
*****
Do you want to exit
1.Yes
2.No
2
*****
1.Set Data
2.Display Data
Enter the option
2
Room Number= 12
Room Type= Exwcutive
Availability of AC = No
Room Area= 1221.0 square metre
*****
Do you want to exit
1.Yes
2.No

```

## Practical 4

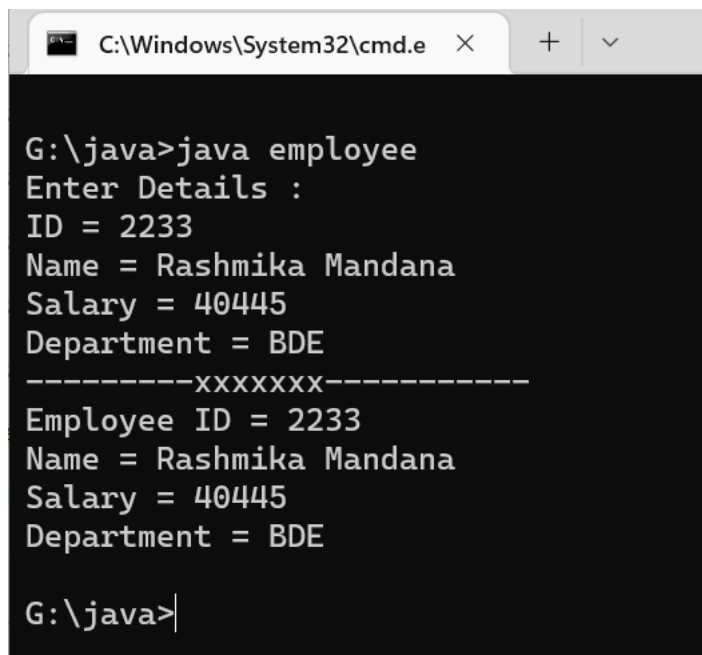
Program 11: Write a java program for employee class, the attributes of this class is id,name,department and salary. In this class the member functions are display data

```
import java.util.*;
import java.io.*;
class data
{
    int id,salary;
    String name,dept;
    data(int i,String n,int s,String d)
    {
        id=i;
        salary=s;
        name=n;
        dept=d;
    }
    void display()
    {
        System.out.println("Employee ID = "+id);
        System.out.println("Name = "+name);
        System.out.println("Salary = "+salary);
        System.out.println("Department = "+dept);
    }
}
class employee{
    public static void main(String args[])
    {
        Scanner sc=new Scanner (System.in);
        System.out.println("Enter Details : ");
        System.out.print("ID = ");
        int i=Integer.parseInt(sc.nextLine());
        System.out.print("Name = ");
        String n=sc.nextLine();
        System.out.print("Salary = ");
        int s=Integer.parseInt(sc.nextLine());
        System.out.print("Department = ");
        String d=sc.nextLine();
        data e=new data(i,n,s,d);
        System.out.println("-----xxxxxxx-----");
        e.display();
    }
}
```

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Program: MCA Sem 1



```
C:\Windows\System32\cmd.e X + v

G:\java>java employee
Enter Details :
ID = 2233
Name = Rashmika Mandana
Salary = 40445
Department = BDE
-----xxxxxxx-----
Employee ID = 2233
Name = Rashmika Mandana
Salary = 40445
Department = BDE

G:\java>
```

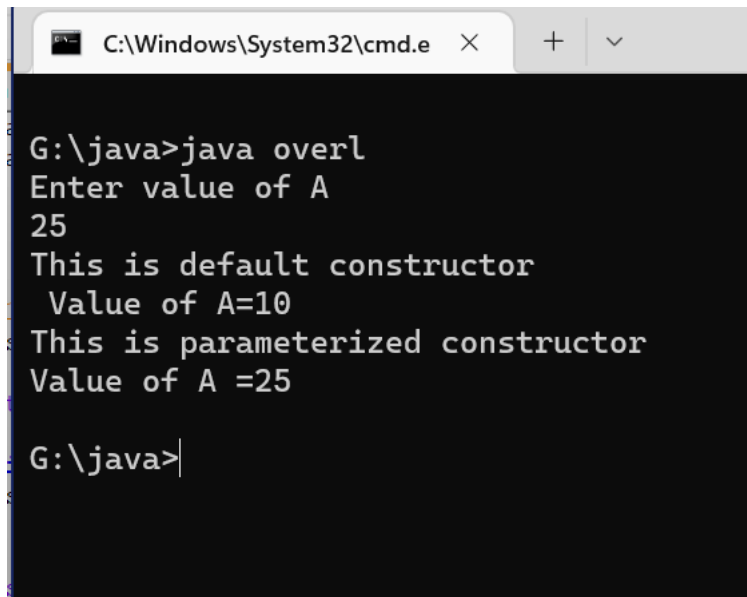
Program 12: Write a Java program to illustrate constructor overloading using this keyword

```
import java.util.*;
import java.io.*;
class dem
{
    int a;
    dem(){
        a=10;
        System.out.println("This is default constructor\n Value of A="+a);
    }
    dem(int a)
    {
        this.a=a;
        System.out.println("This is parameterized constructor\nValue of A =" +this.a);
    }
}
public class overl
{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter value of A");
        int a=Integer.parseInt(sc.nextLine());
        dem d=new dem();
        dem k=new dem(a);
    }
}
```

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Program: MCA Sem 1



```
G:\java>java overl
Enter value of A
25
This is default constructor
Value of A=10
This is parameterized constructor
Value of A =25

G:\java>
```

Program 13: Wrie a java program to illustrate single level inheritance

```
import java.util.*;
import java.io.*;
class student
{
    int id;
    String name;
    void get(int i,String n){
        id=i;
        name=n;
    }
    void show(){
        System.out.println("ID : "+id);
        System.out.println("Name : "+name);
    }
}
class aiit extends student
{
    int fee;
    String course_name;
    void get_aiit(int f,String c){
        fee=f;
        course_name=c;
    }
    void display(){
        System.out.println("Course Name : "+course_name);
        System.out.println("Fees : "+fee);
    }
}
public class details
{
```

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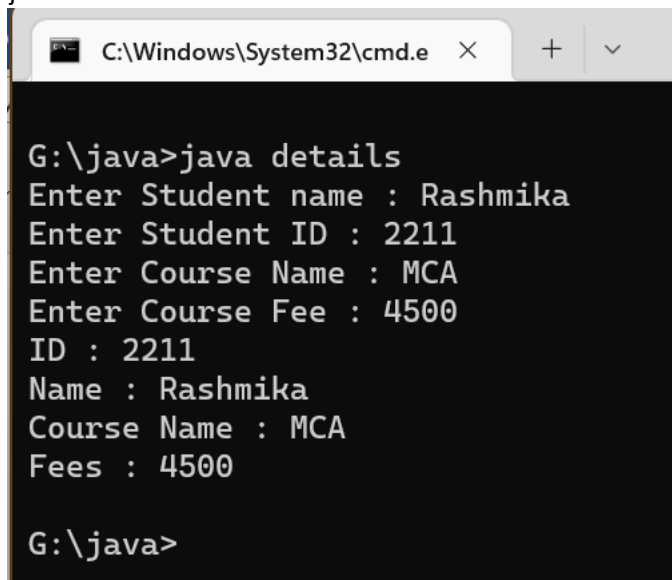
Enroll No: A710145022009

Program: MCA Sem 1

```

public static void main(String args[]){
    Scanner sc=new Scanner(System.in);
    System.out.print("Enter Student name : ");
    String na=sc.nextLine();
    System.out.print("Enter Student ID : ");
    int i=Integer.parseInt(sc.nextLine());
    System.out.print("Enter Course Name : ");
    String cn=sc.nextLine();
    System.out.print("Enter Course Fee : ");
    int fe=Integer.parseInt(sc.nextLine());
    aiit a=new aiit();
    a.get(i,na);
    a.show();
    a.get_aiit(fe,cn);
    a.display();
}
}

```



```

C:\Windows\System32\cmd.e
G:\java>java details
Enter Student name : Rashmika
Enter Student ID : 2211
Enter Course Name : MCA
Enter Course Fee : 4500
ID : 2211
Name : Rashmika
Course Name : MCA
Fees : 4500
G:\java>

```

## Practical 5

Program 13: WAP to calculate total salary of faculty of college including hra, da, bonus using multilevel inheritance.

```
import java.util.*;
import java.io.*;
class salary
{
    int sal;
    void salar(int k)
    {
        sal=k;
    }
}
class hra extends salary
{
    public void calculate1()
    {
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter House Rent Allowance : ");
        int hra= sc.nextInt();
        sal+=hra;
    }
}
class da extends hra
{
    public void calculate2()
    {
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter Dearness Allowance : ");
        int da=sc.nextInt();
        sal+=da;
    }
}
class bonus extends da
{
    public void calculate3()
    {
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter Bonus : ");
        int b=sc.nextInt();
        sal+=b;
    }
}
public class multilevel
{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
```

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Program: MCA Sem 1

```

        System.out.print("Enter Salary of the Faculty : ");
        int s=sc.nextInt();
        bonus b=new bonus();
        b.salar(s);
        b.calculate1();
        b.calculate2();
        b.calculate3();
        System.out.println("Gross Salary of Faculty is : "+b.sal);
    }
}

```

```

G:\java>javac multilevel.java

G:\java>java multilevel
Enter Salary of the Faculty : 45000
Enter House Rent Allowance : 12000
Enter Dearness Allowance : 7800
Enter Bonus : 1200
Gross Salary of Faculty is : 66000

G:\java>

```

Program 14: WAP to illustrate use of hierarchical inheritance.

```

import java.util.*;
import java.io.*;
class employeeSalary{
    int salary=45000;
}
class permanentEmployee extends employeeSalary{
    double hike=0.15;
    double grossSalary(){
        return (salary+salary*hike);
    }
}
class temporaryEmployee extends employeeSalary{
    double hike=0.05;
    double grossSalary(){
        return (salary+salary*hike);
    }
}
class hiemployee{
    public static void main(String[] args){

```

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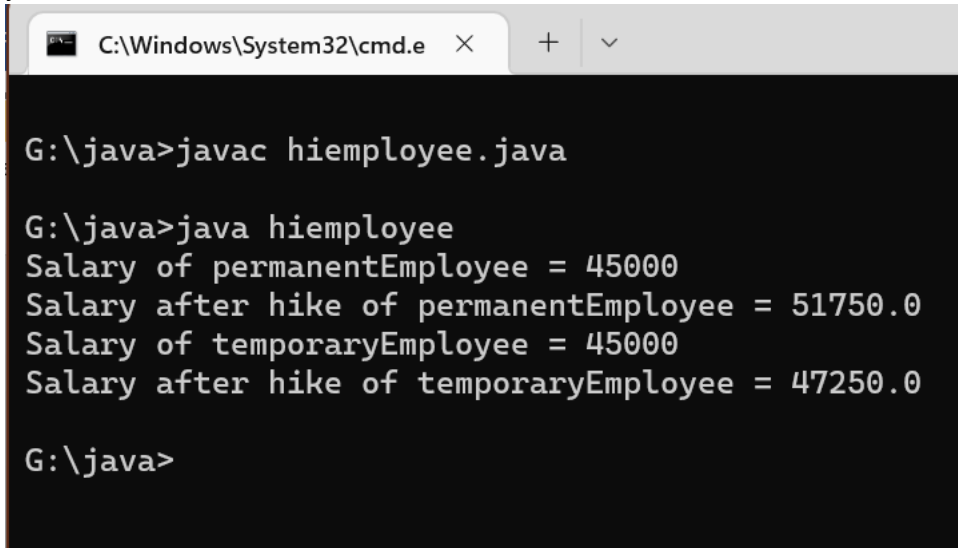
Enroll No: A710145022009

Program: MCA Sem 1

```

        permanentEmployee p=new permanentEmployee();
        temporaryEmployee t=new temporaryEmployee();
        System.out.println("Salary of permanentEmployee = " +p.salary);
        System.out.println("Salary after hike of permanentEmployee = "
+p.grossSalary());
        System.out.println("Salary of temporaryEmployee = " +t.salary);
        System.out.println("Salary after hike of temporaryEmployee = "
+t.grossSalary());
    }
}

```



```

G:\java>javac hiemployee.java

G:\java>java hiemployee
Salary of permanentEmployee = 45000
Salary after hike of permanentEmployee = 51750.0
Salary of temporaryEmployee = 45000
Salary after hike of temporaryEmployee = 47250.0

G:\java>

```

Program 15: Write a java program to illustrate use of super keyword.

```

import java.util.*;
import java.io.*;
class detail{
    String fname,sname;
    int age;
    detail(String f, String s, int a){
        fname=f;
        sname=s;
        age=a;
    }
}
class student extends detail{
    String course,semester;
    int fees;
    student(String f,String s,int a,String ce, String se,int fe){
        super(f,s,a);
        course=ce;
        semester=se;
        fees=fe;
    }
}

```

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Program: MCA Sem 1



```

    }
    void display(){
        System.out.println("Name of Student: "+fname+" "+sname);
        System.out.println("Age : "+age);
        System.out.println("Course : "+course+" "+semester+" sem");
        System.out.println("Fees : "+fees);
    }
}
class faculty extends detail{
    String department;
    int salary;
    faculty(String f,String s,int a,String de,int se){
        super(f,s,a);
        department=de;
        salary=se;
    }
    void display(){
        System.out.println("Name of Faculty : "+fname+" "+sname);
        System.out.println("Age : "+age);
        System.out.println("Department : "+department);
        System.out.println("Salary : "+salary);
    }
}
class university{
    public static void main(String[] args){
        Scanner sc=new Scanner (System.in);
        System.out.print("1.Faculty Details\n2.Student Details\nEnter your choice :");
        int ch=sc.nextInt();

        switch (ch){
            case 2:
                student s= new student("Rashmika","Madana",23,"MCA","1",86000);
                s.display();
                break;
            case 1:
                faculty f=new faculty("Alia","Bhatt",29,"AIIT",45000);
                f.display();
                break;
            default:
                System.out.println("Incorrect Option");
        }
    }
}

```

```
C:\Windows\System32\cmd.e X + v

G:\java>javac university.java

G:\java>java university
1.Faculty Details
2.Student Details
Enter your choice :1
Name of Faculty : Alia Bhatt
Age : 29
Department : AIIT
Salary : 45000

G:\java>java university
1.Faculty Details
2.Student Details
Enter your choice :2
Name of Student: Rashmika Madana
Age : 23
Course : MCA 1 sem
Fees : 86000

G:\java>
```

## Practical 6

Program 16: WAP to illustrate use of abstract class that has abstract and non abstract methods.

```
import java.util.*;
import java.io.*;
abstract class shape{
    abstract void area(); //abstract method
    public void display(){ //non-abstract method
        System.out.println("This is a Program to find out Area");
    }
}
class triangle extends shape{

    void area(){
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter height and base of triangle: ");
        int h=sc.nextInt();
        int b=sc.nextInt();
        System.out.println("Area of Triangle is = "+(0.5*h*b)+"\n");}
}
class rectangle extends shape{

    void area(){
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter length and breadth of rectangle: ");
        int l=sc.nextInt();
        int b=sc.nextInt();
        System.out.println("Area of rectangle is = "+(l*b)+"\n");}
}
class circle extends shape{

    void area(){
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter radius of circle: ");
        int r=sc.nextInt();
        System.out.println("Area of circle is = "+(3.14*r*r)+"\n");}
}
class ar{
    public static void main(String[] args){
        shape c=new circle();
        shape r=new rectangle();
        shape t=new triangle();
        t.display();

        c.area();
        r.area();
        t.area();
    }
}
```

Name: Debesh Das

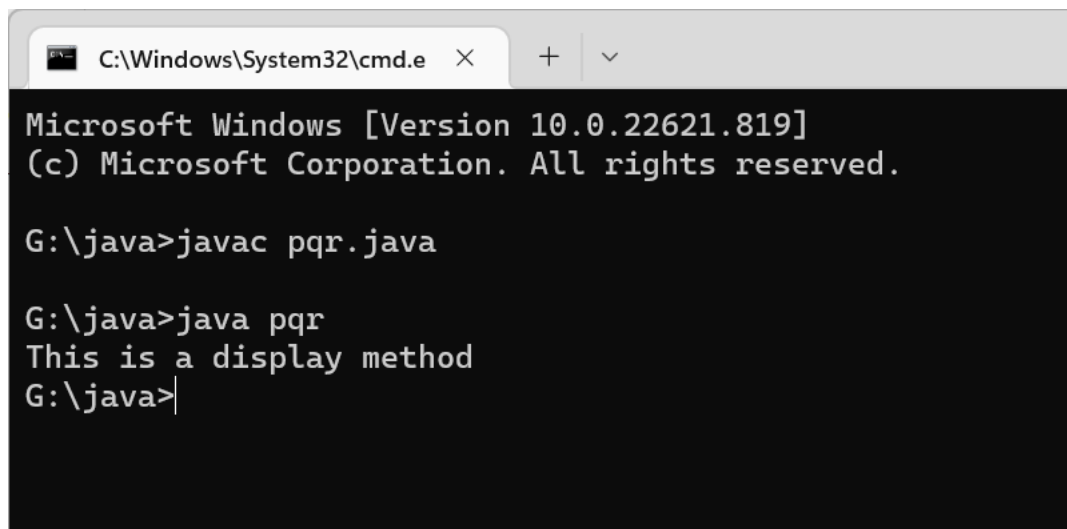
Enroll No: A710145022009

Program: MCA Sem 1

```
}  
C:\Windows\System32\cmd.e X + v  
Microsoft Windows [Version 10.0.22621.819]  
(c) Microsoft Corporation. All rights reserved.  
  
G:\java>java ar  
This is a Program to find out Area  
Enter radius of circle:  
12  
Area of circle is = 452.15999999999997  
  
Enter length and breadth of rectangle:  
10  
12  
Area of rectangle is = 120  
  
Enter height and base of triangle:  
10  
12  
Area of Triangle is = 60.0  
  
G:\java>
```

Program 17: WAP to illustrate use of interface.

```
interface abc  
{  
    void display();  
}  
class pqr implements abc  
{  
    public void display(){System.out.print("This is a display method");}  
    public static void main(String[] args){  
        pqr p=new pqr();  
        p.display();  
    }  
}
```



A screenshot of a Windows command prompt window. The title bar shows the path 'C:\Windows\System32\cmd.e' and standard window controls. The command prompt displays the following text:

```
Microsoft Windows [Version 10.0.22621.819]
(c) Microsoft Corporation. All rights reserved.

G:\java>javac pqr.java

G:\java>java pqr
This is a display method
G:\java>
```

## Practical 7

Program 17: Write a java program for null pointer exception and illustrate finally block and throws keyword.

```
import java.io.*;
import java.util.*;
class nulldemo{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        String str=null;
        String str2=null;
        System.out.println("Enter Yes or No");
        str=sc.nextLine();
        System.out.println(" * * * * * ");
        try{
            if (str.equals("Yes")&& str2.equals("Yes"))
                System.out.println("Yes");
            else
                System.out.println("No");
        }
        catch(NullPointerException e){
            System.out.println("Value is Null    // Exception occurs");
        }
        finally{
            System.out.println("Hello World    //finally statement");
        }
        System.out.println(" * * * * * ");
    }
}
```



```
C:\Windows\System32\cmd.e

G:\java>javac nulldemo.java

G:\java>java nulldemo
Enter Yes or No
No
 * * * * *
No
Hello World    //finally statement
 * * * * *

G:\java>java nulldemo
Enter Yes or No
Yes
 * * * * *
Value is Null    // Exception occurs
Hello World    //finally statement
 * * * * *

G:\java>
```

Name: Debesh Das

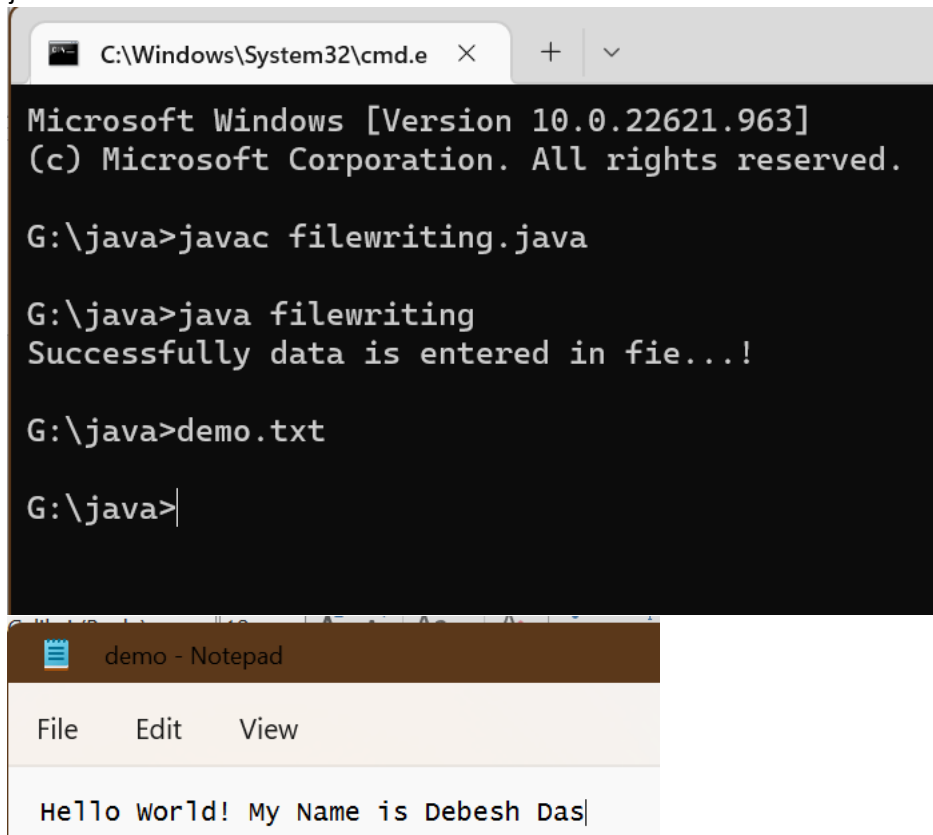
Enroll No: A710145022009

Program: MCA Sem 1

## Practical 8

Program 18: Write a java program to write text in a file

```
import java.io.*;
class filewriting
{
    public static void main(String[] args){
        try{
            FileWriter r=new FileWriter("demo.txt");
            try{
                r.write("Hello World! My Name is Debesh Das");
            }
            finally{
                r.close();
            }
            System.out.println("Successfully data is entered in fie...!");
        }
        catch(IOException i){
            System.out.println(i);
        }
    }
}
```



The screenshot shows a Windows command prompt window titled "C:\Windows\System32\cmd.e" with the following output:

```
Microsoft Windows [Version 10.0.22621.963]
(c) Microsoft Corporation. All rights reserved.

G:\java>javac filewriting.java

G:\java>java filewriting
Successfully data is entered in fie...!

G:\java>demo.txt

G:\java>
```

Below the command prompt, a Notepad window titled "demo - Notepad" is shown with the following text:

```
File Edit View

Hello world! My Name is Debesh Das|
```

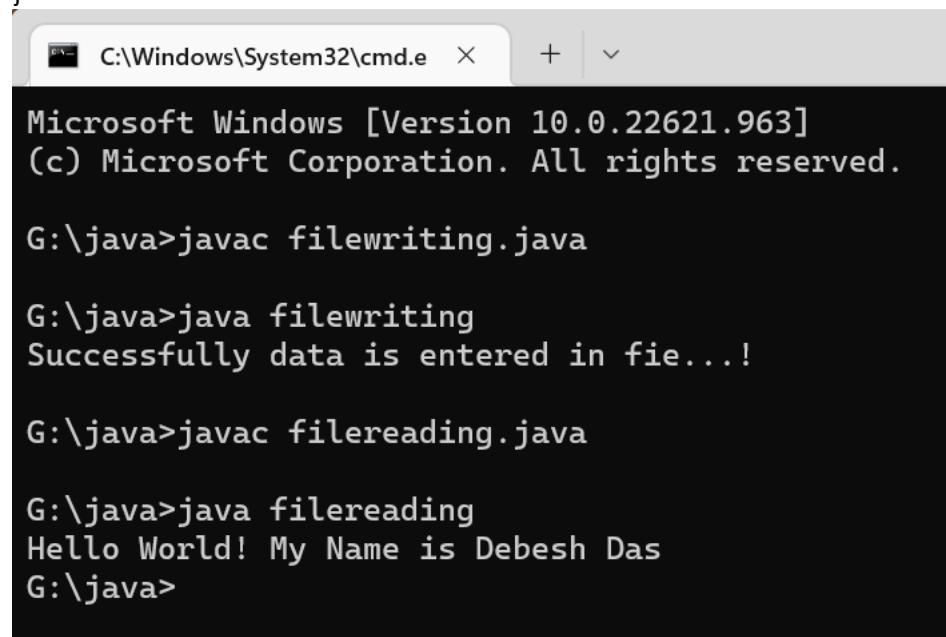
Name: Debesh Das

Enroll No: A710145022009

Program: MCA Sem 1

Program 19: Write a java program to read text from the file

```
import java.io.*;
class filereading{
    public static void main(String[] args){
        try{
            FileReader r=new FileReader("demo.txt");
            try{
                int i;
                while((i=r.read())!=-1){
                    System.out.print((char)i);
                }
            }
            finally{
                r.close();
            }
        }
        catch(IOException e){
            System.out.println("Exception Occured");
        }
    }
}
```



The screenshot shows a Windows Command Prompt window with the following text:

```
C:\Windows\System32\cmd.e  ×  +  ∨

Microsoft Windows [Version 10.0.22621.963]
(c) Microsoft Corporation. All rights reserved.

G:\java>javac filewriting.java

G:\java>java filewriting
Successfully data is entered in fie...!

G:\java>javac filereading.java

G:\java>java filereading
Hello World! My Name is Debesh Das
G:\java>
```

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Enroll No: A710145022009

Program: MCA Sem 1



## Practical 9

Program 20: Write a java program for calculator using AWT controls

```
import java.awt.*;
import java.awt.event.*;
public class calculator implements ActionListener
{
    int c,n;
    String s1,s2,s3,s4,s5;
    Frame f;
    Button b1,b2,b3,b4,b5,b6,b7,b8,b9,b10,b11,b12,b13,b14,b15,b16,b17;
    Panel p;
    TextField tf;
    GridLayout g;
    calculator()
    {
        f = new Frame("My calculator");
        p = new Panel();
        f.setLayout(new FlowLayout());
        b1 = new Button("0");
        b1.addActionListener(this);
        b2 = new Button("1");
        b2.addActionListener(this);
        b3 = new Button("2");
        b3.addActionListener(this);
        b4 = new Button("3");
        b4.addActionListener(this);
        b5 = new Button("4");
        b5.addActionListener(this);
        b6 = new Button("5");
        b6.addActionListener(this);
        b7 = new Button("6");
        b7.addActionListener(this);
        b8 = new Button("7");
        b8.addActionListener(this);
        b9 = new Button("8");
        b9.addActionListener(this);
        b10 = new Button("9");
        b10.addActionListener(this);
        b11 = new Button("+");
        b11.addActionListener(this);
        b12 = new Button("-");
        b12.addActionListener(this);
        b13 = new Button("*");
        b13.addActionListener(this);
        b14 = new Button("/");
        b14.addActionListener(this);
        b15 = new Button("%");
        b15.addActionListener(this);
        b16 = new Button("=");
        b16.addActionListener(this);
```

Name: Debesh Das

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Program: MCA Sem 1

```

        b17 = new Button("C");
        b17.addActionListener(this);
        tf = new TextField(20);
        f.add(tf);
        g = new GridLayout(4,4,10,20);
        p.setLayout(g);

        p.add(b1);p.add(b2);p.add(b3);p.add(b4);p.add(b5);p.add(b6);p.add(b7);p.add(b8);p.add(b9)
;

        p.add(b10);p.add(b11);p.add(b12);p.add(b13);p.add(b14);p.add(b15);p.add(b16);p.add(b17)
;

        f.add(p);
        f.setSize(300,300);
        f.setVisible(true);
    }
    public void actionPerformed(ActionEvent e)
    {
        if(e.getSource()==b1)
        {
            s3 = tf.getText();
            s4 = "0";
            s5 = s3+s4;
            tf.setText(s5);
        }
        if(e.getSource()==b2)
        {
            s3 = tf.getText();
            s4 = "1";
            s5 = s3+s4;
            tf.setText(s5);
        }
        if(e.getSource()==b3)
        {
            s3 = tf.getText();
            s4 = "2";
            s5 = s3+s4;
            tf.setText(s5);
        }
        if(e.getSource()==b4)
        {
            s3 = tf.getText();
            s4 = "3";
            s5 = s3+s4;
            tf.setText(s5);
        }
        if(e.getSource()==b5)
        {
            s3 = tf.getText();
            s4 = "4";
            s5 = s3+s4;
            tf.setText(s5);
        }
    }
}

```

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Enroll No: A710145022009

Program: MCA Sem 1

```

    }
    if(e.getSource()==b6)
    {
        s3 = tf.getText();
        s4 = "5";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b7)
    {
        s3 = tf.getText();
        s4 = "6";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b8)
    {
        s3 = tf.getText();
        s4 = "7";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b9)
    {
        s3 = tf.getText();
        s4 = "8";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b10)
    {
        s3 = tf.getText();
        s4 = "9";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b11)
    {
        s1 = tf.getText();
        tf.setText("");
        c=1;
    }

    if(e.getSource()==b12)
    {
        s1 = tf.getText();
        tf.setText("");
        c=2;
    }

    if(e.getSource()==b13)

```

Name: Debesh Das

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Program: MCA Sem 1

```

{
    s1 = tf.getText();
    tf.setText("");
    c=3;

}
if(e.getSource()==b14)
{
    s1 = tf.getText();
    tf.setText("");
    c=4;

}
if(e.getSource()==b15)
{
    s1 = tf.getText();
    tf.setText("");
    c=5;

}
if(e.getSource()==b16)
{
    s2 = tf.getText();
    if(c==1)
    {
        n = Integer.parseInt(s1)+Integer.parseInt(s2);
        tf.setText(String.valueOf(n));
    }
    else
    if(c==2)
    {
        n = Integer.parseInt(s1)-Integer.parseInt(s2);
        tf.setText(String.valueOf(n));
    }
    else
    if(c==3)
    {
        n = Integer.parseInt(s1)*Integer.parseInt(s2);
        tf.setText(String.valueOf(n));
    }
    if(c==4)
    {
        try
        {
            int p=Integer.parseInt(s2);
            if(p!=0)
            {
                n = Integer.parseInt(s1)/Integer.parseInt(s2);
                tf.setText(String.valueOf(n));
            }
        }
        else

```

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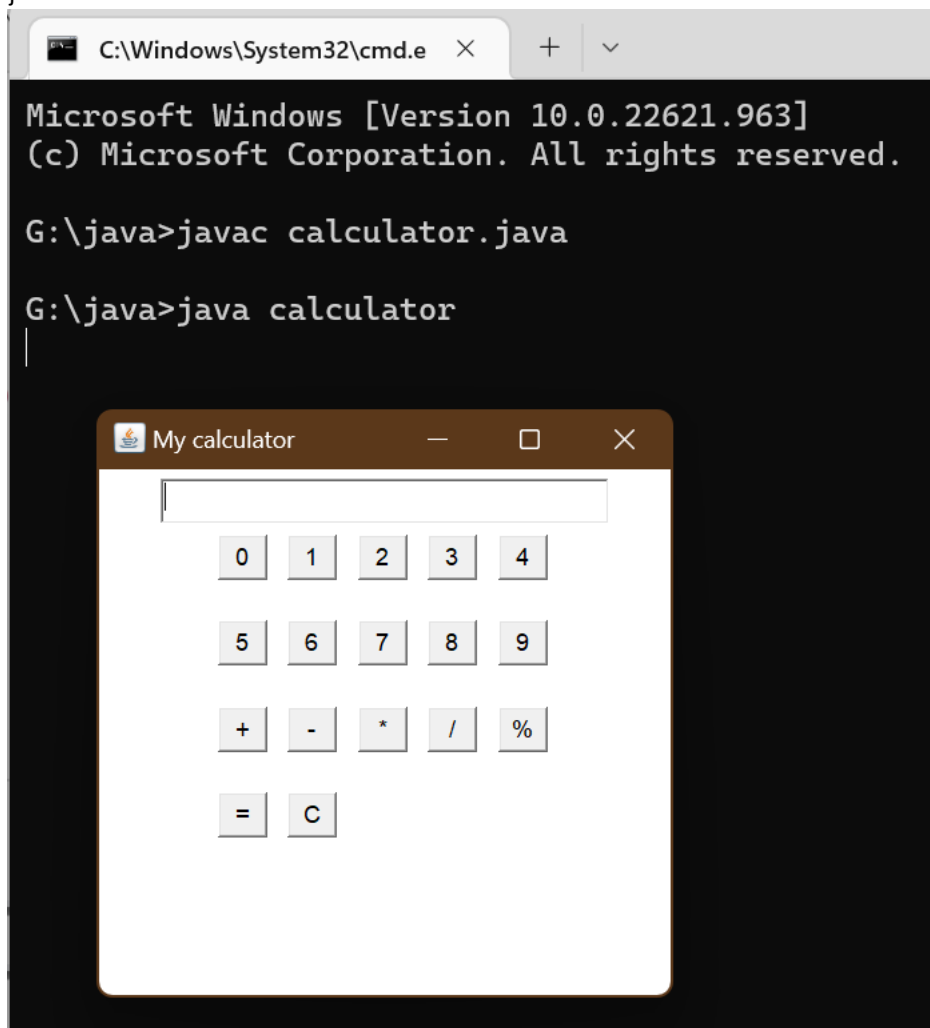
Program: MCA Sem 1

```

        tf.setText("infinite");
    }
    catch(Exception i){}
        }
        if(c==5)
        {
            n = Integer.parseInt(s1)%Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
    }
    if(e.getSource()==b17)
    {
        tf.setText("");
    }
}

public static void main(String[] abc)
{
    calculator v = new calculator();
}
}

```



## Practical 10

Program 21: Write a java program for student registration form using jswing

```
// Java program to implement
// a Simple Registration Form
// using Java Swing

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

class MyFrame
    extends JFrame
    implements ActionListener {

    // Components of the Form
    private Container c;
    private JLabel title;
    private JLabel name;
    private JTextField tname;
    private JLabel mno;
    private JTextField tmno;
    private JLabel gender;
    private JRadioButton male;
    private JRadioButton female;
    private ButtonGroup gengp;
    private JLabel dob;
    private JComboBox date;
    private JComboBox month;
    private JComboBox year;
    private JLabel add;
    private JTextArea tadd;
    private JCheckBox term;
    private JButton sub;
    private JButton reset;
    private JTextArea tout;
    private JLabel res;
    private JTextArea resadd;

    private String dates[]
        = { "1", "2", "3", "4", "5",
            "6", "7", "8", "9", "10",
            "11", "12", "13", "14", "15",
            "16", "17", "18", "19", "20",
            "21", "22", "23", "24", "25",
            "26", "27", "28", "29", "30",
            "31" };
    private String months[]
        = { "Jan", "Feb", "Mar", "Apr",
            "May", "Jun", "July", "Aug",
            "Sep", "Oct", "Nov", "Dec" };
```

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```

private String years[]
    = { "1995", "1996", "1997", "1998",
        "1999", "2000", "2001", "2002",
        "2003", "2004", "2005", "2006",
        "2007", "2008", "2009", "2010",
        "2011", "2012", "2013", "2014",
        "2015", "2016", "2017", "2018",
        "2019" };

// constructor, to initialize the components
// with default values.
public MyFrame()
{
    setTitle("Registration Form");
    setBounds(300, 90, 900, 600);
    setDefaultCloseOperation(EXIT_ON_CLOSE);
    setResizable(false);

    c = getContentPane();
    c.setLayout(null);

    title = new JLabel("Registration Form");
    title.setFont(new Font("Arial", Font.PLAIN, 30));
    title.setSize(300, 30);
    title.setLocation(300, 30);
    c.add(title);

    name = new JLabel("Name");
    name.setFont(new Font("Arial", Font.PLAIN, 20));
    name.setSize(100, 20);
    name.setLocation(100, 100);
    c.add(name);

    tname = new JTextField();
    tname.setFont(new Font("Arial", Font.PLAIN, 15));
    tname.setSize(190, 20);
    tname.setLocation(200, 100);
    c.add(tname);

    mno = new JLabel("Mobile");
    mno.setFont(new Font("Arial", Font.PLAIN, 20));
    mno.setSize(100, 20);
    mno.setLocation(100, 150);
    c.add(mno);

    tmno = new JTextField();
    tmno.setFont(new Font("Arial", Font.PLAIN, 15));
    tmno.setSize(150, 20);
    tmno.setLocation(200, 150);
    c.add(tmno);
}

```

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```
gender = new JLabel("Gender");
gender.setFont(new Font("Arial", Font.PLAIN, 20));
gender.setSize(100, 20);
gender.setLocation(100, 200);
c.add(gender);
```

```
male = new JRadioButton("Male");
male.setFont(new Font("Arial", Font.PLAIN, 15));
male.setSelected(true);
male.setSize(75, 20);
male.setLocation(200, 200);
c.add(male);
```

```
female = new JRadioButton("Female");
female.setFont(new Font("Arial", Font.PLAIN, 15));
female.setSelected(false);
female.setSize(80, 20);
female.setLocation(275, 200);
c.add(female);
```

```
gengp = new ButtonGroup();
gengp.add(male);
gengp.add(female);
```

```
dob = new JLabel("DOB");
dob.setFont(new Font("Arial", Font.PLAIN, 20));
dob.setSize(100, 20);
dob.setLocation(100, 250);
c.add(dob);
```

```
date = new JComboBox(dates);
date.setFont(new Font("Arial", Font.PLAIN, 15));
date.setSize(50, 20);
date.setLocation(200, 250);
c.add(date);
```

```
month = new JComboBox(months);
month.setFont(new Font("Arial", Font.PLAIN, 15));
month.setSize(60, 20);
month.setLocation(250, 250);
c.add(month);
```

```
year = new JComboBox(years);
year.setFont(new Font("Arial", Font.PLAIN, 15));
year.setSize(60, 20);
year.setLocation(320, 250);
c.add(year);
```

```
add = new JLabel("Address");
add.setFont(new Font("Arial", Font.PLAIN, 20));
add.setSize(100, 20);
```



```

add.setLocation(100, 300);
c.add(add);

tadd = new JTextArea();
tadd.setFont(new Font("Arial", Font.PLAIN, 15));
tadd.setSize(200, 75);
tadd.setLocation(200, 300);
tadd.setLineWrap(true);
c.add(tadd);

term = new JCheckBox("Accept Terms And Conditions.");
term.setFont(new Font("Arial", Font.PLAIN, 15));
term.setSize(250, 20);
term.setLocation(150, 400);
c.add(term);

sub = new JButton("Submit");
sub.setFont(new Font("Arial", Font.PLAIN, 15));
sub.setSize(100, 20);
sub.setLocation(150, 450);
sub.addActionListener(this);
c.add(sub);

reset = new JButton("Reset");
reset.setFont(new Font("Arial", Font.PLAIN, 15));
reset.setSize(100, 20);
reset.setLocation(270, 450);
reset.addActionListener(this);
c.add(reset);

tout = new JTextArea();
tout.setFont(new Font("Arial", Font.PLAIN, 15));
tout.setSize(300, 400);
tout.setLocation(500, 100);
tout.setLineWrap(true);
tout.setEditable(false);
c.add(tout);

res = new JLabel("");
res.setFont(new Font("Arial", Font.PLAIN, 20));
res.setSize(500, 25);
res.setLocation(100, 500);
c.add(res);

resadd = new JTextArea();
resadd.setFont(new Font("Arial", Font.PLAIN, 15));
resadd.setSize(200, 75);
resadd.setLocation(580, 175);
resadd.setLineWrap(true);
c.add(resadd);

```

```

        setVisible(true);
    }

    // method actionPerformed()
    // to get the action performed
    // by the user and act accordingly
    public void actionPerformed(ActionEvent e)
    {
        if (e.getSource() == sub) {
            if (term.isSelected()) {
                String data1;
                String data
                    = "Name : "
                    + tname.getText() + "\n"
                    + "Mobile : "
                    + tmno.getText() + "\n";
                if (male.isSelected())
                    data1 = "Gender : Male"
                        + "\n";
                else
                    data1 = "Gender : Female"
                        + "\n";
                String data2
                    = "DOB : "
                    + (String)date.getSelectedItem()
                    + "/" + (String)month.getSelectedItem()
                    + "/" + (String)year.getSelectedItem()
                    + "\n";

                String data3 = "Address : " + tadd.getText();
                tout.setText(data + data1 + data2 + data3);
                tout.setEditable(false);
                res.setText("Registration Successfully..");
            }
            else {
                tout.setText("");
                resadd.setText("");
                res.setText("Please accept the"
                    + " terms & conditions..");
            }
        }

        else if (e.getSource() == reset) {
            String def = "";
            tname.setText(def);
            tadd.setText(def);
            tmno.setText(def);
            res.setText(def);
            tout.setText(def);
            term.setSelected(false);
            date.setSelectedIndex(0);
        }
    }

```

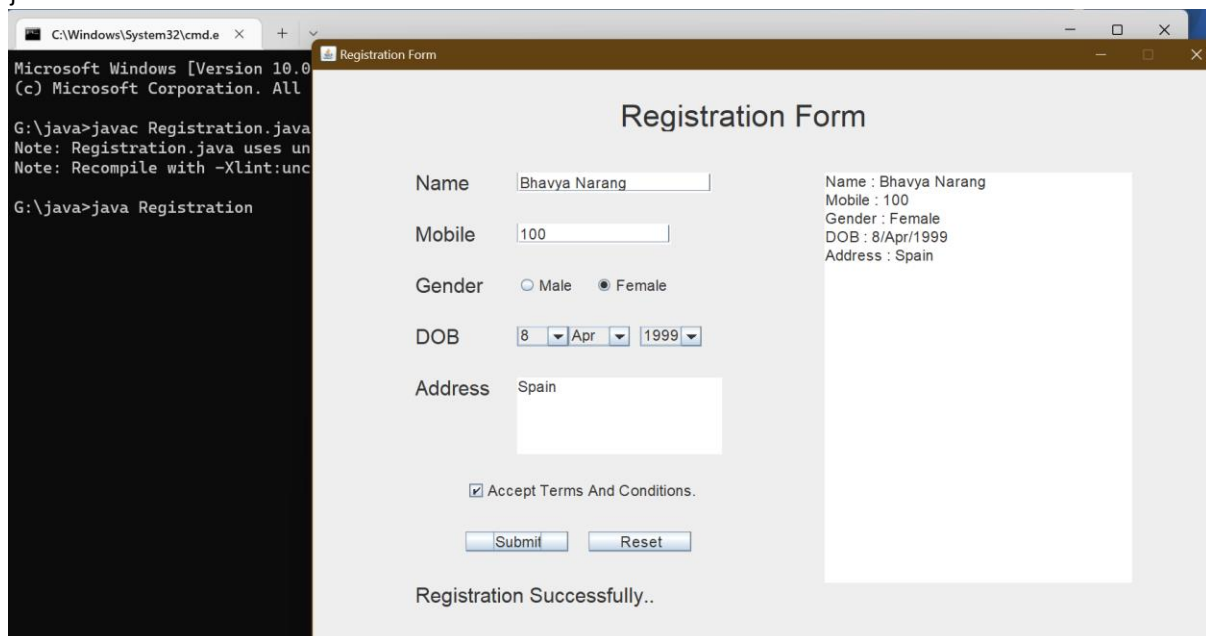
```

        month.setSelectedIndex(0);
        year.setSelectedIndex(0);
        resadd.setText(def);
    }
}

// Driver Code
class Registration {

    public static void main(String[] args) throws Exception
    {
        MyFrame f = new MyFrame();
    }
}

```



## Practical 11

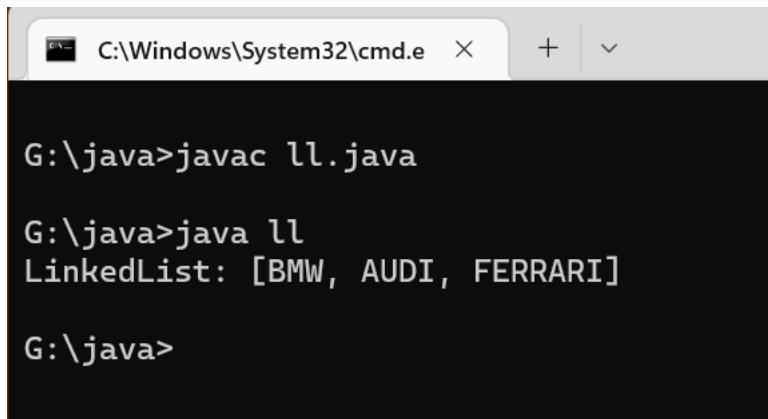
Program 22: WAP to demonstrate LinkedList and it's methods

```

import java.util.LinkedList;
class ll
{
    public static void main(String[] args)
    {
        LinkedList<String> car = new LinkedList<>();
        car.add("BMW");
        car.add("AUDI");
        car.add("FERRARI");
        System.out.println("LinkedList: " + car);
    }
}

```

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Program: MCA Sem 1



```
C:\Windows\System32\cmd.e X + v

G:\java>javac ll.java

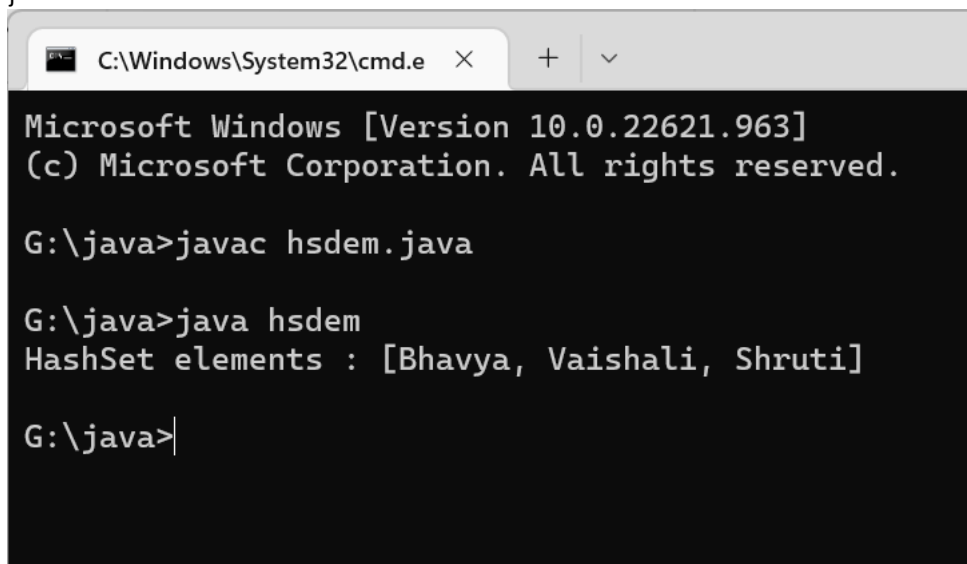
G:\java>java ll
LinkedList: [BMW, AUDI, FERRARI]

G:\java>
```

Program 23: WAP to demonstrate HashSet and it's method

```
import java.io.*;
import java.util.*;
class hsdem
{
    public static void main(String[] args)
    {
        HashSet<String> hs = new HashSet<String>();

        hs.add("Bhavya");
        hs.add("Shruti");
        hs.add("Vaishali");
        System.out.println("HashSet elements : " + hs);
    }
}
```



```
C:\Windows\System32\cmd.e X + v

Microsoft Windows [Version 10.0.22621.963]
(c) Microsoft Corporation. All rights reserved.

G:\java>javac hsdem.java

G:\java>java hsdem
HashSet elements : [Bhavya, Vaishali, Shruti]

G:\java>
```