

# LABORATORY MANUAL OOPS

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E2 CSE

RGUKT-Basar

## PROGRAMS LIST:

### WEEK-1

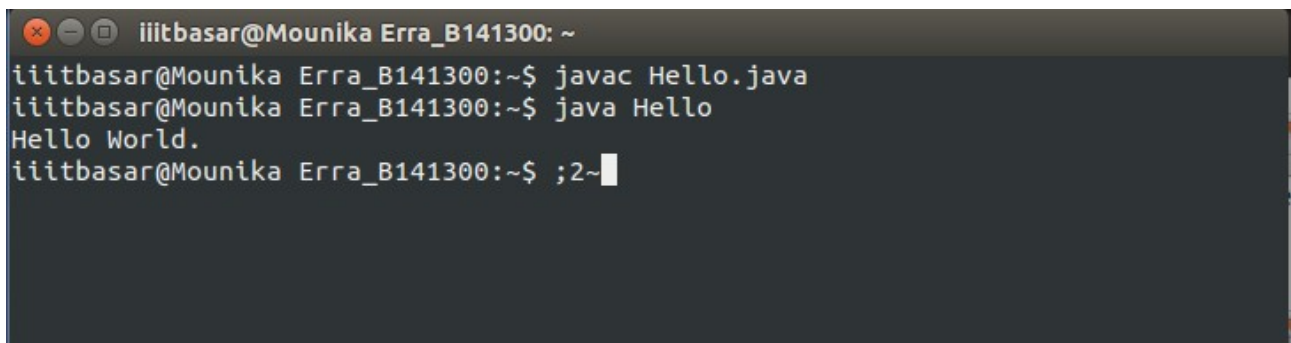
#### 1. Write a Java program print “Hello World”

##### **Program:**

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

##### **OutPut:**

Hello World.

A screenshot of a terminal window with a dark background. The window title is "iitbasar@Mounika Erra\_B141300: ~". The terminal shows the following commands and output:  
iitbasar@Mounika Erra\_B141300:~\$ javac Hello.java  
iitbasar@Mounika Erra\_B141300:~\$ java Hello  
Hello World.  
iitbasar@Mounika Erra\_B141300:~\$ ;2~

#### 2. Write a Java program that prints all real and imaginary solutions to the quadratic equation $ax^2 + bx + c = 0$ . Read in a, b, c and use the quadratic formula

##### **Program:**

```
import java.util.Scanner;  
import java.util.*;  
class Roots {  
    public static void main(String arg[])  
    {  
        Scanner sc=new Scanner(System.in);
```

```

System.out.println("Enter a value:");int a=sc.nextInt();
System.out.println("Enter b value:");
int b=sc.nextInt();
System.out.println("Enter c value:");
int c=sc.nextInt();
System.out.println("Given quadratic equation:"+a+"x^2 + "+b+"x "+c);
int d=b*b-4*a*c;
if(d>0)
{

System.out.println(" Roots are real and unequal");
double r1,r2;
r1=(-b+(Math.sqrt(d))/(2*a));
r2=(-b-(Math.sqrt(d))/(2*a));
System.out.println("The Roots are:"+r1 );
System.out.println("The Roots are:"+r2 );
}
else if(d==0)
{
System.out.println(" Roots are real and equal");
double r1,r2;
r1=(-b+(Math.sqrt(d))/(2*a));
r2=(-b-(Math.sqrt(d))/(2*a));
System.out.println(" Roots are:"+r1 );
System.out.println("The Roots are:"+r2 );
}
else
{
double r1,r2;
System.out.println("The Roots are imaginary:");
r1=(-b+(Math.sqrt(d))/(2*a));
r2=(-b-(Math.sqrt(d))/(2*a));
System.out.println(" Roots are:"+r1 );
System.out.println("The Roots are:"+r2 );
}
}
}

```

### OutPut:

```

Enter a value:
2
Enter b value:
5
Enter c value:
1

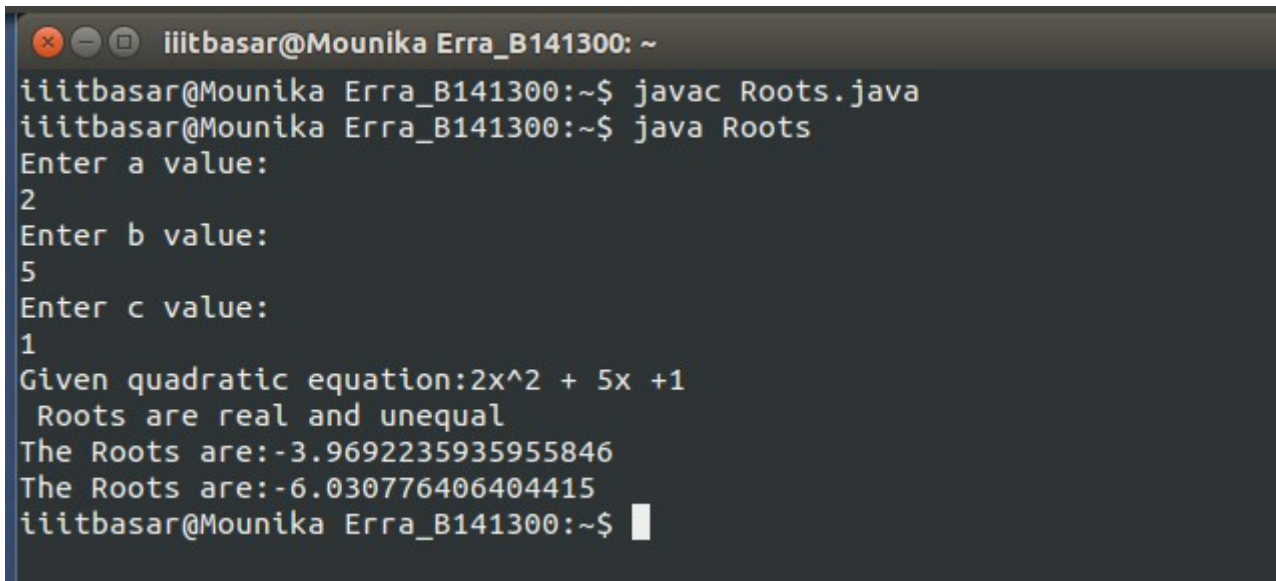
```

Given quadratic equation:  $2x^2 + 5x + 1$

Roots are real and unequal

The Roots are: -3.9692234992980957

The Roots are: -6.030776500701904



```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Roots.java  
iiitbasar@Mounika Erra_B141300:~$ java Roots  
Enter a value:  
2  
Enter b value:  
5  
Enter c value:  
1  
Given quadratic equation:  $2x^2 + 5x + 1$   
Roots are real and unequal  
The Roots are: -3.9692235935955846  
The Roots are: -6.030776406404415  
iiitbasar@Mounika Erra_B141300:~$
```

### 3. Write a Java program to implement calculator operations

#### Program:

```
import java.util.Scanner;  
class Java  
{  
    public static void main(String arg[])  
    {  
        Scanner sc=new Scanner(System.in);  
        System.out.println("Enter an integer number");  
        int a=sc.nextInt();  
        System.out.println("Enter an integer number");  
        int b=sc.nextInt();  
        System.out.println("Enter a number for operation \n1.Sum \n2.Difference  
\n3.Multiplication\n4.divission \n5.Modulo");  
        int n=sc.nextInt();  
        switch(n)  
        {  
            case 1:  
                {  
                    System.out.println("sum of given numbers is "+(a+b));  
                }  
            break;  
            case 2:
```

```

        {
            System.out.println("Difference of given numbers is "+(a-b));
        }
        break;
        case 3:
            {
                System.out.println("Multiplication of given numbers is "+(a*b));
            }
            break;
        case 4:
            {
                System.out.println("Divission of given numbers is "+(a/b));
            }
            break;
        case 5:
            {
                System.out.println("modulo of given numbers is "+(a%b));
            }
            break;
        default:
            System.out.println("Enter valid number");

    }
}
}

```

### OutPut:

```

Enter an integer number
5
Enter an integer number
4
Enter a number for operation
1.Sum
2.Difference
3.Multiplication
4.divission
5.Modulo
1
sum of given numbers is 9

```

```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Java.java
iiitbasar@Mounika Erra_B141300:~$ java Java
Enter an integer number
5
Enter an integer number
2
Enter a number for operation
1.Sum
2.Difference
3.Multiplication
4.divission
5.Modulo
3
Multiplication of given numbers is 10
iiitbasar@Mounika Erra_B141300:~$

```

#### 4. Write a java program to find prime factors of given number

##### Program:

```

import java.util.Scanner;
class Primefact
{
    public static void main(String arg[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter a number");
        int a=sc.nextInt();
        int count=0;
        System.out.println("Prime factors of "+a+" are:");
        if(a>=2&&a%2==0)
        {
            System.out.println("2");
        }
        for(int i=1;i<=a;i++)
        {
            if(a%i==0)
            {
                for(int j=2;j<i;j++)
                {
                    if(i%j==0)
                    {
                        count=0;
                        break;
                    }
                }
                else
                {

```

```
        count=1;
    }
}
if(count==1)
{
    System.out.println(i);
}
}
}
```

## OutPut:

Enter a number

30

Prime factors of 30 are:

2

3

5

```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Java.java  
iiitbasar@Mounika Erra_B141300:~$ java Java  
Enter a number  
21  
Prime factors of 21 are:  
3  
7
```

### 5. Write a java program to find whether given number is Palindrome or not

## Program:

```
import java.util.Scanner;
```

class Java

```
{
    public static void main(String arg[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter number");
        int a=sc.nextInt();
        int t=a;
        int sum=0;
        while(a>0)
        {
```

```

        sum=sum*10;
        int rem=a%10;
        sum=sum+rem;
        a=a/10;
    }
    if(t==sum)
    {
        System.out.println("Given number is palindrom "+sum);
    }
    else
    {
        System.out.println("Given number is not palindrom "+t);
    }
}
}

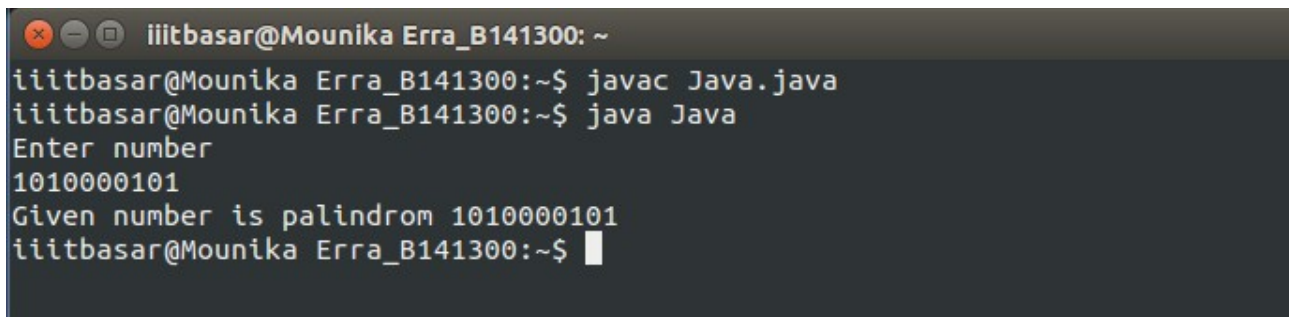
```

### OutPut:

Enter number

123321

Given number is palindrom 123321



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Java.java
iitbasar@Mounika Erra_B141300:~$ java Java
Enter number
1010000101
Given number is palindrom 1010000101
iitbasar@Mounika Erra_B141300:~$

```

[or]

```
import java.util.Scanner;
```

```
class Large
```

```

{
    public static void main(String arg[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter n numbers");
        int n=sc.nextInt();
        int small=2147483647,large=-2147483648,num;
        System.out.println("Enter "+n+" numbers");
        for(int i=0;i<n;i++)

```

```

    {
    num=sc.nextInt();
    if(num>large)
    {
        large=num;
    }
    if(small>num)
    {
        small=num;
    }
    }

    System.out.println("The Largest among given "+n+" numbers is "+large);
    System.out.println("The Smallest among given "+n+ " numbers is
"+small);
    }
}

```

### OutPut:

Enter n numbers

5

Enter 5 numbers

1

9

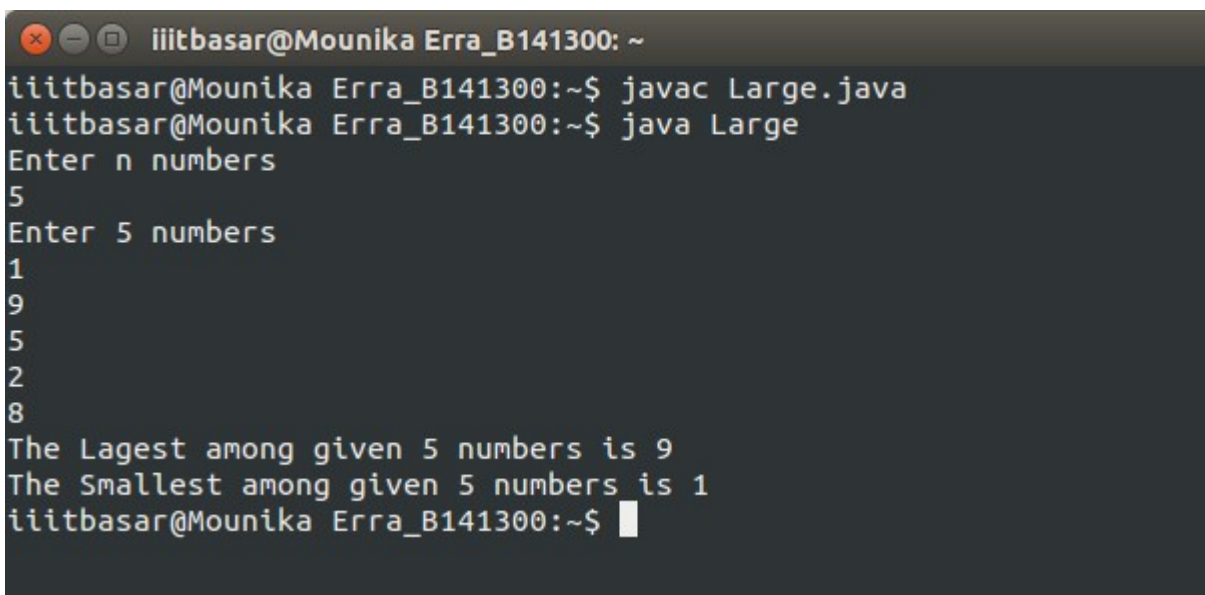
5

2

8

The Largest among given 5 numbers is 9

The Smallest among given 5 numbers is 1



```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Large.java
iiitbasar@Mounika Erra_B141300:~$ java Large
Enter n numbers
5
Enter 5 numbers
1
9
5
2
8
The Largest among given 5 numbers is 9
The Smallest among given 5 numbers is 1
iiitbasar@Mounika Erra_B141300:~$

```

6. Write an application that declares 5 integers, determines and prints the



**largest and smallest in the group.**

**Program:**

```
import java.util.Scanner;
import java.util.*;
class Week1
{
    public static void main(String arg[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter a value:");
        int a=sc.nextInt();
        System.out.println("Enter b value:");
        int b=sc.nextInt();
        System.out.println("Enter c value:");
        int c=sc.nextInt();
        System.out.println("Enter d value:");
        int d=sc.nextInt();
        System.out.println("Enter e value:");
        int e=sc.nextInt();
        if(a>b && a>c && a>d && a>e)
        {
            System.out.println("The largest value is:"+a);
        }
        else if(b>c && b>d && b>e)
        {
            System.out.println("The largest value is:"+b);
        }
        else if(c>d && c>e)
        {
            System.out.println("The largest value is:"+c);
        }
        else if(b>e)
        {
            System.out.println("The largest value is:"+d);
        }
        else
        {
            System.out.println("The largest value is:"+e);
        }
        if(a<b && a<c && a<d && a<e)
        {
            System.out.println("The smallest value is:"+a);
        }
        else if(b<c && b<d && b<e)
```

```

        {
            System.out.println("The smallest value is:"+b);
        }
        else if(c<d && c<e)
        {
            System.out.println("The smallest value is:"+c);
        }
        else if(b<e)
        {
            System.out.println("The smallest value is:"+d);
        }
        else
        {
            System.out.println("The smallest value is:"+e);
        }
    }
}

```

### OutPut:

Enter a value:

6

Enter b value:

9

Enter c value:

-5

Enter d value:

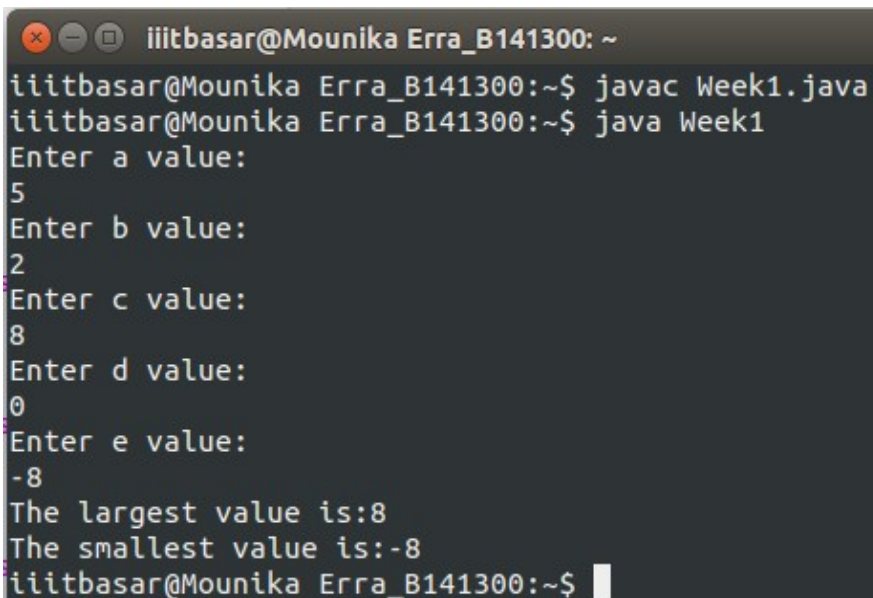
0

Enter e value:

3

The largest value is:9

The smallest value is:-5



```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week1.java
iiitbasar@Mounika Erra_B141300:~$ java Week1
Enter a value:
5
Enter b value:
2
Enter c value:
8
Enter d value:
0
Enter e value:
-8
The largest value is:8
The smallest value is:-8
iiitbasar@Mounika Erra_B141300:~$

```

## WEEK-2

### 1. Write a Java program to sort given list of numbers.

#### **Program:**

```
import java.util.Scanner;
class Week2
{
    public static void main(String arg[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter array size");
        int n=sc.nextInt();
        int a[]=new int[n];
        System.out.println("Enter "+n+" Elements");
        for(int i=0;i<n;i++)
        {
            a[i]=sc.nextInt();
        }
        for(int i=0;i<n;i++)
        {
            for(int j=i+1;j<n;j++)
            {
                if(a[i]>a[j])
                {
                    int temp=a[i];
                    a[i]=a[j];
                    a[j]=temp;
                }
            }
        }
        System.out.println("sorting order:");
        for(int i=0;i<n-1;i++)
        {
            System.out.println(a[i]+" ");
        }
        System.out.println(a[n-1]);
    }
}
```

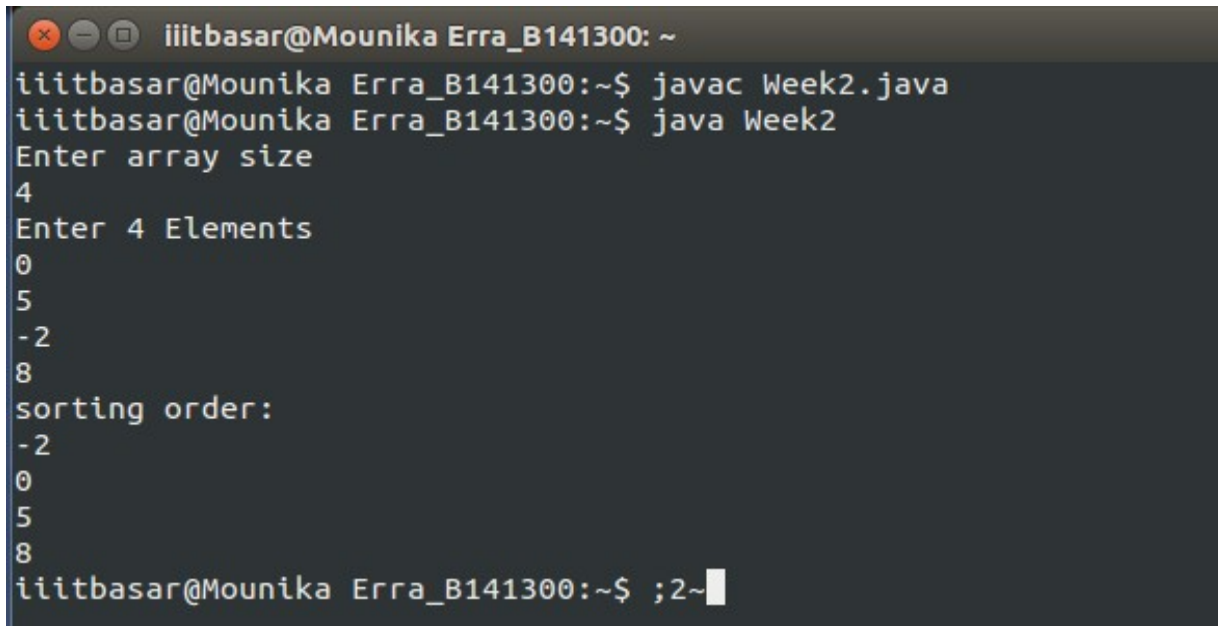
#### **OutPut:**

Enter array size

4

Enter 4 Elements

0  
5  
-2  
8  
sorting order:  
-2  
0  
5



```
iitbasar@Mounika Erra_B141300: ~  
iitbasar@Mounika Erra_B141300:~$ javac Week2.java  
iitbasar@Mounika Erra_B141300:~$ java Week2  
Enter array size  
4  
Enter 4 Elements  
0  
5  
-2  
8  
sorting order:  
-2  
0  
5  
8  
iitbasar@Mounika Erra_B141300:~$ ;2~
```

## 2. Write a Java program to implement linear search.

### Program:

```
import java.util.Scanner;  
class Week2  
{  
    public static void main(String arg[])  
    {  
        Scanner sc=new Scanner(System.in);  
        System.out.println("Enter array size");  
        int n=sc.nextInt();  
        int a[]=new int[n];  
        int i;  
        System.out.println("Enter "+n+" Elements");  
        for(i=0;i<n;i++)  
        {  
            a[i]=sc.nextInt();  
        }  
        System.out.println("Enter Element to Search");
```

```

        int search=sc.nextInt();
        for(i=0;i<n-1;i++)
        {
            if(a[i]==search)
            {
                System.out.println("Element "+search+" is Found in given array
At Index "+i);
                break;
            }
        }
    }
}

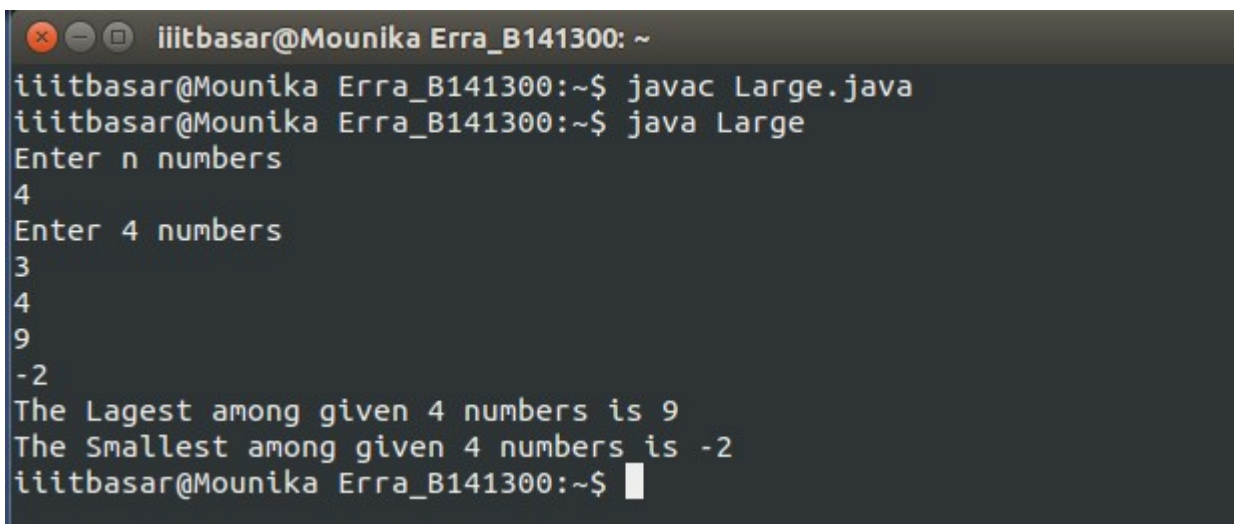
```

### OutPut:

```

Enter array size
4
Enter 4 Elements
2
3
4
7
Enter Element to Search
3
Element 3 is Found in given array At Index 1

```



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Large.java
iitbasar@Mounika Erra_B141300:~$ java Large
Enter n numbers
4
Enter 4 numbers
3
4
9
-2
The Largest among given 4 numbers is 9
The Smallest among given 4 numbers is -2
iitbasar@Mounika Erra_B141300:~$

```

### 3. Write a Java program to implement binary search.

#### Program:

```

import java.util.Scanner;
class Week2
{

```

```

public static void main(String arg[])
{
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter array size");
    int n=sc.nextInt();
    int a[]=new int[n];
    int i;
    System.out.println("Enter "+n+" Elements");
    for(i=0;i<n;i++)
    {
        a[i]=sc.nextInt();
    }
    System.out.println("Enter Element to Search");
    int search=sc.nextInt();
    int first=0,last=n-1,middle;
    middle=(first+last)/2;
    while(first<=last)
    {
        if(a[middle]<search)
            first=middle+1;
        else if(a[middle]==search)
        {
            System.out.println("Element "+search+" is found at "+
(middle+1)+" ");
            break;
        }
        else
        {
            last=middle-1;
            middle=(first+last)/2;
        }
        if(first>last)
            System.out.println(search+" is not present");
    }
}

```

### OutPut:

Enter array size

4

Enter 4 Elements

1

4

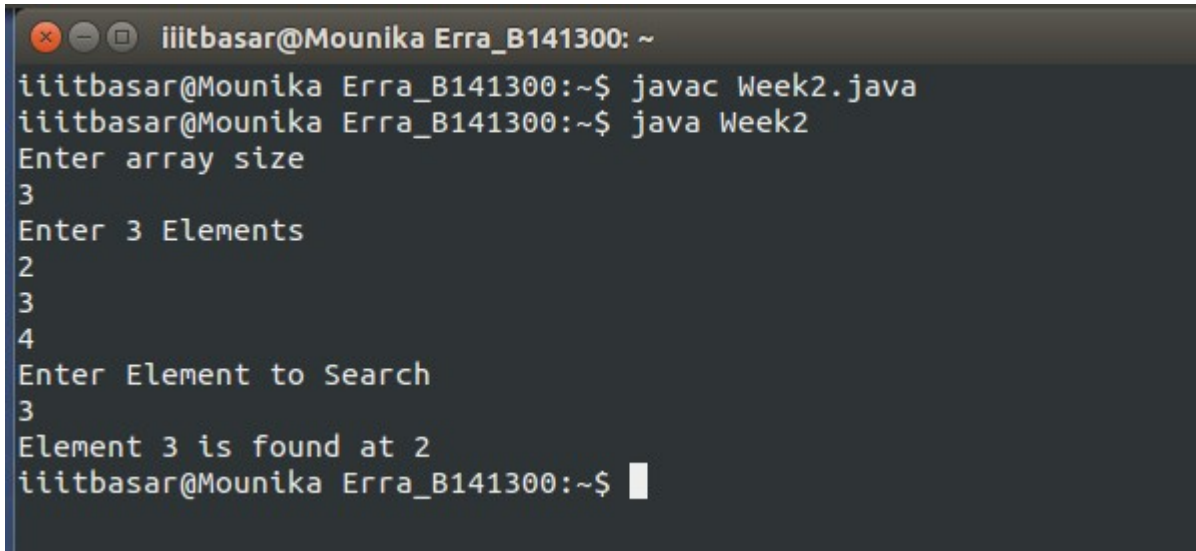
2

5

Enter Element to Search

3

3 is not present



```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Week2.java  
iiitbasar@Mounika Erra_B141300:~$ java Week2  
Enter array size  
3  
Enter 3 Elements  
2  
3  
4  
Enter Element to Search  
3  
Element 3 is found at 2  
iiitbasar@Mounika Erra_B141300:~$
```

**4. Write a java program to add two given matrices.**

**Program:**

```
import java.util.Scanner;
```

```
class Week2  
{  
    public static void main(String args[])  
    {  
        int m, n, c, d;  
        Scanner in = new Scanner(System.in);  
  
        System.out.println("Enter the number of rows and columns of matrix");  
        m = in.nextInt();  
        n = in.nextInt();  
  
        int first[][] = new int[m][n];  
        int second[][] = new int[m][n];  
        int sum[][] = new int[m][n];  
  
        System.out.println("Enter the elements of first matrix");  
  
        for (c = 0; c < m; c++)  
            for (d = 0; d < n; d++)  
                first[c][d] = in.nextInt();  
  
        System.out.println("Enter the elements of second matrix");  
  
        for (c = 0 ; c < m ; c++)  
            for (d = 0 ; d < n ; d++)
```

```

        second[c][d] = in.nextInt();

    for (c = 0; c < m; c++)
        for (d = 0; d < n; d++)
            sum[c][d] = first[c][d] + second[c][d];

    System.out.println("Sum of the matrices:");

    for (c = 0; c < m; c++)
    {
        for (d = 0; d < n; d++)
            System.out.print(sum[c][d]+" ");

        System.out.println();
    }
}
}

```

### OutPut:

Enter the number of rows and columns of matrix

2

2

Enter the elements of first matrix

1 2

3 4

Enter the elements of second matrix

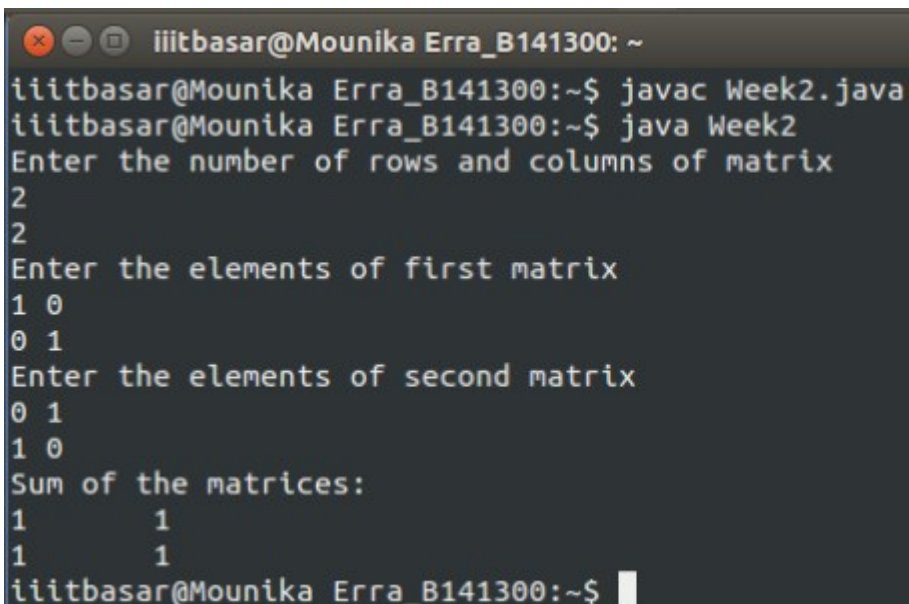
4 3

2 1

Sum of the matrices:

5     5

5     5



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Week2.java
iitbasar@Mounika Erra_B141300:~$ java Week2
Enter the number of rows and columns of matrix
2
2
Enter the elements of first matrix
1 0
0 1
Enter the elements of second matrix
0 1
1 0
Sum of the matrices:
1     1
1     1
iitbasar@Mounika Erra_B141300:~$

```



## 5. Write a java program to multiply two given matrices.

### Program:

```
import java.util.Scanner;
class Week2
{
    public static void main(String args[])
    {
        int m, n, p, q, sum = 0, c, d, k;

        Scanner in = new Scanner(System.in);
        System.out.println("Enter the number of rows and columns of first matrix");
        m = in.nextInt();
        n = in.nextInt();

        int first[][] = new int[m][n];

        System.out.println("Enter elements of first matrix");

        for (c = 0; c < m; c++)
            for (d = 0; d < n; d++)
                first[c][d] = in.nextInt();

        System.out.println("Enter the number of rows and columns of second matrix");
        p = in.nextInt();
        q = in.nextInt();

        if (n != p)
            System.out.println("The matrices can't be multiplied with each other.");
        else
        {
            int second[][] = new int[p][q];
            int multiply[][] = new int[m][q];

            System.out.println("Enter elements of second matrix");

            for (c = 0; c < p; c++)
                for (d = 0; d < q; d++)
                    second[c][d] = in.nextInt();

            for (c = 0; c < m; c++)
            {
                for (d = 0; d < q; d++)
                {
                    for (k = 0; k < p; k++)
```

```

        {
            sum = sum + first[c][k]*second[k][d];
        }

        multiply[c][d] = sum;
        sum = 0;
    }
}

System.out.println("Product of the matrices:");

for (c = 0; c < m; c++)
{
    for (d = 0; d < q; d++)
        System.out.print(multiply[c][d]+" ");

    System.out.print("\n");
}
}
}
}

```

OutPut:

Enter the number of rows and columns of first matrix

3

3

Enter elements of first matrix

1 2 3

4 5 6

7 8 9

Enter the number of rows and columns of second matrix

3

3

Enter elements of second matrix

9 8 7

6 5 4

3 2 1

Product of the matrices:

30    24    18

84    69    54

138   114   90

```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week2.java
iiitbasar@Mounika Erra_B141300:~$ java Week2
Enter the number of rows and columns of first matrix
2 2
Enter elements of first matrix
1 2
3 4
Enter the number of rows and columns of second matrix
2 2
Enter elements of second matrix
1 0
0 1
Product of the matrices:
1      2
3      4
iiitbasar@Mounika Erra_B141300:~$
```

6. Write a java program for sorting a given list of names.

**Program:**

```
import java.util.Scanner;
class Week2
{
    public static void main(String arg[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter array size");
        int s=sc.nextInt();
        int n=s+1;
        String a[]=new String[n];
        int i;
        System.out.println("Enter "+s+" Names");
        for(i=0;i<n;i++)
        {
            a[i]=sc.nextLine();
        }
        System.out.println("Given Names in Sorting order is:");
        for(i=0;i<n;i++)
        {
            String temp;
            for(int j=i+1;j<n;j++)
            {
                if(a[i].compareTo(a[j])>0)
```

```

        {
            temp=a[i];
            a[i]=a[j];
            a[j]=temp;
        }
    }
    for(i=0;i<n;i++)
    {
        System.out.println(a[i]);
    }
}
}

```

OutPut:

Enter array size

4

Enter 4 Names

asdfg

qwert

po

vbn

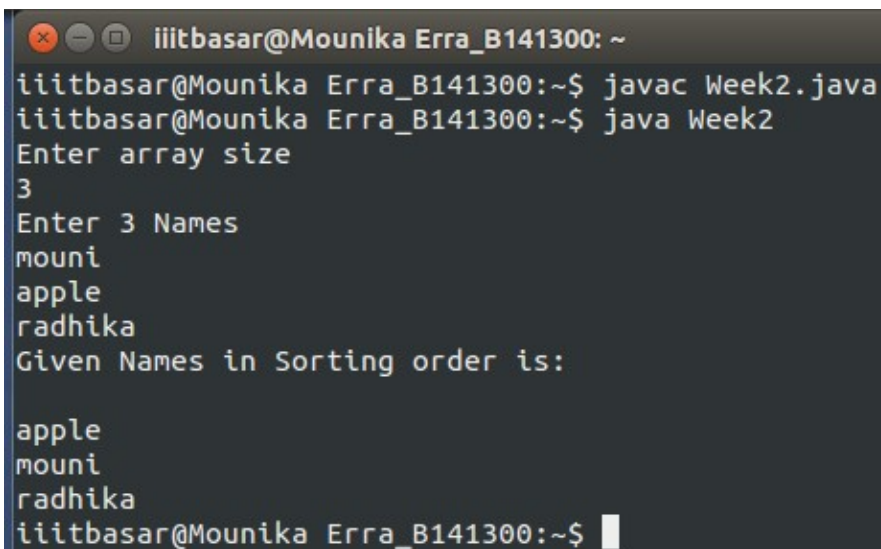
Given Names in Sorting order is:

asdfg

po

qwert

vbn



```

liitbasar@Mounika Erra_B141300: ~
liitbasar@Mounika Erra_B141300:~$ javac Week2.java
liitbasar@Mounika Erra_B141300:~$ java Week2
Enter array size
3
Enter 3 Names
mouni
apple
radhika
Given Names in Sorting order is:

apple
mouni
radhika
liitbasar@Mounika Erra_B141300:~$

```

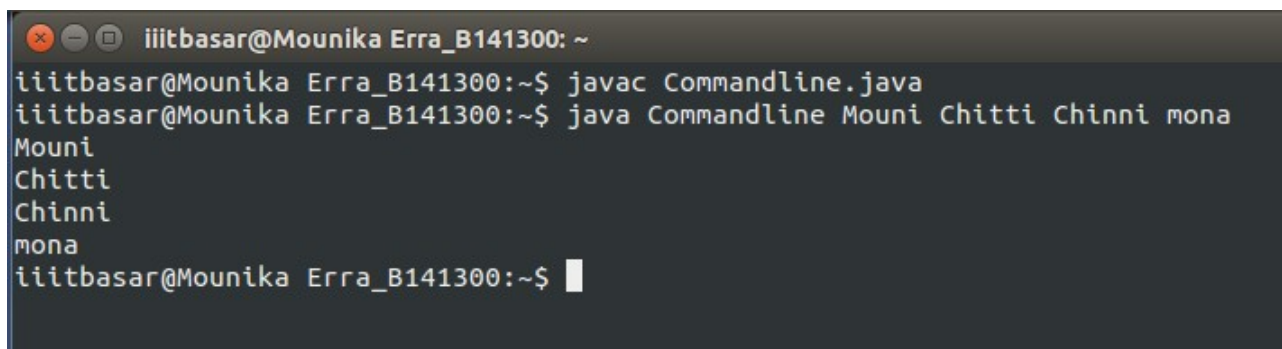
## 7. Write a Java program to give an example for command line arguments.

### Program:

```
class Commandline
{
    public static void main(String args[])
    {
        for(int i=0;i<args.length;i++)
            System.out.println(args[i]);
    }
}
```

Output:

```
iiitbasar@Mounika Erra_B141300:~$ javac Commandline.java
iiitbasar@Mounika Erra_B141300:~$ java Commandline Amma Nanna
Amma
Nanna
```

A screenshot of a terminal window with a dark background. The window title is "iiitbasar@Mounika Erra\_B141300: ~". The terminal shows the following commands and output:

```
iiitbasar@Mounika Erra_B141300:~$ javac Commandline.java
iiitbasar@Mounika Erra_B141300:~$ java Commandline Mouni Chitti Chinni mona
Mouni
Chitti
Chinni
mona
iiitbasar@Mounika Erra_B141300:~$
```

## WEEK-3

details of employee

includes, Emp\_name, Emp\_age, Emp\_gender, Emp\_designation, Emp\_salary, Emp\_Address etc.,

### Program:

```
import java.util.Scanner;
class Employee_details1
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter number of Employees:");
        int n=s.nextInt();
```

```

System.out.println("Enter "+n+ " Employees Details");
int id[]=new int[n];
String name[]=new String[n];
String gender[]=new String[n];
String des[]=new String[n];
String address[]= new String[n];
int age[]=new int[n];
int salary[]=new int[n];
System.out.println("Enter Employee Details \nID
Number\nName\nGender\nDesignation\nAddress\nSalary\nAge\nRespectively");
for(int i=0;i<n;i++)
{
System.out.println("Enter Employee "+(i+1)+" Details ");
id[i]=s.nextInt();
name[i]=s.next();
gender[i]=s.next();
des[i]=s.next();
address[i]=s.next();
salary[i]=s.nextInt();
age[i]=s.nextInt();
}
System.out.println("Enter Employee id whose details you required");
int ID=s.nextInt();
System.out.println("Employee id "+ID+" Details");
for(int i=0;i<n;i++)
{
if(ID==id[i])
{
System.out.println("Employee name is:"+name[i]);
System.out.println("Employee age is:"+age[i]);
System.out.println("Employee gender is:"+gender[i]);
System.out.println("Employee designation is:"+des[i]);
System.out.println("Employee salary is:"+salary[i]);
System.out.println("Employee Address is:"+address[i]);
}
}
}
}

```

### OutPut:

Enter number of Employees:

2

Enter 2 Employees Details

Enter Employee Details

ID Number

Name

Gender

Designation

Address

Salary

Age

Respectively

Enter Employee 1 Details

1400

mouni

female

manager

basar

500000

23

Enter Employee 2 Details

1300

hyma

female

hr

basar

3000000

23

Enter Employee id whose details you required

1300

Employee id 1300 Details

Employee name is:hyma

Employee age is:23

Employee gender is:female

Employee designation is:hr

Employee salary is:3000000

Employee Address is:basar

```
iiitbasar@iiitbasar-TravelMate-P243-M: ~/Desktop
Enter 2 Employees Details
Enter Employee 1 id
1300
Enter Employee 2 id
1306
Enter Employee 1 name
Mounika
Enter Employee 2 name
Sandhya
Enter Employee 1 gender
female
Enter Employee 2 gender
female
Enter Employee 1 designation
teacher
Enter Employee 2 designation
engineer
Enter Employee 1 Address
rgukt
Enter Employee 2 Address
Basara
Enter Employee 1 Salary
30000
Enter Employee 2 Salary
40000
Enter Employee 1 Age
19
Enter Employee 2 Age
19
Enter Employee id whose details you required
1306
Employee id 1306 Details
Employee name is:Sandhya
Employee age is:19
Employee gender is:female
Employee designation is:engineer
Employee salary is:40000
Employee Arress is:Basara
iiitbasar@iiitbasar-TravelMate-P243-M:~/Desktop$
```

2. A mail-order house sells five products whose retail prices are as follows :  
Product 1 : Rs. 99.90 ,  
Product 2 : Rs. 20.20 , Product 3 : Rs. 6.87 , Product 4 : Rs. 45.50 and Product  
5 : Rs. 40.49 . Each  
product has Prdouct\_Id, Product\_Name,  
Product\_Quantity, Product\_Price. Write an application that



reads a series of pairs of numbers as follows :

a) product Id

b) quantity sold your program use a switch statement to determine the retail price for each product.

should calculate and display the total retail value of all products sold.

it

**Program:**

```
import java.util.Scanner;
```

```
public class Products
```

```
{
```

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

```
    {
```

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

```
        double product1;
```

```
        double product2;
```

```
        double product3;
```

```
        double product4;
```

```
        double product5;
```

```
        int quantity;
```

```
        double totalSales = 0;
```

```
        System.out.println("Choose product 1 to 5 ");
```

```
        System.out.println("Product 1 : Rs. 99.90\nProduct 2 : Rs. 20.20\nProduct 3 : Rs.  
6.87\nProduct 4 : Rs. 45.50\nProduct 5 : Rs. 40.49");
```

```
        int productNo=input.nextInt();
```

```
        System.out.println("Enter quantity sold ");
```

```
        quantity = input.nextInt();
```

```
        switch (productNo)
```

```
        {
```

```
            case 1: product1 = 99.90;
```

```
            totalSales+=(99.90*quantity);
```

```
            break;
```

```
            case 2: product2 = 20.20;
```

```
            totalSales+=(20.20*quantity);
```

```
            break;
```

```
            case 3: product3 = 6.87;
```

```
            totalSales+=(6.87*quantity);
```

```
            break;
```

```
            case 4: product4 = 45.50;
```

```
            totalSales+=(45.50*quantity);
```

```
            break;
```

```
            case 5: product5 = 40.49;
```

```
            totalSales+=(40.49*quantity);
```

```
            break;
```

```
}
```

```
        System.out.println("The total retail value of all products  
sold:\n"+totalSales);  
    }  
}
```

### OutPut:

Choose product 1 to 5

Product 1 : Rs. 99.90

Product 2 : Rs. 20.20

Product 3 : Rs. 6.87

Product 4 : Rs. 45.50

Product 5 : Rs. 40.49

4

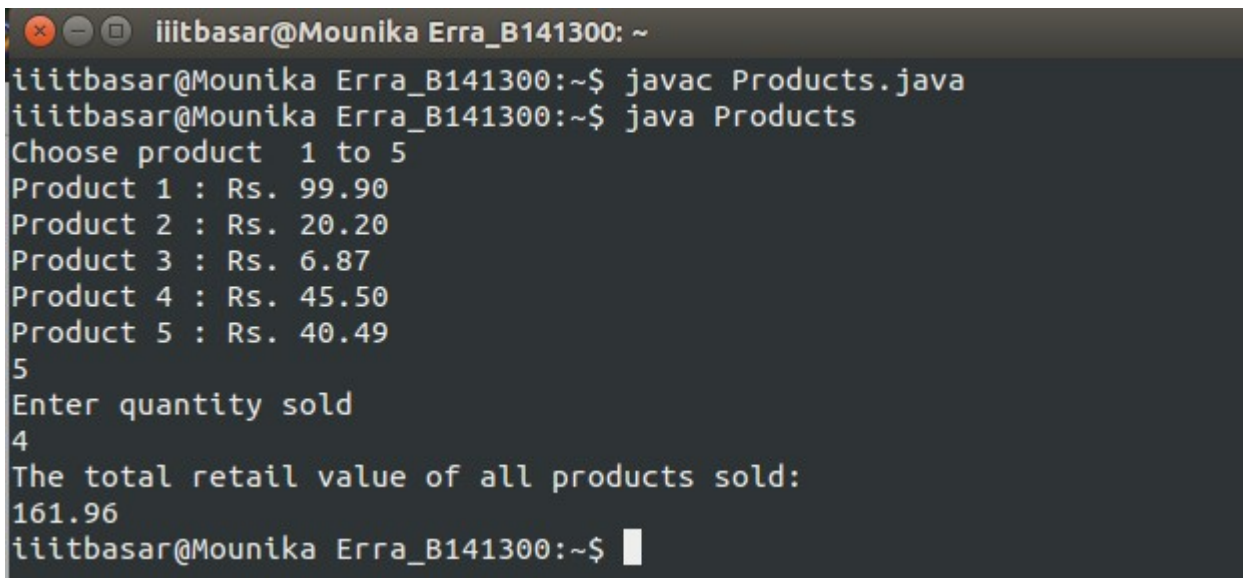
Enter quantity sold

5

The total retail value of all products sold:

227.5

### 3. Write java program that inputs 5 numbers, each between 10 and 100



```
iitbasar@Mounika Erra_B141300: ~  
iitbasar@Mounika Erra_B141300:~$ javac Products.java  
iitbasar@Mounika Erra_B141300:~$ java Products  
Choose product 1 to 5  
Product 1 : Rs. 99.90  
Product 2 : Rs. 20.20  
Product 3 : Rs. 6.87  
Product 4 : Rs. 45.50  
Product 5 : Rs. 40.49  
5  
Enter quantity sold  
4  
The total retail value of all products sold:  
161.96  
iitbasar@Mounika Erra_B141300:~$
```

inclusive. As

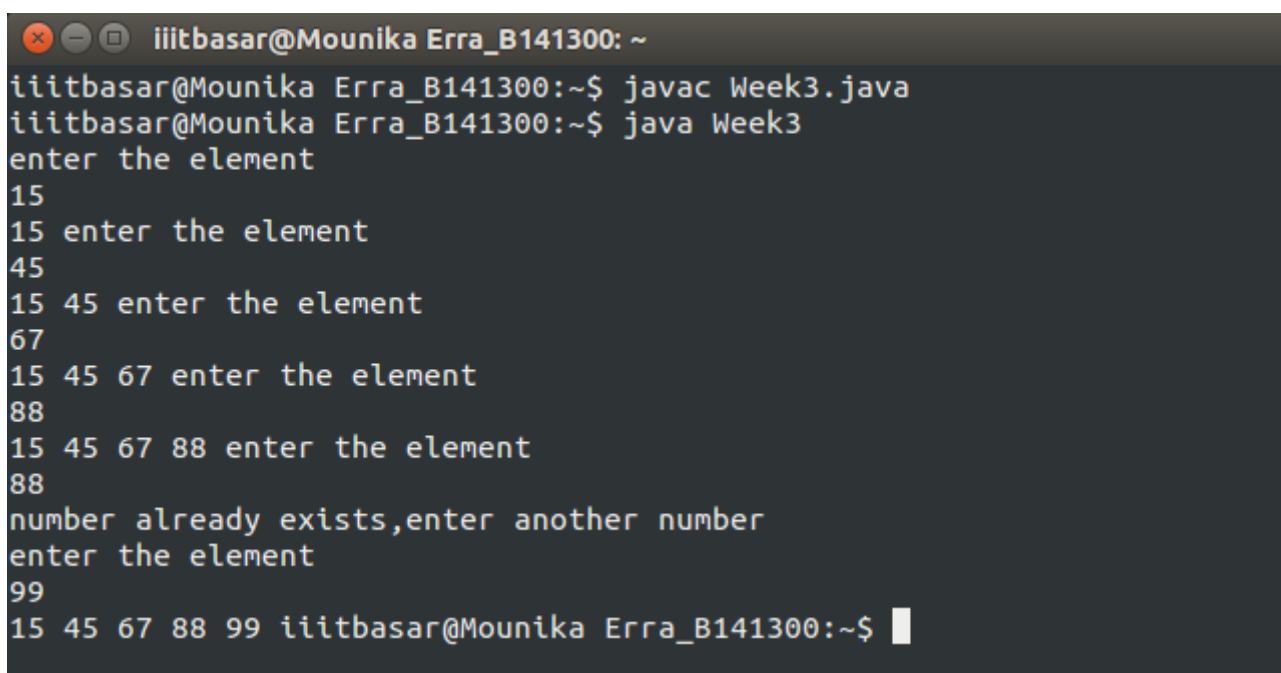
**each number is read display it only if it's not a duplicate of any number already read display the complete set of unique values input after the user enters each new value**

**Program:**

```
import java.util.*;
public class Week3
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        int arr[]=new int[5];
        for(int i=0;i<5;i++)
        {
            int count=0;
            System.out.println("enter the element");
            int e=s.nextInt();
            for(int j=0;j<arr.length;j++)
            {
                if(e==arr[j])
                {
                    count=1;
                    System.out.println("number already exists,enter another number");
                    i=i-1;
                    break;
                }
                else if(e<10||e>100)
                {
                    count=1;
                    System.out.println("number is not in range (10&100)enter a valid number");
                    i=i-1;
                    break;
                }
            }
            if(count!=1)
            {
                arr[i]=e;
                for (int k=0;k<=i;k++)
                {
                    System.out.print(arr[k]+" ");
                }
            }
        }
    }
}
```

### OutPut:

enter the element  
14  
14 enter the element45  
14 45 enter the element  
56  
14 45 56 enter the element  
76  
14 45 56 76 enter the element  
89  
14 45 56 76 89



```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Week3.java  
iiitbasar@Mounika Erra_B141300:~$ java Week3  
enter the element  
15  
15 enter the element  
45  
15 45 enter the element  
67  
15 45 67 enter the element  
88  
15 45 67 88 enter the element  
88  
number already exists, enter another number  
enter the element  
99  
15 45 67 88 99 iiitbasar@Mounika Erra_B141300:~$
```

**4. Write a java program : rolling a pair of dices 10 times [ each attempt should be delayed by 10000 ms ] and count number Successful attempts. successful attempt : If the pair of Dice results in same values.**

### Program:

```
import java.util.Random;  
public class Week3  
{  
    public static void main(String args[])  
    {  
        Random random=new Random();  
        int freq1=0,freq2=0,freq3=0,freq4=0,freq5=0,freq6=0;  
        for(int roll=1;roll<10000;roll++)  
        {  
            int dice1=1+random.nextInt(6);
```

```

        int dice2=1+random.nextInt(6);
        if(dice1==dice2)
        {
switch(dice1)
{
case 1:
++freq1;
break;
case 2:
++freq2;
break;
case 3:
++freq3;
break;
case 4:
++freq4;
break;
case 5:
++freq5;
break;
case 6:
++freq6;
break;
}
}
}
System.out.println("face\t
Frequency:");System.out.println("1\t"+freq1+"\n2\t"+freq2+"\n3\t"+freq3+"\n4\t"+fr
eq4+"\n5\t"+freq5+"\n6\t"+freq6);
}
}

```

Output:

face Frequency:

1	296s
2	282
3	291
4	304
5	299
6	304

```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week3.java
iiitbasar@Mounika Erra_B141300:~$ java Week3
face      Frequency:
1         272
2         273
3         286
4         282
5         274
6         291
iiitbasar@Mounika Erra_B141300:~$
```

**5. Implement the following case study using OOP concepts in Java. E-Book stall :**

**Every book has Properties which includes : Book \_Name, Book \_Author,Book \_Count ; Every Customer is having properties as : Customer \_Id, Customer \_Name, Customer \_Address and he can buy Books from E- Book stall. Write a Program which will display the text book name and the remaining count of text books when a customer buys a text book.**

**Program:**

```
import java.util.*;
class Week3
{
    public static void main(String args[])
    {
        Book b1=new Book("OOP","Mounika",10);
        customer c1=new customer("CSE","rgukt_basar",10);
        c1.buy(b1,2);
        Book b2=new Book("SL","Radhika",20);
        customer c2=new customer("CSE","rgukt_basar",20);
        c2.buy(b2,10);
    }
}
class Book
{
    String name,author;
    int count;
    public Book(String name,String author,int count)
    {
        this.name=name;
        this.author=author;
        this.count=count;
    }
}
```

```

public void sell(int n)
{
    if(n<=count)
    {
        count=count-n;
        System.out.println("sold"+n+"copies of
books"+name);System.out.println("remaining copies="+count);
    }
    else
    {
        System.out.println("stock not available");
    }
}
}
}
class customer
{
    String name,address;
    int cid;
    public customer(String name,String address,int cid)
    {
        this.name=name;
        this.address=address;
        this.cid=cid;
    }
    public void buy(Book b,int n)
    {
        System.out.println(name+"is buying a book");
        b.sell(n);
    }
}

```

### OutPut:

CSEis buying a book  
sold2copies of booksOOP  
remaining copies=8  
CSEis buying a book  
sold10copies of booksSL  
remaining copies=10

```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Week3.java
iitbasar@Mounika Erra_B141300:~$ java Week3
CSEis buying a book
sold2copies of books00P
remaining copies=8
CSEis buying a book
sold10copies of booksSL
remaining copies=10
iitbasar@Mounika Erra_B141300:~$
```

## WEEK-4

1. Write an application that uses String method compareTo to compare two strings defined by the user.

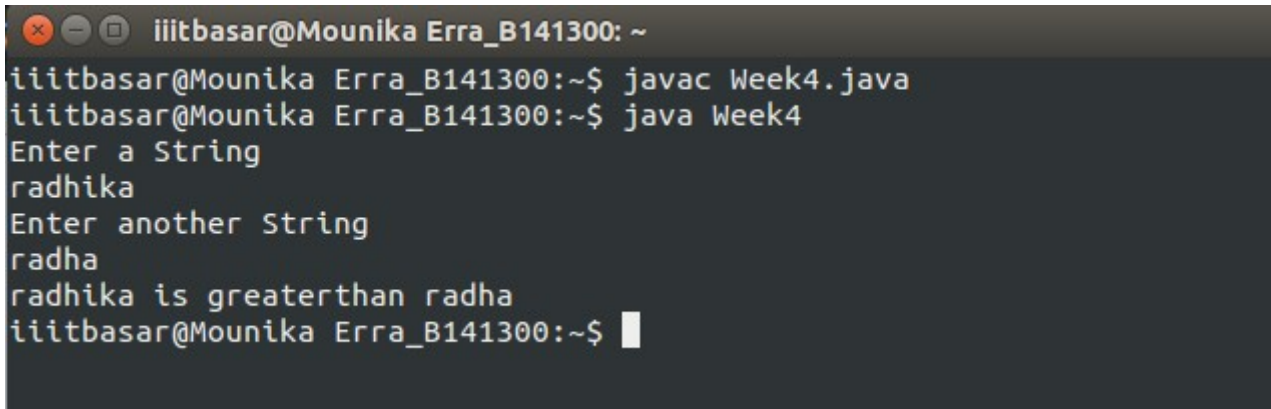
### **Program:**

```
import java.util.Scanner;
class Week4
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        System.out.println("Enter another String");
        String s1=sc.nextLine();
        if(s.compareTo(s1)>0)
        {
            System.out.println(s+" is greaterthan "+s1);
        }
        else if(s.compareTo(s1)<0)
        {
            System.out.println(s+" is lessthan "+s1);
        }
        else
        {
            System.out.println("Given two Strings are equal");
        }
    }
}
```



### OutPut:

Enter a String  
mouni  
Enter another String  
mounika  
mouni is lessthan mounika



```
iitbasar@Mounika Erra_B141300: ~  
iitbasar@Mounika Erra_B141300:~$ javac Week4.java  
iitbasar@Mounika Erra_B141300:~$ java Week4  
Enter a String  
radhika  
Enter another String  
radha  
radhika is greaterthan radha  
iitbasar@Mounika Erra_B141300:~$
```

**2. Write an application that uses String method equals and equalsIgnoreCase to tests objects for equality.**

### Program:

```
import java.util.Scanner;  
class Week4  
{  
    public static void main(String args[])  
    {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter a String");  
        String s=sc.nextLine();  
        System.out.println("Enter another String");  
        String s1=sc.nextLine();  
        if(s.equals(s1))  
        {  
            System.out.println(s+" and "+s1+" are equal");  
        }  
        else if(s.equalsIgnoreCase(s1))  
        {  
            System.out.println(s+" and "+s1+" are equal by Ignoring the case of  
characters");  
        }  
        else  
        {  
            System.out.println(s+" and "+s1+" are not equal");  
        }  
    }  
}
```

```
    }  
    }  
}
```

### OutPut:

Enter a String

Rgukt

Enter another String

RGUKT

Rgukt and RGUKT are equal by Ignoring the case of characters

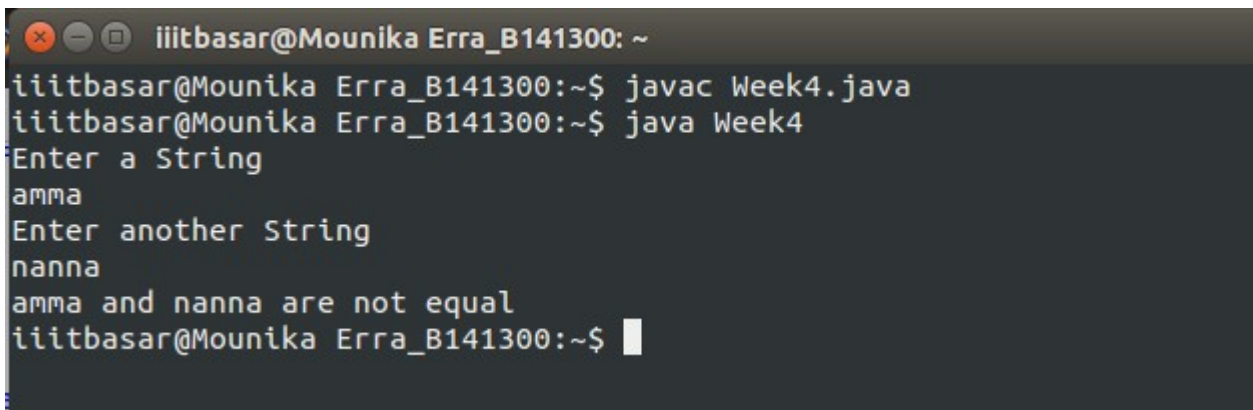
Enter a String

rgukt

Enter another String

iiit

rgukt and iiit are not equal



```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Week4.java  
iiitbasar@Mounika Erra_B141300:~$ java Week4  
Enter a String  
amma  
Enter another String  
nanna  
amma and nanna are not equal  
iiitbasar@Mounika Erra_B141300:~$
```

**3. Write an application that uses String method indexOf to determine the total of any given alphabet in a defined text.**

### Program:

```
import java.util.Scanner;
```

```
class Week4
```

```
{
```

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

```
    {
```

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

```
        System.out.println("Enter a sentence");
```

```
        String sen = sc.nextLine();
```

```
        System.out.println("Enter a Character");
```

```
        char ch = sc.next().charAt(0);
```

```
        int count=0;
```

```
        for(int i=0;i<sen.length();i++)
```

```
        {
```

```
            if(sen.charAt(sen.indexOf(ch))==sen.charAt(i))
```

```

    {
        count++;
    }
}
System.out.println(ch+" is present "+count+ " times in given string");
}

```

### OutPut:

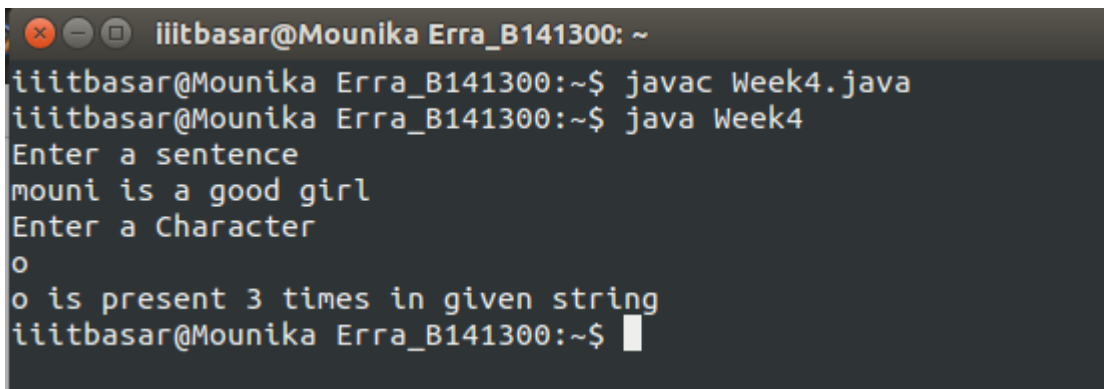
Enter a sentence

Basar

Enter a Character

a

a is present 2 times in given string



```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week4.java
iiitbasar@Mounika Erra_B141300:~$ java Week4
Enter a sentence
mouni is a good girl
Enter a Character
o
o is present 3 times in given string
iiitbasar@Mounika Erra_B141300:~$ 

```

## 4. Write an application that uses String method concat to concatenate two defined strings

### Program:

```
import java.util.Scanner;
```

```
class Week4
```

```
{
```

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

```
    {
```

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

```
        System.out.println("Enter a String");
```

```
        String s=sc.nextLine();
```

```
        System.out.println("Enter another String");
```

```
        String s1=sc.nextLine();
```

```
        System.out.println("concatenation of given strings is: "+s+s1);
```

```
        String s2=s.concat(s1);
```

```
        System.out.println("concatenation of given strings by using string concat method is: "+s2);
```

```
    }
```

```
}
```

### Output:

Enter a String

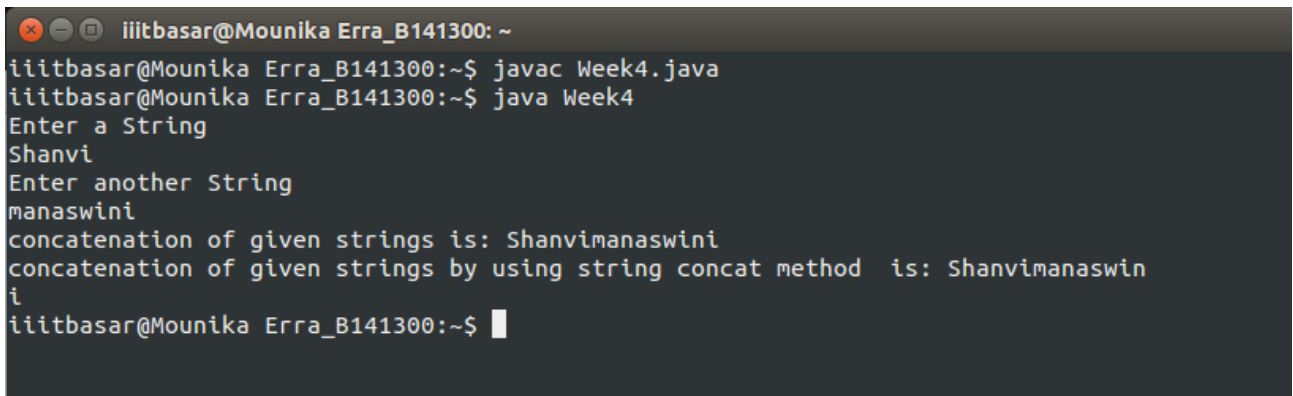
RGUKT

Enter another String

Basar

concatenation of given strings is: RGUKTBasar

concatenation of given strings by using string concat method is: RGUKTBasar



```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Week4.java  
iiitbasar@Mounika Erra_B141300:~$ java Week4  
Enter a String  
Shanvi  
Enter another String  
manaswini  
concatenation of given strings is: Shanvimanaswini  
concatenation of given strings by using string concat method is: Shanvimanaswin  
i  
iiitbasar@Mounika Erra_B141300:~$
```

### 5. Write a Java program to print all vowels in given string and count number of vowels and consonants present in given string

#### Program:

```
import java.util.Scanner;  
class Week4  
{  
    public static void main(String args[])  
    {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("enter your sentence");  
        String sen = sc.nextLine();  
        int vowels=0,con=0;  
        char ch;  
        sen=sen.toLowerCase();  
        for(int i=0;i<sen.length();++i)  
        {  
            ch=sen.charAt(i);  
            if(ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u'||ch=='A'||ch=='E'||ch=='O'||ch=='I'||  
            ch=='U')  
            {  
                ++vowels;  
                System.out.println(ch+" is vowel");  
            }  
            else (ch>'a'&&ch<='z')
```

```

        {
        ++con;
        System.out.println(ch+" is consonant");
        }
    }
    System.out.println("Number of vowels present in given sentence is "+vowels);
    System.out.println("Number of Consonants present in given sentence is
"+con);
    }
}

```

### **OutPut:**

Enter your sentence

Mounika is a Smart Girl

m is consonant

o is vowel

u is vowel

n is consonant

i is vowel

k is consonant

a is vowel

i is vowel

s is consonant

a is vowel

s is consonant

m is consonant

a is vowel

r is consonant

t is consonant

g is consonant

i is vowel

r is consonant

l is consonant

Number of vowels present in given sentence is 8

Number of Consonants present in given sentence is 11

```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Week4.java  
iiitbasar@Mounika Erra_B141300:~$ java Week4  
Enter your sentence  
Not getting It Take a deep breath and say ur smart enough to do this  
n is consonant  
o is vowel  
t is consonant  
g is consonant  
e is vowel  
t is consonant  
t is consonant  
i is vowel  
n is consonant  
g is consonant  
i is vowel  
t is consonant  
t is consonant  
a is vowel  
k is consonant  
e is vowel  
a is vowel  
d is consonant  
e is vowel  
e is vowel  
p is consonant  
b is consonant  
r is consonant  
e is vowel  
a is vowel  
t is consonant  
  
s is consonant  
m is consonant  
a is vowel  
r is consonant  
t is consonant  
e is vowel  
n is consonant  
o is vowel  
u is vowel  
g is consonant  
h is consonant  
t is consonant  
o is vowel  
d is consonant  
o is vowel  
t is consonant  
h is consonant  
i is vowel  
s is consonant  
Number of vowels present in given sentence is 21  
Number of Consonants present in given sentence is 33  
iiitbasar@Mounika Erra_B141300:~$
```

```

import java.util.Scanner;
class Week4
{
    public static void main(String args[])
    {
        String sen;
        Scanner in = new Scanner(System.in);
        System.out.println("enter your sentence");
        sen = in.nextLine();
        int vow=0, con=0, digits=0, spaces=0;
        char ch;
        sen=sen.toLowerCase();
        for(int i = 0; i < sen.length(); ++i)
        {
            ch = sen.charAt(i);
            if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' || ch == 'A' || ch == 'E' ||
            ch == 'I' || ch == 'O' || ch == 'U')
            {
                ++vow;
            }
            else if((ch >= 'a' && ch <= 'z'))
            {
                ++con;
            }
            else if(ch >= '0' && ch <= '9')
            {
                ++digits;
            }
            else if(ch == ' ')
            {
                ++spaces;
            }
        }
        System.out.println("Vowels: " +vow);
        System.out.println("Consonants: " +con);
        System.out.println("Digits: " +digits);
        System.out.println("White spaces: " +spaces);
    }
}

```

### OutPut:

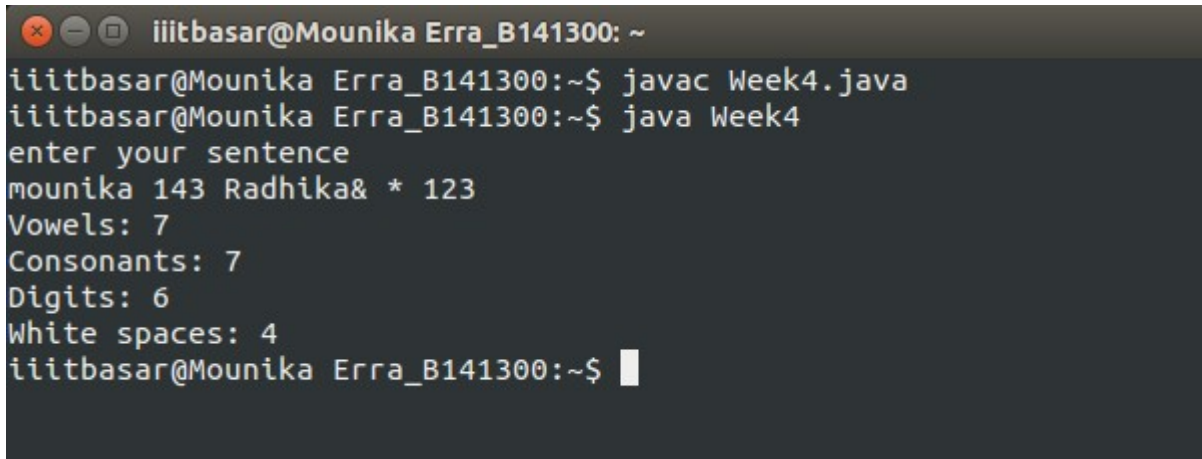
```

enter your sentence
im a good girl 123
Vowels: 5
Consonants: 6

```

Digits: 3

White spaces: 4

A terminal window with a dark background and light-colored text. The window title is "iitbasar@Mounika Erra\_B141300: ~". The terminal shows the following commands and output:

```
iitbasar@Mounika Erra_B141300:~$ javac Week4.java
iitbasar@Mounika Erra_B141300:~$ java Week4
enter your sentence
mounika 143 Radhika& * 123
Vowels: 7
Consonants: 7
Digits: 6
White spaces: 4
iitbasar@Mounika Erra_B141300:~$
```

**6. Write an application that finds the length of a given string.**

**Program:**

```
import java.util.Scanner;
class Week4
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        int a=s.length();
        System.out.println("length of given String is:"+a);
    }
}
```

**OutPut:**

```
Enter a String
rgukt
length of given String is:5
```

OutPut:



```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Week4.java  
iiitbasar@Mounika Erra_B141300:~$ java Week4  
Enter a String  
monalisa  
length of given String is:8  
iiitbasar@Mounika Erra_B141300:~$
```

## 7. Write an application that uses String method charAt to reverse the string

### Program:

```
import java.util.Scanner;  
class Week4  
{  
    public static void main(String args[])  
    {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter a String");  
        String s=sc.nextLine();  
        int n=s.length();  
        System.out.print("Reverse of given string is: ");  
        for(int i=n-1;i>=0;i-- )  
        {  
            char rev=s.charAt(i);  
            System.out.print(rev);  
        }  
        System.out.println("");  
    }  
}
```

### OutPut:

Enter a String  
rgukt  
Reverse of given string is: tkugr

```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Week4.java  
iiitbasar@Mounika Erra_B141300:~$ java Week4  
Enter a String  
Swami Vivekanandha  
Reverse of given string is: ahdnanakeviV imawS  
iiitbasar@Mounika Erra_B141300:~$
```

**8. Write an application that finds the substring from any given string using substring and method startsWith & endsWith methods.**

**Program:**

```
import java.util.Scanner;
class Week4
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        System.out.println("Enter a number for substring starts from it: "+(s.length()));
        int n=sc.nextInt();
        String s1=s.substring(n);
        System.out.println(s1);
        System.out.println("Enter an interval below: "+(s.length()));
        int a=sc.nextInt();
        int b=sc.nextInt();
        String s2=s.substring(a,b);
        System.out.println("Substring in given interval is:");
        System.out.println(s2);
    }
}
```

**Output:**

```
Enter a String
RGUKTBasar
Enter a number for substring starts from it: 10
5
Basar
Enter an interval below: 10
5
8
Substring in given interval is:
Bas
```

```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Week4.java
iitbasar@Mounika Erra_B141300:~$ java Week4
Enter a String
mounika Erra
Enter a number for substring starts from it below: 12
7
Erra
Enter an interval below: 12
0
7
Substring in given interval is:
mounika
iitbasar@Mounika Erra_B141300:~$

```

**9. Write an application that changes any given string with uppercase letters, displays to lowercase letters and displays it.**

**Program:**

```

import java.util.Scanner;
class Week4
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        String s1=s.toLowerCase();
        System.out.print("Lowercase string is:"+s1);
        System.out.println(" ");
    }
}

```

**OutPut:**

```

Enter a String
RGUKT
Lowercase string is:rgukt

```

```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Week4.java
iitbasar@Mounika Erra_B141300:~$ java Week4
Enter a String
INDIA
Lowercase string is:india
iitbasar@Mounika Erra_B141300:~$

```

## WEEK-5

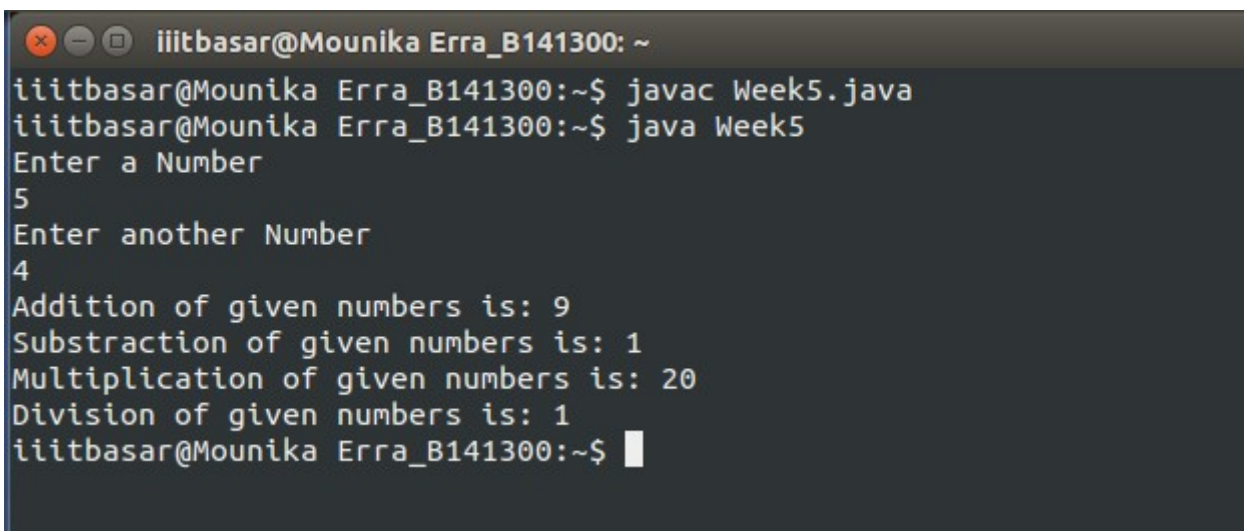
### 1. Write a Java Program to implement Wrapper classes and their methods.

#### Program:

```
import java.util.Scanner;
class Week5
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter a Number");
        int a=s.nextInt();
        Integer c= new Integer(a);
        System.out.println("Enter another Number");
        int b=s.nextInt();
        Integer d= new Integer(b);
        System.out.println("Addition of given numbers is: "+(c+d));
        System.out.println("Substraction of given numbers is: "+(c-d));
        System.out.println("Multiplication of given numbers is: "+(c*d));
        System.out.println("Division of given numbers is: "+(c/d));
    }
}
```

#### OutPut:

```
Enter a Number
20
Enter another Number
5
Addition of given numbers is: 25
Substraction of given numbers is: 15
Multiplication of given numbers is: 100
Division of given numbers is: 4
```



```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Week5.java
iitbasar@Mounika Erra_B141300:~$ java Week5
Enter a Number
5
Enter another Number
4
Addition of given numbers is: 9
Substraction of given numbers is: 1
Multiplication of given numbers is: 20
Division of given numbers is: 1
iitbasar@Mounika Erra_B141300:~$
```

**2. Write an application that prompts the user for the radius of a circle and uses a method called circleArea to calculate the area of the circle and uses a method circlePerimeter to calculate the perimeter of the circle.**

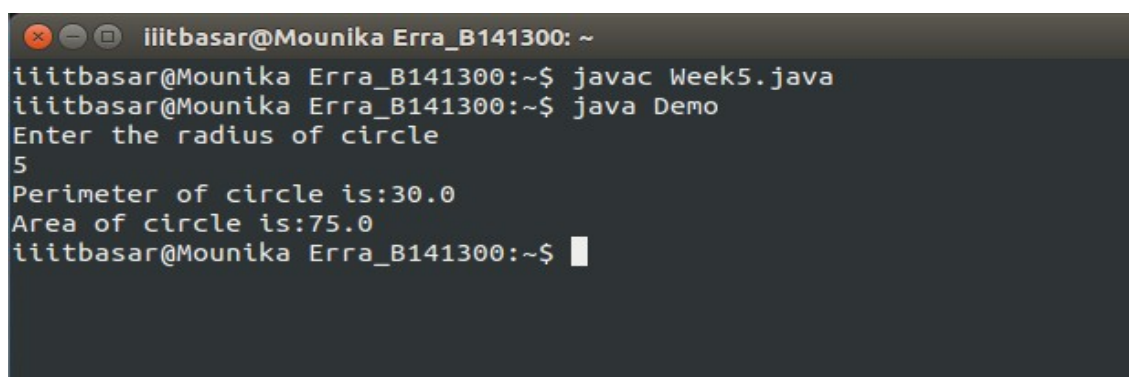
**Program:**

```
import java.util.Scanner;
class Week5
{
    double r;
    double Area()
    {
        return (22/7)*r*r;
    }
    double Perimeter()
    {
        return 2*(22/7)*r;
    }
}

//class declares multiple objects of circle
class Demo
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        Week5 c=new Week5();//object1
        System.out.println("Enter the radius of circle");
        double R=s.nextDouble();
        c.r=R;
        System.out.println("Perimeter of circle is:"+c.Perimeter());
        System.out.println("Area of circle is:"+c.Area());
    }
}
```

**OutPut:**

```
Enter the radius of circle
7
Perimeter of circle is:42.0
Area of circle is:147.0
```



```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week5.java
iiitbasar@Mounika Erra_B141300:~$ java Demo
Enter the radius of circle
5
Perimeter of circle is:30.0
Area of circle is:75.0
iiitbasar@Mounika Erra_B141300:~$
```

### 3. Write a JAVA program for the following

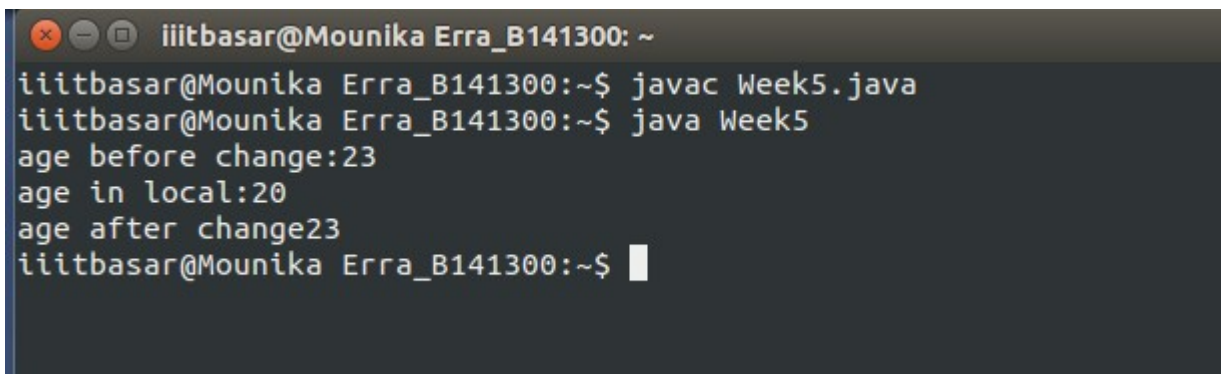
#### a. Call by value

##### Program:

```
class Week5
{
int age=23;
void change_age(int age)
{
age=age+10;// cahnges will be done in the local variable only
System.out.println("age in local:"+age);
}
public static void main(String aa [])
{
Week5 c1=new Week5();
System.out.println("age before change:"+c1.age);
c1.change_age(10);
System.out.println("age after change"+c1.age);
}
}
```

##### OutPut:

age before change:23  
age in local:20  
age after change23



```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week5.java
iiitbasar@Mounika Erra_B141300:~$ java Week5
age before change:23
age in local:20
age after change23
iiitbasar@Mounika Erra_B141300:~$
```

#### b. Call by object

##### Program:

```
class Week5
{
int age=23;
void change_age(Week5 c1)
{
age=age+10;// cahnges will be done in the local variable only
```

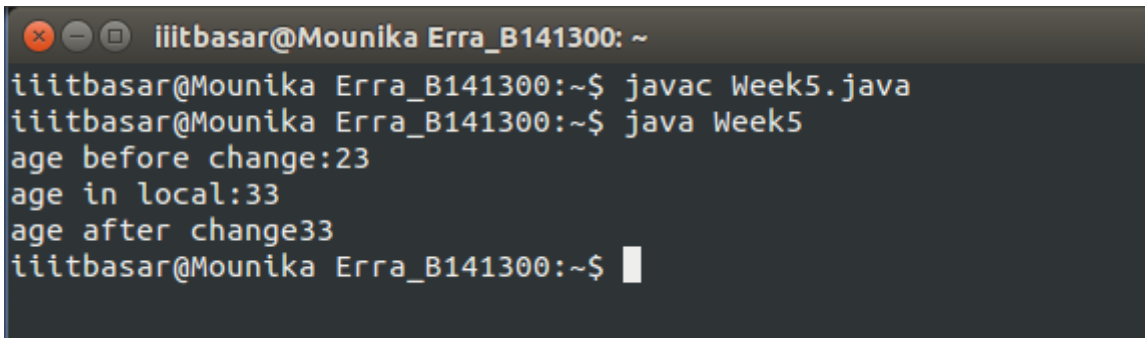
```

        System.out.println("age in local:"+age);
    }
    public static void main(String aa [])
    {
        Week5 c1=new Week5();
        System.out.println("age before change:"+c1.age);
        c1.change_age(c1);// passinf object through called method
        System.out.println("age after change"+c1.age);
    }
}

```

### OutPut:

age before change:23  
age in local:33  
age after change33



```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Week5.java
iiitbasar@Mounika Erra_B141300:~$ java Week5
age before change:23
age in local:33
age after change33
iiitbasar@Mounika Erra_B141300:~$

```

**4. Create a class Account with an instance variable balance (double). It should contain a constructor that initializes the balance, ensure that the initial balance is**

**greater than 0.0. Acct details : Acct\_Name, Acct\_acctno, Acct\_Bal, Acct\_Address.**

**Create two methods namely credit and debit, getBalance.**

**The Credit adds the amount (passed as parameter) to balance and does not return any**

**data. Debit method withdraws money from an Account. GetBalance displays the amount. Ensure that the debit amount does not exceed the Account's balance. In that case the balance should be left unchanged and the method should print a message indicating "Debit amount exceeded account balance".**

### Program:

```

import java.util.Scanner;
class Account
{
    //instance variables
    String Accountant_name;
    int Account_number;

```

```

double ammount,withdraw,deposit;
Account(String s,double a,int i,double w,double d)
{
    Accountant_name=s;
    ammount=a;
    Account_number=i;
    withdraw=w;
    deposit=d;
}
void debit(double w)
{
    if(ammount>w)
    {
        ammount=(ammount-w);
        System.out.println("Total ammount after withdrawn "+withdraw+"
is:"+ammount);
        double M=(ammount-withdraw)+deposit;
        System.out.println("Current Balance in Account:"+M);
    }
    else
    {
        System.out.println("Insufficent accunt balance");
        System.out.println("Enter amount below:"+ammount);
    }
}

void credit(double d)
{
    ammount=(ammount+d);
    System.out.println("Accountant Name:"+Accountant_name);
    System.out.println("Account Number:"+Account_number);
    System.out.println("Total ammount after deposited "+deposit+"
is:"+ammount);
}
}
class Bank
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter accountant name:");
        String name=s.nextLine();
        System.out.println("Enter Account Number:");
        int i=s.nextInt();
        System.out.println("Enter amount");
        double a=s.nextDouble();
    }
}

```



```

        System.out.println("Enter withdraw ammount");
        double w=s.nextDouble();

        System.out.println("Enter deposit ammount");
        double d=s.nextDouble();
        System.out.println("Account Details:");
        Account Ac=new Account(name,a,i,w,d);
        Ac.credit(d);
        Ac.debit(w);
    }
}

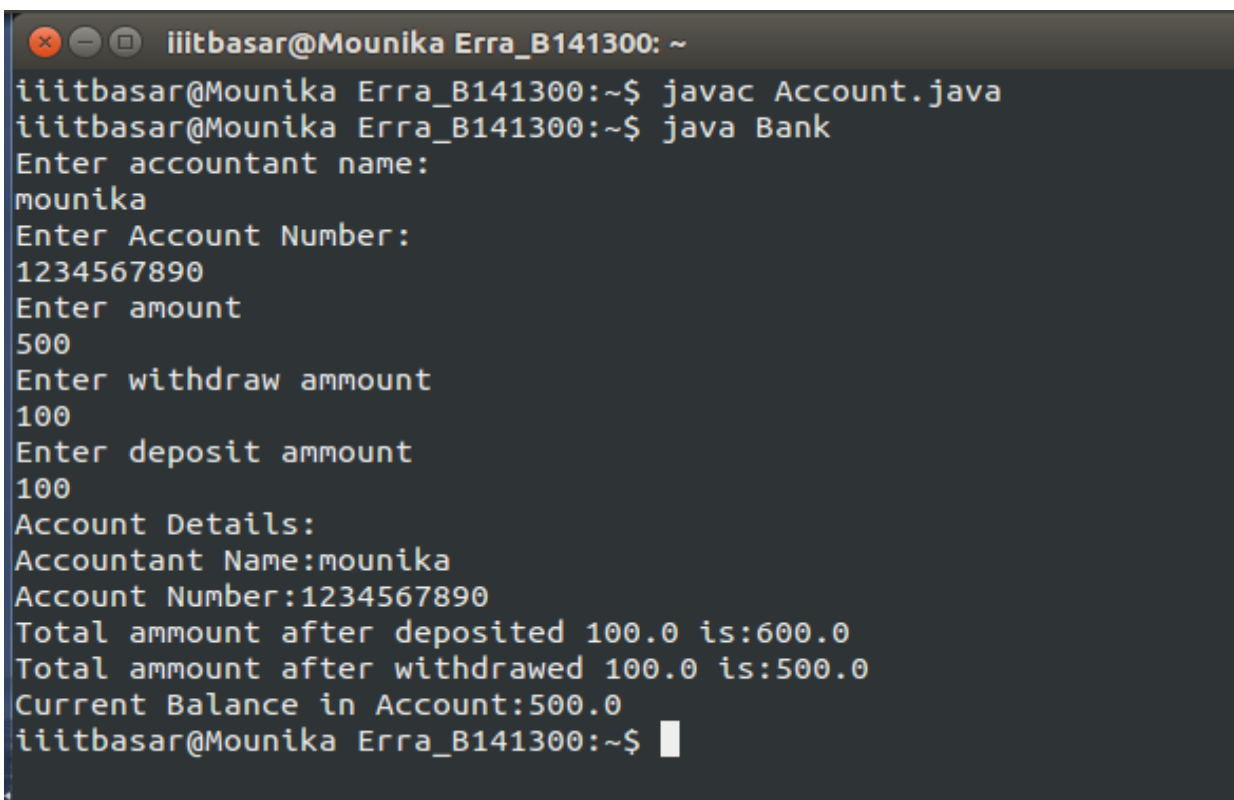
```

### OutPut:

```

Enter accountant name:
Radhika
Enter Account Number:
1234567890
Enter amount
1000
Enter withdraw ammount
100
Enter deposit ammount
500
Account Details:
Accountant Name:Radhika
Account Number:1234567890
Total ammount after deposited 500.0 is:1500.0
Total ammount after withdrewed 100.0 is:1400.0
Current Balance in Account:1400.0

```



```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Account.java
iiitbasar@Mounika Erra_B141300:~$ java Bank
Enter accountant name:
mounika
Enter Account Number:
1234567890
Enter amount
500
Enter withdraw ammount
100
Enter deposit ammount
100
Account Details:
Accountant Name:mounika
Account Number:1234567890
Total ammount after deposited 100.0 is:600.0
Total ammount after withdrewed 100.0 is:500.0
Current Balance in Account:500.0
iiitbasar@Mounika Erra_B141300:~$

```

## 5. Write Java program for the following

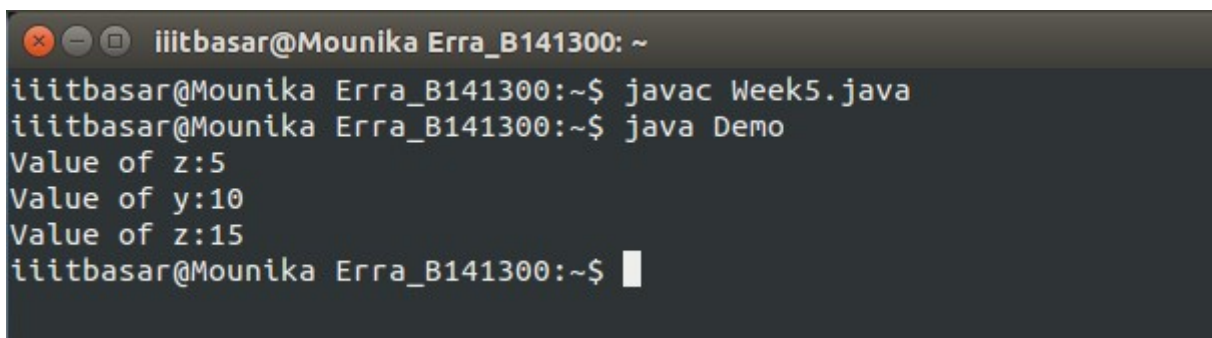
### a. Example for this operator and the use of this keyword.

#### Program:

```
class Week5
{
    Week5(int x,int y,int z)
    {
        this(x,y);
        System.out.println("Value of z:"+z);
    }
    Week5(int x,int y)
    {
        this(x);
        System.out.println("Value of y:"+y);
    }
    Week5(int x)
    {
        System.out.println("Value of z:"+x);
    }
}
class Demo
{
    public static void main(String aa[])
    {
        Week5 e=new Week5(5,10,15);
    }
}
```

#### OutPut:

Value of z:5  
Value of y:10  
Value of z:15



```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Week5.java
iitbasar@Mounika Erra_B141300:~$ java Demo
Value of z:5
Value of y:10
Value of z:15
iitbasar@Mounika Erra_B141300:~$
```

## b. Example for super keyword.

### Program:

**//Base class vehicle**

```
class Vehicle
{
    int maxSpeed = 120;
}

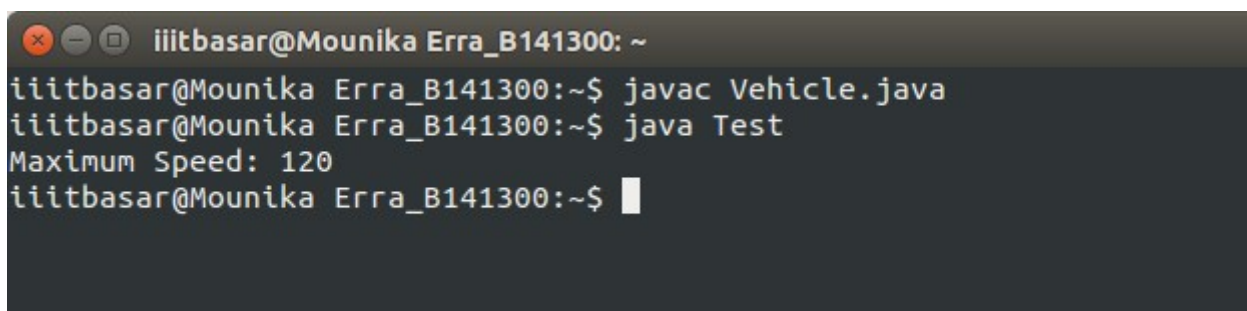
//sub class Car extending vehicle
class Car extends Vehicle
{
    int maxSpeed = 180;

    void display()
    {
        //print maxSpeed of base class (vehicle)
        System.out.println("Maximum Speed: " + super.maxSpeed);
    }
}

//Driver program to test
class Test
{
    public static void main(String[] args)
    {
        Car small = new Car();
        small.display();
    }
}
```

### OutPut:

Maximum Speed: 120



```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Vehicle.java
iitbasar@Mounika Erra_B141300:~$ java Test
Maximum Speed: 120
iitbasar@Mounika Erra_B141300:~$
```

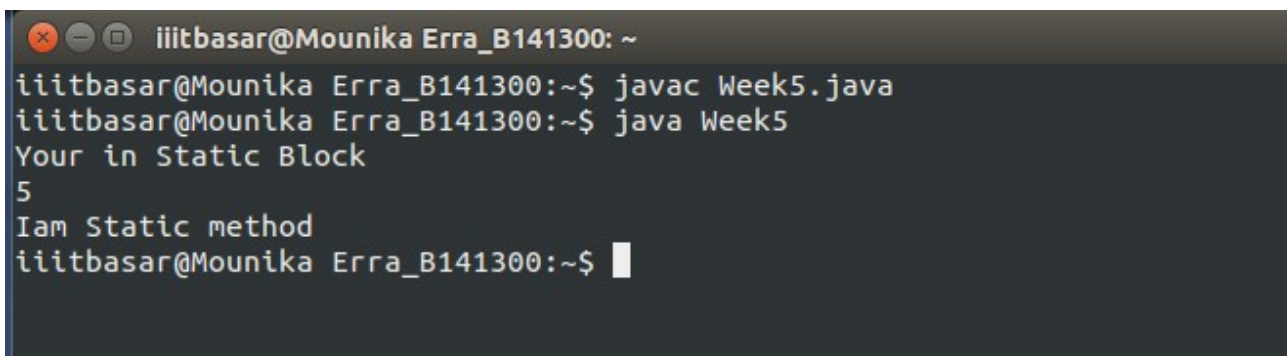
## c. Example for static variables and methods.

### Program:

```
class Week5
{
    static //Static Block
    {
        System.out.println("Your in Static Block");
    }
    static void display() //static method
    {
        System.out.println("Iam Static method");
    }
    static int a=5;//Static Variable
    public static void main(String args[])
    {
        System.out.println(Week5.a);
        Week5.display();
    }
}
```

### OutPut:

Your in Static Block  
5  
Iam Static method



```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Week5.java
iitbasar@Mounika Erra_B141300:~$ java Week5
Your in Static Block
5
Iam Static method
iitbasar@Mounika Erra_B141300:~$
```

## WEEK-6

**1. Write a Java program to find Area and Circle of different shapes using polymorphism concept**

### Program:

```
class shape
{
    void area(float x)
    {
```

```

        System.out.println("The area of the square: "+x*x+"sq.units");
    }
    void area(float x,float y)
    {
        System.out.println("The area of the rectangular: "+x*y+"sq.units");
    }
    void Area(double x)
    {
        double z=3.14*x*x;
        System.out.println("The area of the circle "+z+"sq.units");
    }
    void Area(int x,int y)
    {
        float r=(x*y)/2;
        System.out.println("The area of the trianle "+r+"sq.units");
    }
}
class cal_shape
{
    public static void main(String a[])
    {
        shape s=new shape();
        s.area(10);
        s.area(20,30);
        s.Area(5);
        s.Area(2,5);
    }
}

```

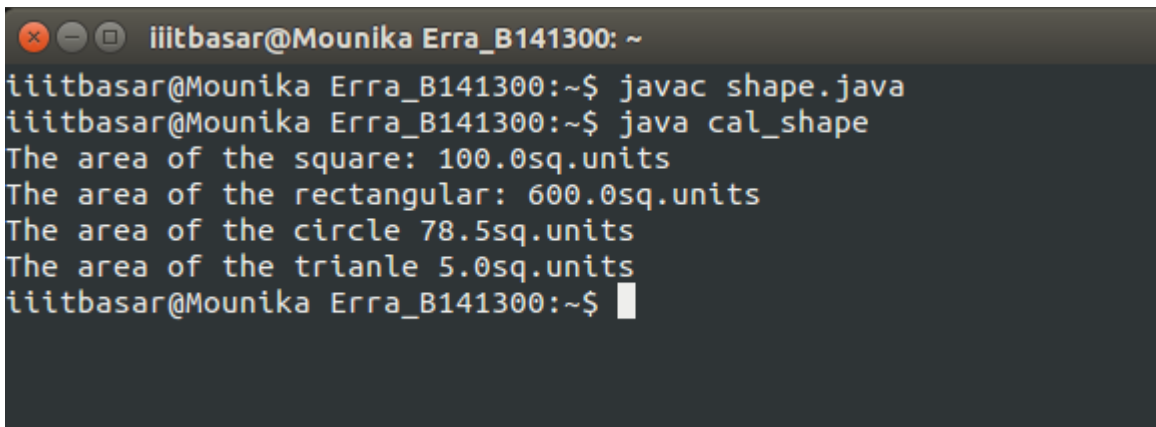
### OutPut:

The area of the square: 100.0sq.units

The area of the rectangular: 600.0sq.units

The area of the circle 78.5sq.units

The area of the trianle 5.0sq.units



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac shape.java
iitbasar@Mounika Erra_B141300:~$ java cal_shape
The area of the square: 100.0sq.units
The area of the rectangular: 600.0sq.units
The area of the circle 78.5sq.units
The area of the trianle 5.0sq.units
iitbasar@Mounika Erra_B141300:~$

```

## 2. Write a Java program which can give example of Method overloading and overriding

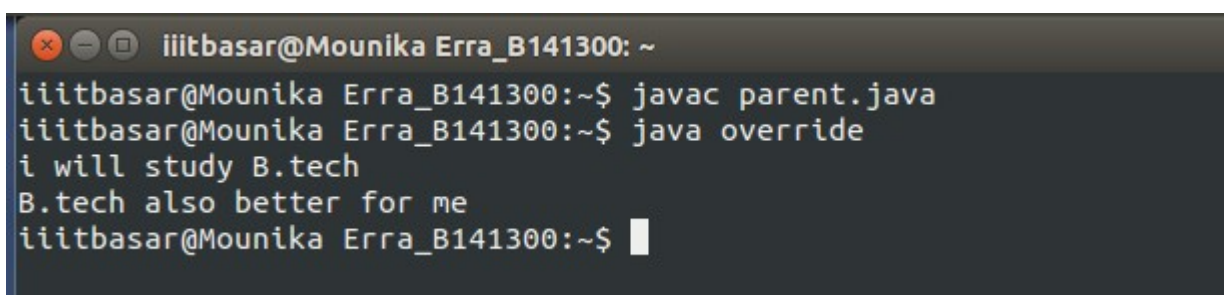
### Program:

```
class parent
{
    void m1()
    {
        System.out.println("you must study MBA");
    }
    void m2()
    {
        System.out.println("MBA is better to you");
    }
}

class override extends parent
{
    void m1()
    {
        System.out.println("i will study B.tech");
    }
    void m2()
    {
        System.out.println("B.tech also better for me");
    }
    public static void main(String args[])
    {
        override c1= new override();
        c1.m1();
        c1.m2();
    }
}
```

### OutPut:

i will study B.tech  
B.tech also better for me



```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac parent.java
iiitbasar@Mounika Erra_B141300:~$ java override
i will study B.tech
B.tech also better for me
iiitbasar@Mounika Erra_B141300:~$
```

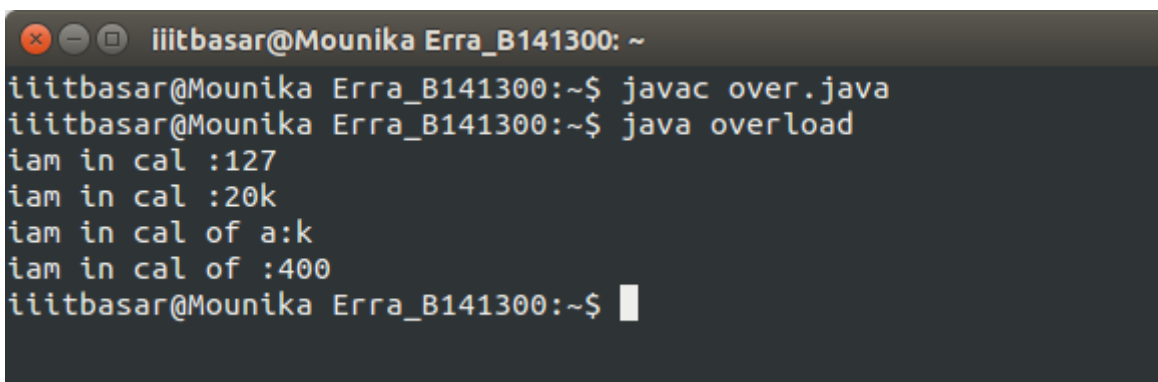
## Overloading

### Program:

```
import java.util.Scanner;
class over
{
    void cal(int a, char c)
    {
        System.out.println("iam in cal :"+(a+c));
        System.out.println("iam in cal :"+a+c);
    }
    void cal(char c)
    {
        System.out.println("iam in cal of a:"+c);
    }
    void cal(int a)
    {
        System.out.println("iam in cal of :"+a*a);
    }
}
class overload
{
    {
        public static void main(String args[])
        {
            over c1 = new over ();
            c1.cal(20,'k');
            c1.cal('k');
            c1.cal(20);
        }
    }
}
```

### OutPut:

iam in cal :127  
iam in cal :20k  
iam in cal of a:k  
iam in cal of :400



```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac over.java
iitbasar@Mounika Erra_B141300:~$ java overload
iam in cal :127
iam in cal :20k
iam in cal of a:k
iam in cal of :400
iitbasar@Mounika Erra_B141300:~$
```

**3. Write an application to create a super class Employee with information first name & last name and methods getFirstName(), getLastName() derive the sub-classes ContractEmployee and RegularEmployee with the information about department, designation & method displayFullName() , getDepartment(), getDesig() to print the salary and to set department name & designation of the corresponding sub-class objects respectively.**

**Program:**

```
class emp
{
    String first_name ;
    String last_name;

    void getfirstname(String g)
    {
        first_name =g;
        System.out.println("first name is:" +g);
    }
    void getlastname(String h)
    {
        last_name =h;
        System.out.println("last name is :"+h);
    }
}

class contractemp extends emp
{
    String department ;
    String designation;
    String fullname;

    void displayfullname(String a)
    {
        fullname = a;
        System.out.println("full name of contract employ is :"+a);
    }

    void department(String b)
    {
        department = b;
    }
}
```



```
System.out.println("department of contract employ is :"+b);  
  
}
```

```
void designation(String c)  
{  
    designation = c;  
    System.out.println("designation of contract employ is :"+c);  
}  
}
```

```
class regularemp extends emp  
{  
    String department ;  
    String designation;  
    String fullname;  
    void displayfullname(String d)  
    {  
        fullname = d;  
        System.out.println("regular employ full name is:"+d);  
    }  
}
```

```
void department(String e)  
{  
  
    department = e;  
    System.out.println("department of regular employ is:"+e);  
}
```

```
void designation(String f)  
{  
    designation =f;  
    System.out.println("designation of regular employ is:"+f);  
}  
}
```

```
class employ  
{  
    public static void main(String args[])  
    {  
        emp e1= new emp();  
  
        e1.getfirstname("Mounika");  
        e1.getlastname("Erra");  
    }  
}
```

```

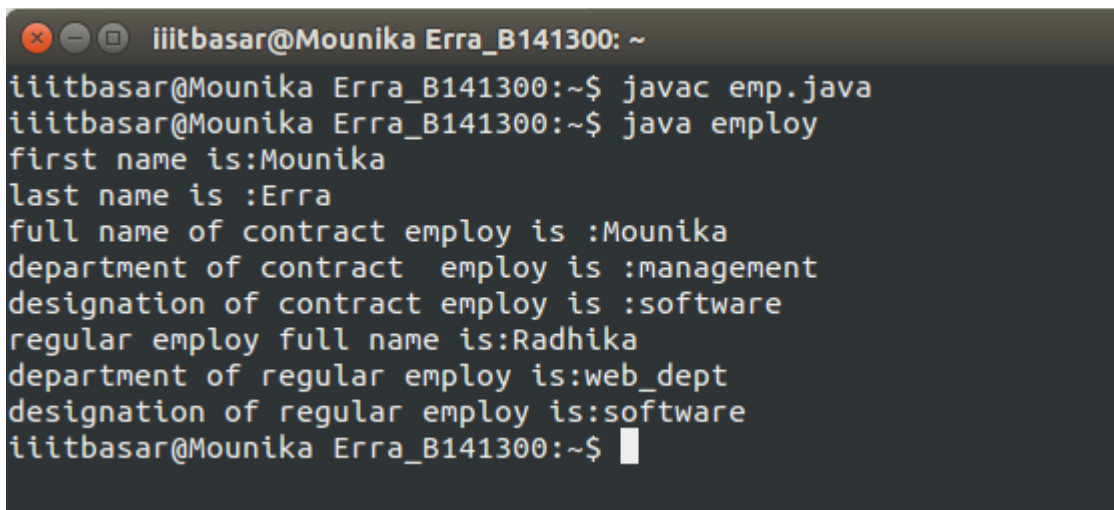
contractemp c1= new contractemp();
c1.displayfullname("Mounika");
c1.department("management");
c1.designation("software");

regularemp r1= new regularemp();
r1.displayfullname("Radhika");
r1.department("web_dept");
r1.designation("software");
}
}

```

### OutPut:

first name is:Mounika  
 last name is :Erra  
 full name of contract employ is :Mounika  
 department of contract employ is :management  
 designation of contract employ is :software  
 regular employ full name is:Radhika  
 department of regular employ is:web\_dept  
 designation of regular employ is:software



```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac emp.java
iiitbasar@Mounika Erra_B141300:~$ java employ
first name is:Mounika
last name is :Erra
full name of contract employ is :Mounika
department of contract employ is :management
designation of contract employ is :software
regular employ full name is:Radhika
department of regular employ is:web_dept
designation of regular employ is:software
iiitbasar@Mounika Erra_B141300:~$

```

**4. Derive sub-classes of ContractEmployee namely HourlyEmployee & WeeklyEmployee with information number of hours & wages per hour, number of weeks & wages per week respectively & method calculateWages() to calculate their monthly salary. Also override getDesig () method depending on the type of contract employee.**

### Program:

```
class contractemployee
```

```

{
    String desig;
    double salary;
    public void setDesignation(String desig)
    {
        this.desig=desig;
    }
    public String getdesignation()
    {
        return desig;
    }
}
class hourlyemp extends contractemployee
{
    int hours,wageph;
    hourlyemp(String design,int hours,int wageph)
    {
        super.setDesignation(design);
        this.hours=hours;
        this.wageph=wageph;
    }
    int calwages()
    {
        return hours*wageph*30;
    }
    public String getDesignation()
    {
        return super.desig;
    }
}
class Weeklyemp extends contractemployee
{
    int weeks,wagespwk;
    Weeklyemp(String design,int weeks,int wagepwk)
    {
        super.setDesignation(design);
        this.weeks=weeks;
        this.wagespwk=wagespwk;
    }
    int calwages()
    {
        return weeks*wagespwk*30;
    }
    public String getDesignation()
    {
        return super.desig;
    }
}

```

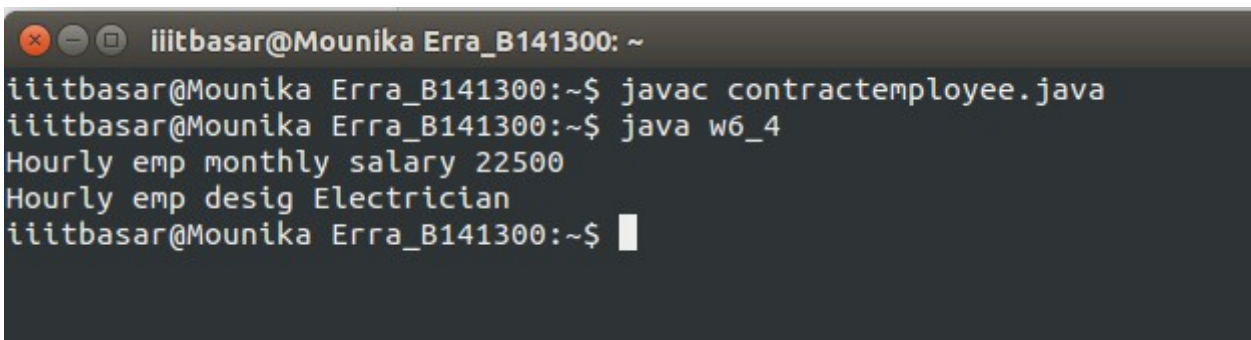
```

    }
}
class w6_4
{
    public static void main(String a[])
    {
        hourlyemp he=new hourlyemp("Electrician",10,75);
        System.out.println("Hourly emp monthly salary "+he.calwages());
        System.out.println("Hourly emp desig "+he.getdesignation());
    }
}

```

### OutPut:

Hourly emp monthly salary 22500  
 Hourly emp desig Electrician



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac contractemployee.java
iitbasar@Mounika Erra_B141300:~$ java w6_4
Hourly emp monthly salary 22500
Hourly emp desig Electrician
iitbasar@Mounika Erra_B141300:~$

```

**5. Write an application to create a super class Vehicle with information vehicle number,insurance number,color and methods getConsumption() displayConsumption(). Derive the sub-classes TwoWheeler and FourWheeler with method maintenance() and average() to print the maintenance And average of vehicle.**

### Program:

```

class vehicle
{
    int vno;
    int ino;
    String color;
    double fuel;
    void setinfo(int vno,int ino,String color)
    {
        this.vno=vno;
        this.ino=ino;
        this.color=color;
    }
    void getconsumption(double fuel)

```

```

    {
    this.fuel=fuel;
    }
    void displayconsumption()
    {
    System.out.println("fuel consumption:"+fuel);
    }
    void displayinfo(){
    System.out.println("Vehicle "+vno);
    System.out.println("Insurance no: "+ino);
    System.out.println("color "+color);
    }
}
class twowheeler extends vehicle
{
    double avg;
    double mt;
    void setspecs(double avg,double mt)
    {
    this.avg=avg;
    this.mt=mt;
    }
    double getmaintenance()
    {
    return mt;
    }
    double getaverage()
    {
    return avg;
    }
}
class fourwheeler extends vehicle
{
    double avg;
    double mt;
    void setspecs(double avg,double mt)
    {
    this.avg=avg;
    this.mt=mt;
    }
    double getmaintenance()
    {
    return mt;
    }
    double getaverage()

```

```

        {
            return avg;
        }
    }
    class vehiclename
    {
    public static void main(String args[])
        {
            twowheeler tw=new twowheeler();
            tw.setinfo(1490,123432,"Blue");
            tw.getconsumption(5);
            tw.setspecs(55,1200);
            double m=tw.getmaintenance();
            double av=tw.getaverage();
            System.out.println("for two wheelers");
            tw.displayinfo();
            tw.displayconsumption();
            System.out.println("maintenance: "+m);
            System.out.println("average "+av);
            fourwheeler fw=new fourwheeler();
            fw.setinfo(9000,876646,"Silver");
            fw.getconsumption(10);
            fw.setspecs(20,5000);
            m=fw.getmaintenance();
            av=fw.getaverage();
            System.out.println("for four wheelers");
            fw.displayinfo();
            fw.displayconsumption();
            System.out.println("maintenance: "+m);
            System.out.println("average "+av);
        }
    }

```

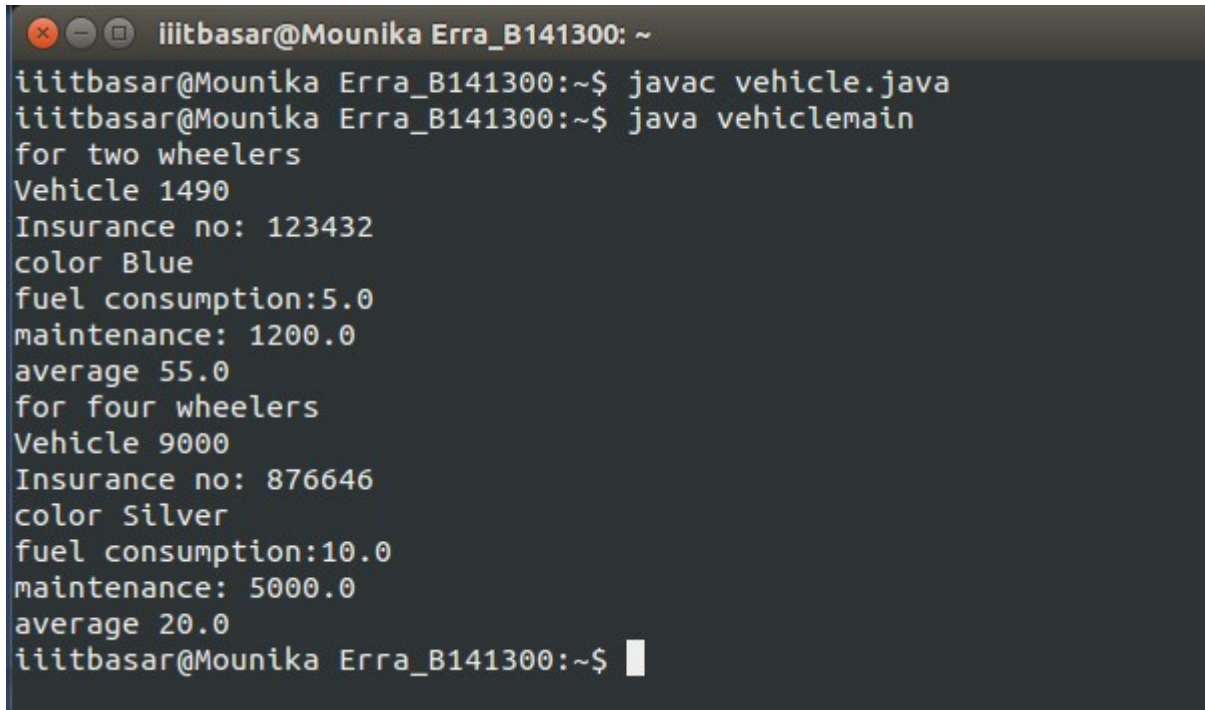
### OutPut:

```

for two wheelers
Vehicle 1490
Insurance no: 123432
color Blue
fuel consumption:5.0
maintenance: 1200.0
average 55.0
for four wheelers
Vehicle 9000
Insurance no: 876646
color Silver

```

fuel consumption:10.0  
maintenance: 5000.0  
average 20.0

A terminal window with a dark background and light-colored text. The window title is "iiitbasar@Mounika Erra\_B141300: ~". The terminal shows the following commands and output:

```
iiitbasar@Mounika Erra_B141300:~$ javac vehicle.java
iiitbasar@Mounika Erra_B141300:~$ java vehiclename
for two wheelers
Vehicle 1490
Insurance no: 123432
color Blue
fuel consumption:5.0
maintenance: 1200.0
average 55.0
for four wheelers
Vehicle 9000
Insurance no: 876646
color Silver
fuel consumption:10.0
maintenance: 5000.0
average 20.0
iiitbasar@Mounika Erra_B141300:~$
```

**6. Extend the above TwoWheeler class with methods getType() and getName() which gives the information about the type and the name of the company. Create sub-classes Geared and NonGeared with method average() to print the average of a geared and non-geared two wheeler.**

#### **Program:**

```
class vehicle
{
    int vno;
    int ino;
    String color;
    double fuel;
    void setinfo(int vno,int ino,String color)
    {
        this.vno=vno;
        this.ino=ino;
        this.color=color;
    }
    void getconsumption(double fuel)
    {
        this.fuel=fuel;
    }
    void displayconsumption()
```

```

    {
    System.out.println("fuel consumption:"+fuel);
    }
    void displayinfo(){
    System.out.println("Vehicle "+vno);
    System.out.println("Insurance no: "+ino);
    System.out.println("color "+color);
    }
}
class twowheeler extends vehicle
{
    double avg;
    double mt;
    void setspecs(double avg,double mt)
    {
    this.avg=avg;
    this.mt=mt;
    }
    double getmaintenance()
    {
    return mt;
    }
    double getaverage()
    {
    return avg;
    }
}
class geared extends twowheeler
{
String type;
String name;
geared(String type,String name)
{
this.type=type;
this.name=name;
}
String gettype()
{
return type;
}
String getname()
{
return name;
}
}

```



```

class nongear extends twowheeler
{
String type;
String name;
nongear(String type,String name)
{
this.type=type;
this.name=name;
}
String gettype()
{
return type;
}
String getname()
{
return name;
}
}
class vehiclem
{
public static void main(String args[])
{
    twowheeler tw=new twowheeler();
    tw.setinfo(1490,123432,"Blue");
    tw.getconsumption(5);
    tw.setspecs(55,1200);
    double m=tw.getmaintenance();
    double av=tw.getaverage();
    System.out.println("for two wheelers");
    tw.displayinfo();
    tw.displayconsumption();
    System.out.println("maintenance: "+m);
    System.out.println("average "+av);
    geared g=new geared("geared","motorcycle");
    String type=g.gettype();
    String name=g.getname();
    System.out.println("\n type:"+type+"\n name:"+name);
    nongear ng=new nongear("non-geared","motorcycle");
    type=ng.gettype();
    name=ng.getname();
    System.out.println("\n type:"+type+"\n name:"+name);
}
}

```

**OutPut:**

for two wheelers  
Vehicle 1490  
Insurance no: 123432  
color Blue  
fuel consumption:5.0

```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac vehicle.java  
iiitbasar@Mounika Erra_B141300:~$ java vehiclem  
for two wheelers  
Vehicle 1490  
Insurance no: 123432  
color Blue  
fuel consumption:5.0  
maintenance: 1200.0  
average 55.0  
  
type:geared  
name:motorcycle  
  
type:non-geared  
name:motorcycle  
iiitbasar@Mounika Erra_B141300:~$
```

## WEEK-7

**1. Create an abstract class Shape which calculate the area and volume of 2-d and 3-d shapes with methods getArea() and getVolume(). Reuse this class to calculate the area and volume of square,circle ,cube and sphere.**

### **Program:**

```
import java.util.Scanner;  
abstract class Shape  
{  
    abstract void getArea(int r,int a);  
    abstract void getVolume(int r,int a);  
}  
class Calculations extends Shape  
{  
    public void getArea(int r,int a)  
    {  
  
        System.out.println("Area of the circle is:" +(3.14*r*r));  
        System.out.println("Surface area of the cube is:"+(6*a*a));  
        System.out.println("Surface area of the sphere is:"+(4*3.14*r*r));  
    }  
}
```

```

    }
    public void getVolume(int r,int a)
    {
        System.out.println("Volume of the cube is:" +(a*a*a));
        System.out.println("Volume of the sphere is:"+((4/3)*3.14*r*r*r));
    }
}
class Main
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the radius value of circle&sphere:");
        int R=sc.nextInt();
        System.out.println("Enter the side value of cub:");
        int A=sc.nextInt();
        Shape sh=new Calculations();
        sh.getArea(R,A);
        sh.getVolume(R,A);
    }
}

```

### OutPut:

Enter the radius value of circle&sphere:

5

Enter the side value of cub:

6

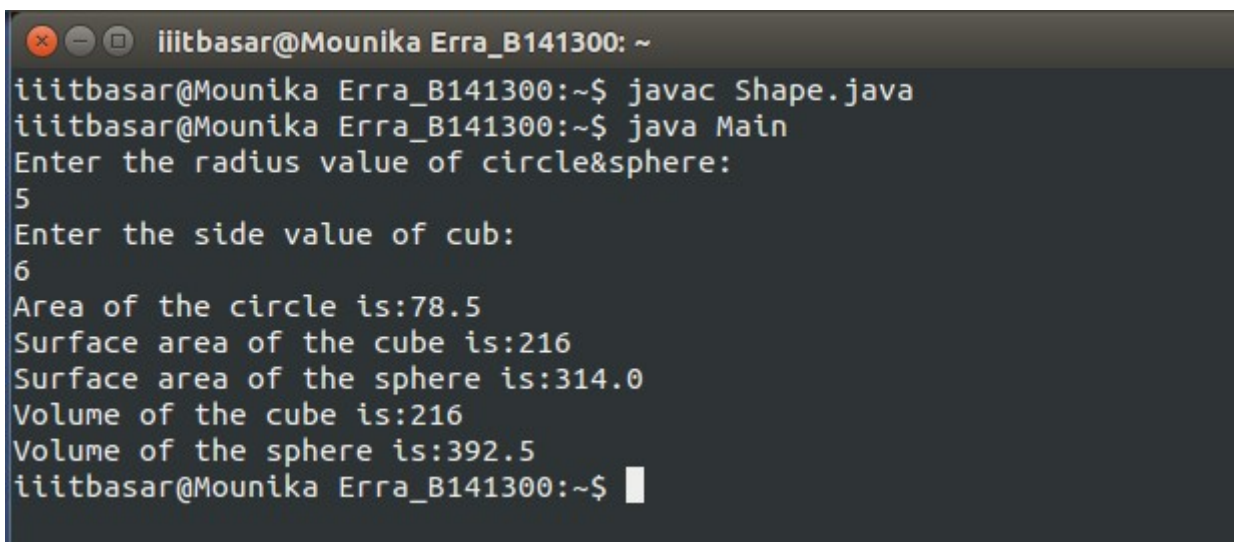
Area of the circle is:78.5

Surface area of the cube is:216

Surface area of the sphere is:314.0

Volume of the cube is:216

Volume of the sphere is:392.5



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Shape.java
iitbasar@Mounika Erra_B141300:~$ java Main
Enter the radius value of circle&sphere:
5
Enter the side value of cub:
6
Area of the circle is:78.5
Surface area of the cube is:216
Surface area of the sphere is:314.0
Volume of the cube is:216
Volume of the sphere is:392.5
iitbasar@Mounika Erra_B141300:~$

```

**2. Create an abstract class Employee with methods getAmount() which displays the amount paid to employee. Reuse this class to calculate the amount to be paid to WeeklyEmployee and HourlyEmployee according to no. of hours and total hours for HourlyEmployee and no. of weeks and total weeks for WeeklyEmployee.**

**Program:**

```
import java.util.Scanner;
abstract class Employee
{
    abstract void getAmount(int m,int n);
}
class HE extends Employee
{
    public void getAmount(int m,int wage)
    {
        System.out.println("Amount paid to hourly employee:"+(m*wage));
    }
}
class WE extends Employee
{
    public void getAmount(int p,int Wage)
    {
        System.out.println("Amount paid to Weekly employee:"+(p*Wage));
    }
}
class Main
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter no.of hours HourlyEmployee worked: ");
        int a=sc.nextInt();
        System.out.println("Enter Wage value of Hourly Employee:");
        int b=sc.nextInt();
        System.out.println("Enter no.of weeks WeeklyEmployee worked:");
        int c=sc.nextInt();
        System.out.println("Enter Wage value of Weekly Employee:");
        int d=sc.nextInt();
        Employee sc1= new HE();
        Employee sc2= new WE();
        sc1.getAmount(a,b);
        sc2.getAmount(c,d);
    }
}
```

### OutPut:

Enter no.of hours HourlyEmployee worked:

8

Enter Wage value of Hourly Employee:

200

Enter no.of weeks WeeklyEmployee worked:

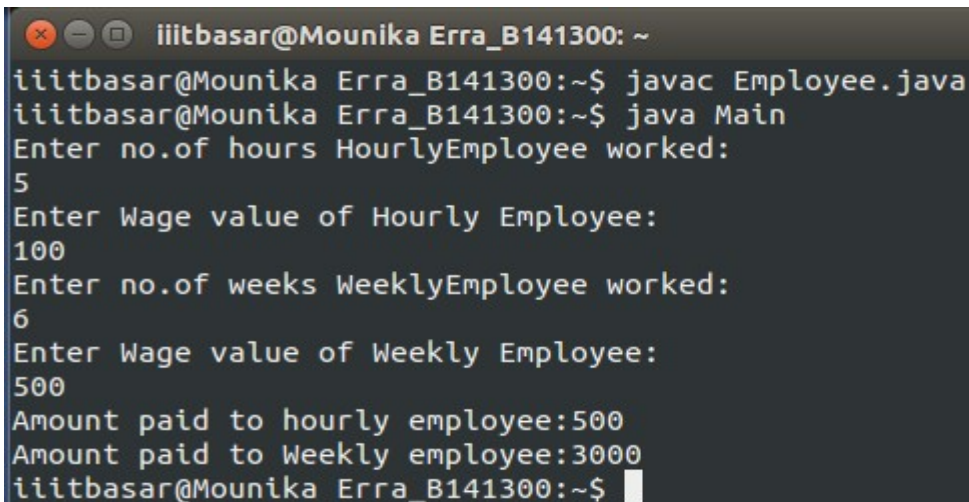
7

Enter Wage value of Weekly Employee:

7500

Amount paid to hourly employee:1600

Amount paid to Weekly employee:52500



```
iiitbasar@Mounika Erra_B141300: ~  
iiitbasar@Mounika Erra_B141300:~$ javac Employee.java  
iiitbasar@Mounika Erra_B141300:~$ java Main  
Enter no.of hours HourlyEmployee worked:  
5  
Enter Wage value of Hourly Employee:  
100  
Enter no.of weeks WeeklyEmployee worked:  
6  
Enter Wage value of Weekly Employee:  
500  
Amount paid to hourly employee:500  
Amount paid to Weekly employee:3000  
iiitbasar@Mounika Erra_B141300:~$
```

**3.Create an Interface payable with method getAmount ().Calculate the amount to be and Employee by implementing Interface.paid to Invoice**

### Program:

```
import java.util.Scanner;
```

```
interface payable
```

```
{
```

```
    void getAmount(int m,int n);
```

```
}
```

```
class cal implements payable
```

```
{
```

```
    public void getAmount(int m,int n)
```

```
    {
```

```
        System.out.println("Amount paid to employee:"+(m*100));
```

```
        System.out.println("Invoice or bill :"+((m*100)+n));//invoice includes
```

```
employee payment and
```

```
extra charges
```

```
    }
```

```

}
class Main
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter Amount: ");
        int a=sc.nextInt();
        System.out.println("Enter Extra Charges: ");
        int b=sc.nextInt();
        payable pb=new cal();
        pb.getAmount(a,b);
    }
}

```

### OutPut:

Enter Amount:

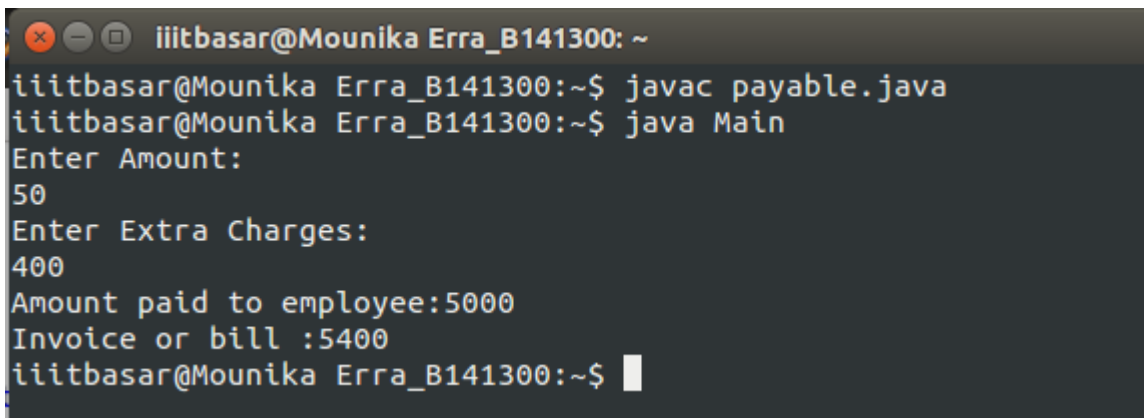
100

Enter Extra Charges:

600

Amount paid to employee:10000

Invoice or bill :10600



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac payable.java
iitbasar@Mounika Erra_B141300:~$ java Main
Enter Amount:
50
Enter Extra Charges:
400
Amount paid to employee:5000
Invoice or bill :5400
iitbasar@Mounika Erra_B141300:~$

```

**4. Create an Interface Vehicle with method getColor(),getNumber(), getConsumption() calculate the fuel consumed , name and color for TwoWheeler and Four Wheeler By implementing interface Vehicle.**

### Program:

```

import java.util.Scanner;
interface Vehicle
{
    void getColor(String c);
    void getNumber(int n);
    void getConsumption(int l,int fuelcost);
}
class TwoWheeler implements Vehicle

```

```

{
    public void getColor(String c)
    {
        System.out.println("Color of the TwoWheeler is:"+c);
    }
    public void getNumber(int n)
    {
        System.out.println("Number of the TwoWheeler is:"+n);
    }
    public void getConsumption(int l,int fuelcost)
    {
        System.out.println("Consumption of TwoWheeler is:"+(l*fuelcost));
    }
}
class FourWheeler implements Vehicle
{
    public void getColor(String c)
    {
        System.out.println("Color of the FourWheeler is:"+c);
    }
    public void getNumber(int n)
    {
        System.out.println("Number of the FourWheeler is:"+n);
    }
    public void getConsumption(int l,int fuelcost)
    {
        System.out.println("Consumption of FourWheeler is:"+(l*fuelcost));
    }
}
class Main
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter The color of TwoWheeler:");
        String C=sc.nextLine();
        System.out.println("Enter Number of TwoWheeler:");
        int N=sc.nextInt();
        System.out.println("Enter Number of Litres of Fuel Consumed by
TwoWheeler:");
        int L=sc.nextInt();
        System.out.println("Enter the cost of Fuel per litre Consumed by
TwoWheeler:");
        int FC=sc.nextInt();
        System.out.println("Enter The color of FourWheeler:");
    }
}

```

```

        String C1=sc.next();
        System.out.println("Enter Number of FwoWheeler:");
        int N1=sc.nextInt();
        System.out.println("Enter Number of Litres of Fuel Consumed by
FwoWheeler:");
        int L1=sc.nextInt();
        System.out.println("Enter the cost of Fuel per litre Consumed by
FwoWheeler:");
        int FC1=sc.nextInt();
        Vehicle TW=new TwoWheeler();
        Vehicle FW=new FourWheeler();
        TW.getColor(C);
        TW.getNumber(N);
        TW.getConsumption(L,FC);
        FW.getColor(C1);
        FW.getNumber(N1);
        FW.getConsumption(L1,FC1);
    }
}

```

### **OutPut:**

```

Enter The color of TwoWheeler:
Red
Enter Number of TwoWheeler:
7890
Enter Number of Litres of Fuel Consumed by TwoWheeler:
4
Enter the cost of Fuel per litre Consumed by TwoWheeler:
65
Enter The color of FourWheeler:
White
Enter Number of FwoWheeler:
5678
Enter Number of Litres of Fuel Consumed by FwoWheeler:
3
Enter the cost of Fuel per litre Consumed by FwoWheeler:
74
Color of the TwoWheeler is:Red
Number of the TwoWheeler is:7890
Consumption of TwoWheeler is:260
Color of the FourWheeler is:White
Number of the FourWheeler is:5678
Consumption of FourWheeler is:222

```



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac Vehicle.java
iitbasar@Mounika Erra_B141300:~$ java Main
Enter The color of TwoWheeler:
black
Enter Number of TwoWheeler:
1234
Enter Number of Litres of Fuel Consumed by TwoWheeler:
2
Enter the cost of Fuel per litre Consumed by TwoWheeler:
75
Enter The color of FourWheeler:
Blue
Enter Number of FwoWheeler:
4321
Enter Number of Litres of Fuel Consumed by FwoWheeler:
3
Enter the cost of Fuel per litre Consumed by FwoWheeler:
70
Color of the TwoWheeler is:black
Number of the TwoWheeler is:1234
Consumption of TwoWheeler is:150
Color of the FourWheeler is:Blue
Number of the FourWheeler is:4321
Consumption of FourWheeler is:210
iitbasar@Mounika Erra_B141300:~$

```

**5. Create an Interface Fare with method getAmount() to get the amount paid for fare Calculate the fare paid by bus and train implementing interface Fare. of travelling.**

#### **Program:**

```

import java.util.Scanner;
interface Fare
{
    void getAmount(int K,int C);
}
class Bus implements Fare
{
    public void getAmount(int K,int C)
    {
        System.out.println("Amount paid for travelling by Bus:"+(K*C));
    }
}
class Train implements Fare
{
    public void getAmount(int K,int C)
    {

```

```

        System.out.println("Amount paid for travelling by Train:"+(K*C));
    }
}
class Main
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter No.of Kilometers travelled by bus:");
        int k=sc.nextInt();
        System.out.println("Enter No.of Kilometers travelled by Train:");
        int k1=sc.nextInt();
        System.out.println("Enter fare for Kilometer travelled by bus:");
        int f=sc.nextInt();
        System.out.println("Enter fare for Kilometer travelled by Train:");
        int f1=sc.nextInt();
        Fare b=new Bus();
        Fare t=new Train();
        b.getAmount(k,f);
        t.getAmount(k1,f1);
    }
}

```

### OutPut:

```

Enter No.of Kilometers travelled by bus:
15
Enter No.of Kilometers travelled by Train:
15
Enter fare for Kilometer travelled by bus:
3
Enter fare for Kilometer travelled by Train:
1
Amount paid for travelling by Bus:45
Amount paid for travelling by Train:15

```

```

iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac Fare.java
iiitbasar@Mounika Erra_B141300:~$ java Main
Enter No.of Kilometers travelled by bus:
50
Enter No.of Kilometers travelled by Train:
50
Enter fare for Kilometer travelled by bus:
3
Enter fare for Kilometer travelled by Train:
1
Amount paid for travelling by Bus:150
Amount paid for travelling by Train:50
iiitbasar@Mounika Erra_B141300:~$

```

**6. Create an Interface StudentFee with method getAmount() ,getFirstName() ,getLastName(), getAddress(), getContact(). Calculate the amount paid by the Hostler and NonHostler student by implementing interface Student Fee**

**Program:**

```
interface Studentfee
{
    void getAmount(int clgfee);
    void getFirstname(String fname);
    void getLastname(String lname);
    void getAddress(String address);
    void getContact(double contact);
}
class Hostler implements Studentfee
{
    public void getAmount(int clgfee)
    {
        int hostelfee=5000;
        System.out.println("fee payed by hostler:"+(clgfee+hostelfee));
    }
    public void getFirstname(String fname)
    {
        System.out.println("first name of the student:"+fname);
    }
    public void getLastname(String lname)
    {
        System.out.println("last name of the student:"+lname);
    }
    public void getAddress(String address)
    {
        System.out.println("Address of the student:"+address);
    }
    public void getContact(double contact)
    {
        System.out.println("contact number of the student:"+contact);
    }
}
class NonHostler implements Studentfee
{
```

```

    public void getAmount(int clgfee)
    {
        System.out.println("fee payed by nonhostler:"+(clgfee));
    }
    public void getFirstname(String fname)
    {
        System.out.println("first name of the student:"+fname);
    }
    public void getLastname(String lname)
    {
        System.out.println("last name of the student:"+lname);
    }
    public void getAddress(String address)
    {
        System.out.println("Address of the student:"+address);
    }
    public void getContact(double contact)
    {
        System.out.println("contact number of the student:"+contact);
    }
}
class Main
{
    public static void main(String args[])
    {
        Studentfee h= new Hostler();
        h.getAmount(23000);
        h.getFirstname("Mounika");
        h.getLastname("Erra");
        h.getAddress("Bhimaram,Mancheria,Telangana");
        h.getContact(504204);
        System.out.println("\n");
        Studentfee h1= new NonHostler();
        h1.getAmount(20000);
        h1.getFirstname("Hyma");
        h1.getLastname("Nilagiri");
        h1.getAddress("Anakapally,vishakapatnam,Andhrapradesh");
        h1.getContact(26064);
    }
}

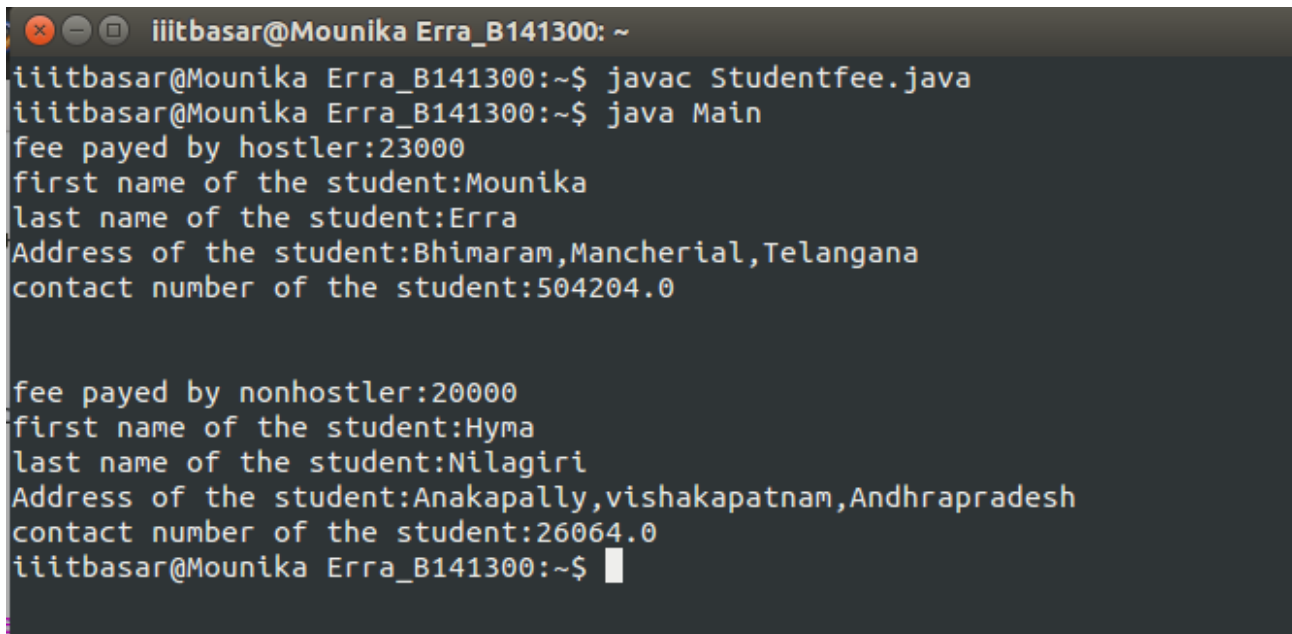
```

}

### **OuPut:**

fee payed by hostler:23000  
first name of the student:Mounika  
last name of the student:Erra  
Address of the student:Bhimaram,Mancherial,Telangana  
contact number of the student:504204.0

fee payed by nonhostler:20000  
first name of the student:Hyma  
last name of the student:Nilagiri  
Address of the student:Anakapally,vishakapatnam,Andhrapradesh  
contact number of the student:26064.0



```
iitbasar@Mounika Erra_B141300: ~  
iitbasar@Mounika Erra_B141300:~$ javac Studentfee.java  
iitbasar@Mounika Erra_B141300:~$ java Main  
fee payed by hostler:23000  
first name of the student:Mounika  
last name of the student:Erra  
Address of the student:Bhimaram,Mancherial,Telangana  
contact number of the student:504204.0  
  
fee payed by nonhostler:20000  
first name of the student:Hyma  
last name of the student:Nilagiri  
Address of the student:Anakapally,vishakapatnam,Andhrapradesh  
contact number of the student:26064.0  
iitbasar@Mounika Erra_B141300:~$
```

## WEEK-8

**1. Write a Program to create your own package. Package should have more than two classes. write a Program that uses the classes from the package.**

### **Program:**

```
package Mouni;  
public class A  
{  
    public void m1()  
    {  
        System.out.println("Iam a good Girl");  
    }  
}
```

```

    }
}

package Mouni;
public class B
{
    public void m()
    {
        System.out.println("Hello,How are you?");
    }
}

package Mouni;
public class C
{
    public void m2()
    {
        System.out.println("Hai, What are you doing?");
    }
}

import Mouni.A;
import Mouni.B;
import Mouni.C;
class Main
{
    public static void main(String args[])
    {
        A a1=new A();
        B b=new B();
        C c=new C();
        a1.m1();
        b.m();
        c.m2();
    }
}

```

**OutPut:**

```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac -d . A.java
iitbasar@Mounika Erra_B141300:~$ javac -d . B.java
iitbasar@Mounika Erra_B141300:~$ javac -d . C.java
iitbasar@Mounika Erra_B141300:~$ javac Main.java
iitbasar@Mounika Erra_B141300:~$ java Main
Iam a good Girl
Hello,How are you?
Hai, What are you doing?
iitbasar@Mounika Erra_B141300:~$
```

**2. Create a package named org.shapes. Create some classes in the package representing some common geometric shapes like Square, Triangle, Circle and so on. write a Program that uses the classes from the package.**

**Program:**

```
package Shapes;
public class Triangle
{
    public void area(double l,double b)
    {
        System.out.println(0.5*l*b);
    }
    public void perimeter(double s,double s1,double s2)
    {
        System.out.println(s+s1+s2);
    }
}
```

```
package Shapes;
public class Square
{
    public void area(double a)
    {
        System.out.println(a*a);
    }
    public void perimeter(double s)
    {
        System.out.println(4*s);
    }
}
```

```
package Shapes;
public class Circle
{
    public void area(double r)
    {
        System.out.println(3.14*r*r);
    }
    public void circumference(double d)
    {
        System.out.println(3.14*d);
    }
}
```

```
import Shapes.Triangle;
import Shapes.Square;
import Shapes.Circle;
public class Mainshapes
{
    public static void main(String args[])
    {
        Triangle t=new Triangle();
        Square s=new Square();
        Circle c=new Circle();
        System.out.println("Area of Triangle is:");
        t.area(4,5);
        System.out.println("Perimeter of Triangle is:");
        t.perimeter(1,2,3);
        System.out.println("Area of Square is:");
        s.area(4);
        System.out.println("Perimeter of Square is:");
        s.perimeter(8);
        System.out.println("Area of Circle is:");
        c.area(5);
        System.out.println("Circumference of Circle is:");
        c.circumference(8);
    }
}
```



## OutPut:

```
iiitbasar@Mounika Erra_B141300: ~
iiitbasar@Mounika Erra_B141300:~$ javac -d . Triangle.java
iiitbasar@Mounika Erra_B141300:~$ javac -d . Square.java
iiitbasar@Mounika Erra_B141300:~$ javac -d . Circle.java
iiitbasar@Mounika Erra_B141300:~$ javac Mainshapes.java
iiitbasar@Mounika Erra_B141300:~$ java Mainshapes
Area of Triangle is:
10.0
Perimeter of Triangle is:
6.0
Area of Square is:
16.0
Perimeter of Square is:
32.0
Area of Circle is:
78.5
Circumference of Circle is:
25.12
iiitbasar@Mounika Erra_B141300:~$
```

**3. Write a Java program to create package called dept. Create four classes as CSE, ECE, ME and CE add methods in each class which can display subject names of your respect year. access this package classes from main class**

### Program:

```
package dept;
public class ECE
{
    public void Subjects()
    {
        System.out.println("EMT\nDEC\nDSD\nAC\nDC");
    }
}
```

```
package dept;
public class CSE
{
    public void Subjects()
    {
        System.out.println("Java\nDM\nPPL\nDBMS\nCOA");
    }
}
```

```
package dept;
```

```
public class CE
{
    public void Subjects()
    {
        System.out.println("ED\nGraphics");
    }
}
```

```
package dept;
public class ME
{
    public void Subjects()
    {
        System.out.println("mechanics\nFlued Mechanics");
    }
}
```

```
import dept.ECE;
import dept.CSE;
import dept.CE;
import dept.ME;
public class Branches
{
    public static void main(String args[])
    {
        ECE ec=new ECE();
        System.out.println("Subjects of ECE:");
        ec.Subjects();
        CSE cs=new CSE();
        System.out.println("Subjects of CSE:");
        cs.Subjects();
        CE ce=new CE();
        System.out.println("Subjects of CE:");
        ce.Subjects();
        ME me=new ME();
        System.out.println("Subjects of ME:");
        me.Subjects();
    }
}
```

**OutPut:**

```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac -d . ECE.java
iitbasar@Mounika Erra_B141300:~$ javac -d . CE.java
iitbasar@Mounika Erra_B141300:~$ javac -d . ME.java
iitbasar@Mounika Erra_B141300:~$ javac -d . CSE.java
iitbasar@Mounika Erra_B141300:~$ javac Branches.java
iitbasar@Mounika Erra_B141300:~$ java Branches
Subjects of ECE:
EMT
DEC
DSD
AC
DC
Subjects of CSE:
Java
DM
PPL
DBMS
COA
Subjects of CE:
ED
Graphics
Subjects of ME:
mechanics
Flued Mechanics
iitbasar@Mounika Erra_B141300:~$
```

**4. Write a Calculator program : Include all calculator operations in as classes in a Package and import in to main class.**

**Program:**

```
package calculator;
public class Numbers
{
    public int add(int a,int b)
    {
        return a+b;
    }
    public int sub(int a,int b)
    {
        return a-b;
    }
    public double mult(int a,int b)
    {
        return a*b;
    }
    public double div(int a,int b)
    {
        return a/b;
    }
}
```

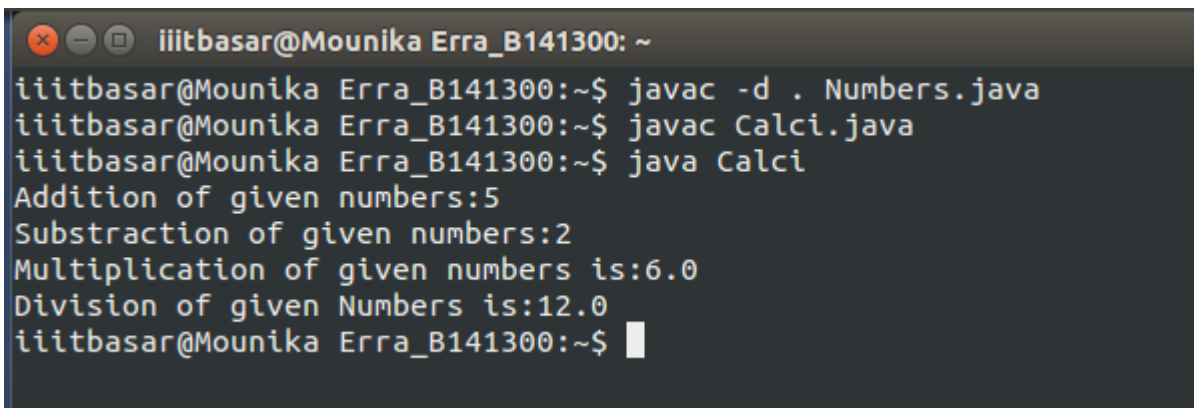
```

    }
}

import calculator.Numbers;
public class Calci
{
    public static void main(String args[])
    {
        Numbers n=new Numbers();
        System.out.println("Addition of given numbers:"+n.add(2,3));
        System.out.println("Substraction of given numbers:"+n.sub(5,3));
        System.out.println("Multiplication of given numbers is:"+n.mult(4,2));
        System.out.println("Division of given Numbers is:"+n.div(8,4));
    }
}

```

### OutPut:



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac -d . Numbers.java
iitbasar@Mounika Erra_B141300:~$ javac Calci.java
iitbasar@Mounika Erra_B141300:~$ java Calci
Addition of given numbers:5
Substraction of given numbers:2
Multiplication of given numbers is:6.0
Division of given Numbers is:12.0
iitbasar@Mounika Erra_B141300:~$

```

### 5. Write a program for the following a. Example to use interfaces in Packages.

#### Program:

```

package Oops;
public class Class
{
    public void m()
    {
        System.out.println("Good Morning,Sir");
    }
}

```

```

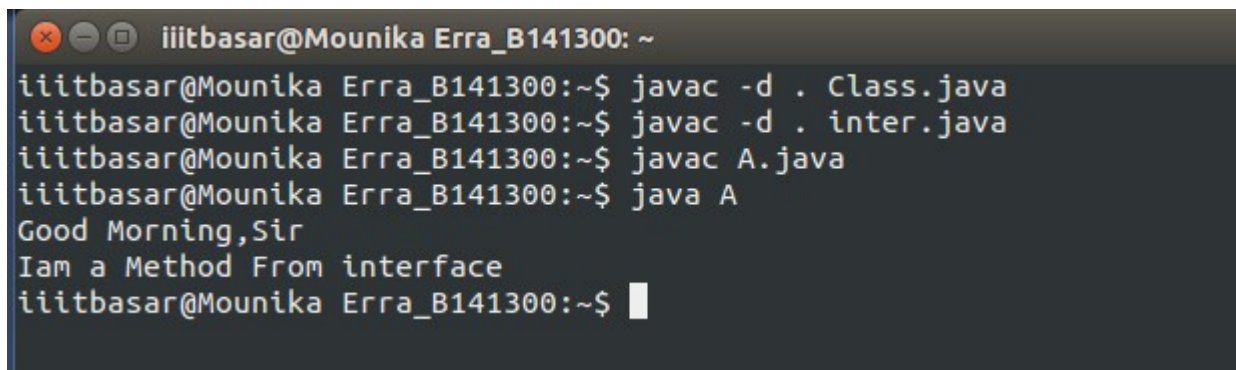
package Oops;

```

```
public interface inter
{
    public void m1();
}
```

```
import Oops.Class;
import Oops.inter;
class A implements inter
{
    public void m1()
    {
        System.out.println("Iam a Method From interface");
    }
    public static void main(String args[])
    {
        Class c=new Class();
        c.m();
        A a=new A();
        a.m1();
    }
}
```

### OutPut:



```
iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac -d . Class.java
iitbasar@Mounika Erra_B141300:~$ javac -d . inter.java
iitbasar@Mounika Erra_B141300:~$ javac A.java
iitbasar@Mounika Erra_B141300:~$ java A
Good Morning,Sir
Iam a Method From interface
iitbasar@Mounika Erra_B141300:~$
```

### b. Example to create sub package in a package.

#### Program:

```
package Oops.java;
public class M
{
    public void m()
    {
        System.out.println("Hai!");
    }
}
```

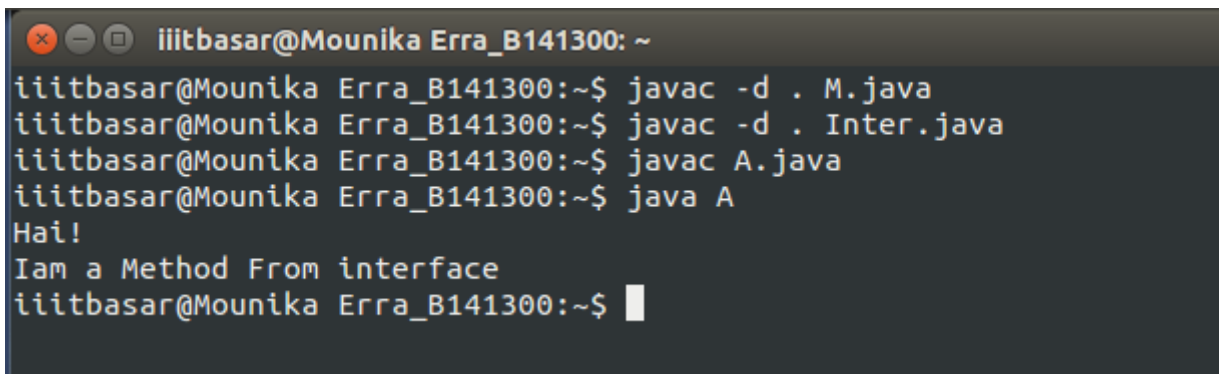
```

    }
}
package Oops.java;
public interface Inter
{
    public void m1();
}

import Oops.java.M;
import Oops.java.Inter;
class A implements Inter
{
    public void m1()
    {
        System.out.println("Iam a Method From interface");
    }
    public static void main(String args[])
    {
        M c=new M();
        c.m();
        A a=new A();
        a.m1();
    }
}

```

### OutPut:



```

iitbasar@Mounika Erra_B141300: ~
iitbasar@Mounika Erra_B141300:~$ javac -d . M.java
iitbasar@Mounika Erra_B141300:~$ javac -d . Inter.java
iitbasar@Mounika Erra_B141300:~$ javac A.java
iitbasar@Mounika Erra_B141300:~$ java A
Hai!
Iam a Method From interface
iitbasar@Mounika Erra_B141300:~$

```